

Program  
and Abstracts

SOCIETY FOR  
AMERICAN ARCHAEOLOGY

THIRTY-NINTH ANNUAL MEETING

Washington, D.C.

2, 3, 4 May 1974

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Thirty-Ninth Annual Meeting  
SOCIETY FOR AMERICAN ARCHAEOLOGY

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Program Chairman: William Fitzhugh

Program Committee: James Adovasio, Alison Brooks, Robert Evans (local arrangements), Robert Stuckenrath, John Terrell, John Yellen

systems

OFFICERS  
OF THE SOCIETY FOR AMERICAN ARCHAEOLOGY

- President: Douglas W. Schwartz
- President-elect: Charles R. McGimsey III
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- Editor: Edwin N. Wilmsen
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- Executive Committee Members: George L. Cowgill, Cynthia Irwin-Williams, George C. Frison

GENERAL INFORMATION

**Registration** A registration desk will be located in the Promenade on the hotel's first floor from 4 p.m. to 9 p.m. on Wednesday, 8 a.m. to 4 p.m. on Thursday and Friday, and 8 a.m. to noon on Saturday. Registration, which includes a copy of the Program and Abstracts, is required for attendance at all sessions.

**Advance Registration** Members who pre-registered by 10 April should claim their badges and Programs at the ADVANCE registration desk in the Promenade.

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

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

**Placement Service** A placement service, located in the Virginia Room, will be open from 4 p.m. to 9 p.m. Wednesday, and from 10 a.m. to 5 p.m. Thursday through Saturday. Message forms will be provided and assigned box numbers must be used for the message center. Your comments and suggestions for future placement service activity are welcome.

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

**Open House** The Promenade will be the scene of an open reception (cash bar), to which everyone is invited, on Thursday from 5 p.m. to 6:30 p.m.

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

**Luncheons** Tickets for Table Talk, which will be held at 12:15 p.m. on Friday at the El Bodegon Restaurant, 1637 R Street, NW, may be purchased at the advance registration desk. The restaurant is located 9 short blocks from the Mayflower and can be reached by taxi or by walking north on 17th St. to R St. Allow 15 to 20 minutes if you walk.

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

**Message Center** A self-service message center will be located in the Promenade next to the local information desk. This center should not be used for messages pertaining to the placement service.

**Exhibits** Publisher's exhibits will be on display in the Cabinet Room from 4 p.m. to 9 p.m. Wednesday, 10 a.m. to 6 p.m. Thursday and Friday, and 9 a.m. to noon on Saturday. Participating exhibitors, as the Program went to press, included Academic Press Inc., American University Press Services Inc., University of Chicago Press, W. H. Freeman and Company, Peabody Museum of Archaeology and Ethnology, and the University of Texas Press.

**Cooperative Child Care Service** Parents interested in using and participating in a cooperative day care service should visit the District Room which has been equipped for that purpose. The room will be open from 4 p.m. to midnight on Wednesday, and from 8 a.m. to midnight Thursday through Saturday.

**Lounge** Capital B has been set aside as an informal meeting place from 4 p.m. to midnight Wednesday, and from 8 a.m. to midnight Thursday through Saturday.

**Tours** Tours of the Smithsonian Institution's Analytical and Conservation Laboratories will be arranged for those interested. Inquire at the local information desk in the Promenade for details.

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

**Paper Categories** Symposia Papers were solicited by symposia chairmen, and their presentation length varies according to the requirements of each meeting. Where chairmen did not indicate presentation order, the papers have been scheduled as they appeared in the Preliminary Program. Times have been assigned to facilitate session-hopping; it is requested that chairmen maintain the established schedules. If there is need for time or order changes, please announce the new schedule on the blackboard at the start of the meeting. Symposia and general session chairmen are requested also to use the blackboard to indicate the identity of the speaker for latecomers. Symposia abstracts are given separately in the Program and Abstracts.

**Contributed Papers (CP)** are unsolicited contributions which had to be received in full manuscript form for consideration for 20-minute presentation, 10-minute question periods have been scheduled with each CP.

**Research Reports (RR)** have been received in abstract form only and have been scheduled for 10-minute presentation with 5 minutes for questions. Since maintenance of the schedule is mandatory for CP and RR sessions, chairmen and participants are instructed to observe these time limits closely. Further discussion should be taken outside the meeting room to one of the lounge areas provided, such as Capital Suite B.

**Directory to Hotel Restaurants and Lounges**

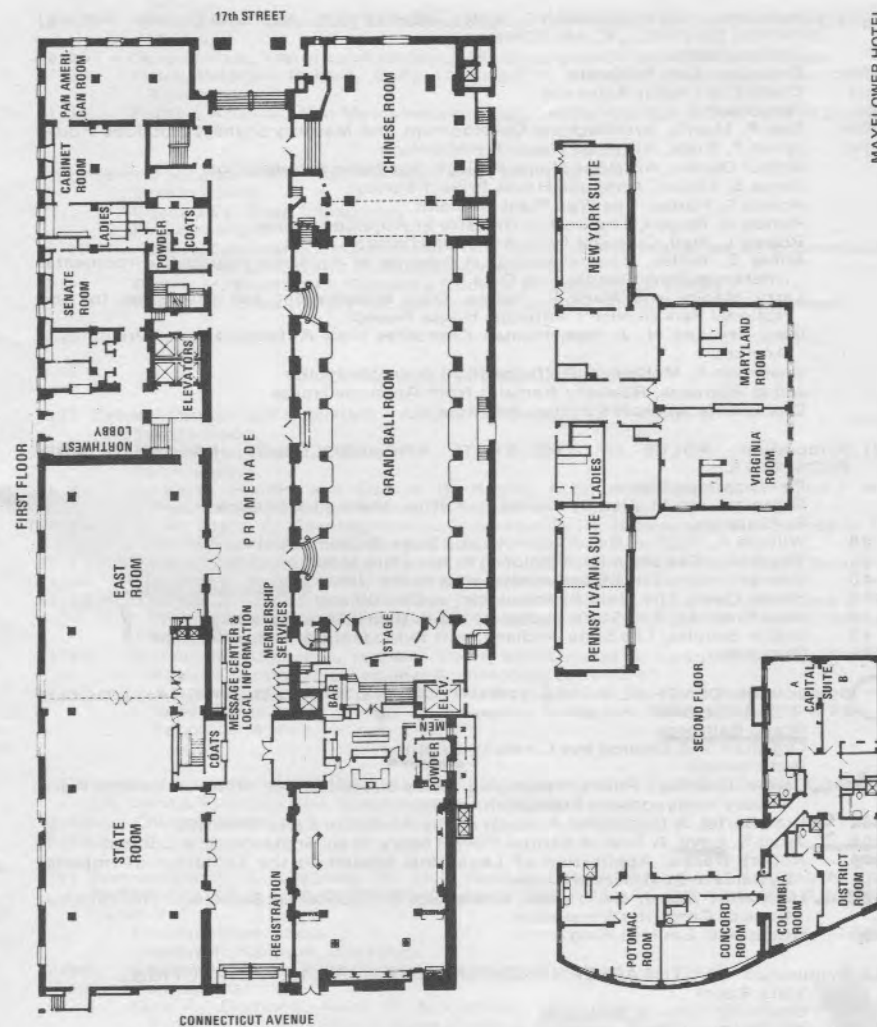
The Carvery: breakfast, lunch, dinner, 6:30 a.m. to 11:00 p.m.

The Town and Country Restaurant and Lounge: breakfast, lunch, light snacks, 6:30 a.m. to 1:00 a.m.

The Lobby Court Lounge: noon to 7:30 p.m.

**NOTE FROM THE PROGRAM COMMITTEE**

This year's Program represents an attempt to contain the meeting to a maximum of six concurrent sessions. Priority was given to symposia and to contributed papers for daytime scheduling. Most research reports have been placed in evening sessions. The committee wishes to thank the participants for their cooperation in submitting papers and symposia according to specification and their tolerance of submission guidelines and scheduling problems. Please observe the paper time limits. In the effort to evaluate and plan future Annual Meetings we would appreciate feedback on this Program and meeting.



## PROGRAM

### THURSDAY MORNING, 2 MAY

- (1, 2) Symposium: ENVIRONMENT AND BEHAVIOR AT ANTELOPE HOUSE, CANYON DE CHELLY, ARIZONA  
 Chinese Room  
 9:00- Organizer: Don P. Morris  
 12:00- Chaired by: Keith Anderson  
 and Participants:  
 2:00- Don P. Morris, Architectural Development and Masonry Style at Antelope House  
 5:00- James P. Rock, Antelope House Methodology  
 Arthur Dennis, Antelope House Project: The Natural Vegetation  
 James E. Mount, Antelope House Project Survey  
 Annita S. Harlan, The Wild Plant Remains  
 Pamela C. Magers, The Cotton Industry at Antelope House  
 Robert L. Hall, Cultivars from Antelope House  
 James E. Kelley, Zooarchaeological Analysis at Antelope House: Environmental Inferences from Distribution Data  
 Larry Manire and Mark E. Harlan, Data Management and Processing for the National Park Service's Antelope House Project  
 Gary Fry and H. J. Hall, Human Coprolites from Antelope House: Preliminary Analysis  
 Charmion R. McKusick, Avifauna from Antelope House  
 James Adovasio, Basketry Remains from Antelope House  
 Discussants: Michael Schiffer, Jeff Reid
- (3) Symposium: ROLES OF THE STATE ARCHAEOLOGIST: PROBLEMS AND PROSPECTS  
 Pan-American Room  
 Organizer and Chaired by: James E. Fitting, Marshall McKusick  
 Participants:  
 9:00 William A. Ritchie, Reminiscences of a State Archaeologist  
 9:20 Ray Baby, The State Archaeologist in the State Museum  
 9:40 George Frison, The State Archaeologist in the University  
 10:00 Hester Davis, The State Archaeologist as Coordinator  
 10:20 Joan Freeman, The State Archaeologist in the Historical Agency  
 10:40 Bettye Broyles, The State Archaeologist in the Natural Resources Agency  
 11:00 Discussion
- (4) Symposium: CENTRAL PLACE THEORY AND OTHER LOCATIONAL MODELS IN ARCHAEOLOGY  
 Grand Ballroom  
 Organizer and Chaired by: Carole L. Crumley  
 Participants:  
~~9:00~~ Carole Crumley, Poleis, Paradigms, Ports-of-Trade: The Role of Central Place Theory in Hypothesis Formation  
~~9:20~~ Brad Bartel, A Locational Analysis of the Anatolian Early Neolithic  
~~9:40~~ Janet E. Levy, A Test of Central Place Theory in an Archaeological Context  
~~10:00~~ Robert Wenke, Application of Locational Models to the Evolution of Imperial Systems in Southwestern Iran  
~~10:30~~ H. Martin Wobst, Centripetal Tendencies in Egalitarian Societies: The Implications of Computer Simulation  
~~11:00~~ Discussant: Leslie J. King
- (5) Symposium: SOUTHEASTERN WOODLAND STUDIES: NEW DIRECTIONS  
 State Room  
 Organizer: John A. Walthall  
 Chaired by: John A. Walthall, Drexel A. Peterson  
 Participants:  
 9:00 Drexel A. Peterson, The Antecedents for the Woodland Pattern in the Lower Tennessee Valley  
 9:25 Ned J. Jenkins, Settlement and Subsistence Patterns in the Western Middle Tennessee Valley during the Transitional Period  
 9:50 Daniel T. Penton, The Early Swift Creek Phase in North Florida: Internal Expressions and External Connections  
 10:15 John A. Walthall, Hopewellian Trade and Interaction in the Mid-South  
 10:40 C. Earle Smith, Direct Evidence for Woodland Diet and Environment  
 11:05 Wesley Cowan, Cultural-Ecological Studies in the Southeast: Some Perspectives  
 11:30 Discussants: James B. Griffin, Christopher S. Peebles

### (6) Contributed Papers: MIDDLE AMERICAN CIVILIZATION

- East Room  
 Chaired by: Joseph Ball  
 Participants:  
 8:00 Ronald A. Grennes-Ravitz, The Quintessential Role of Olmec in the Central Highlands of Mexico: A Refutation  
 8:30 Paul F. Healy, The Cuyamel Caves: Preclassic Sites in Northeast Honduras  
 9:00 Prentiss M. Thomas, Jr., Classic Maya Terracing and Artificial Ridges at Becan, Campeche  
 9:30 Joseph W. Ball and D. F. Potter, Preclassic Architecture at Becan, Campeche, Mexico  
 10:00 Merle Green Robertson, Sculptural Stucco Techniques Used at Palenque, Chiapas, Mexico  
 10:30 Gary A. Pahl, Historical Analysis of the Hieroglyphic Inscriptions at Copan  
 11:00 Helen Perlstein Pollard, Early Urbanism in the Late Postclassic: The Case of Tzintzuntzan  
 11:30 Patricia Anawalt, Pan-Mesoamerican Costume Distribution at the Time of Spanish Contact

### (7) General Session: ADMINISTRATION AND ETHICS

- Senate Room  
 Chaired by: Evan I. DeBloois  
 Participants:  
 9:00 Robert Cunningham (CP), Could Field Research Administration Be Economically Improved and So Aid Scientific Achievement?  
 9:20 Robert H. Smith (CP), Toward a Code of Archaeological Ethics  
 9:40 Richard E. Ross (RR), Field Archaeology and the Grade School Experiment

### THURSDAY AFTERNOON, 2 MAY

### (8) General Session: SITE SURVEY AND SAMPLING TECHNIQUES

- Senate Room  
 Chaired by: Evan I. DeBloois  
 Participants:  
 10:00 J. Barto Arnold and George B. Kegley (CP), A Magnetometer Survey of a Prehistoric Village in Western Texas  
 10:30 G. A. Clark, C. Fuentes, and L. G. Strauss (RR), Preliminary Site Survey in the Cantabrian Mountains, Burgos, Spain  
 10:45 Evan I. DeBloois (RR), A Test of Random Sampling in Archaeological Surveying  
 11:00 Margaret K. Brown (RR), Traverse Sampling: A Case Study  
 11:15 Thomas R. Lyons, James I. Ebert, Basil G. Pouls and Robert H. Hitchcock (RR), Photogrammetric Mapping and Locational Digitization of Pre-Architecture Techniques and Application  
 11:30 Robert K. Hitchcock, James I. Ebert, and Thomas R. Lyons (RR), The Role of Remote Sensing in a Regional Archaeological Research  
 11:45 J. Simon Bruder, E. G. Large, and Barbara Stark (RR), Remote Sensing as an Aid to Archaeological Survey in Estuarine Mangrove Swamps: A Field Test in Veracruz, Mexico

### (2) Symposium: ENVIRONMENT AND BEHAVIOR AT ANTELOPE HOUSE, CANYON DE CHELLY, ARIZONA. (Continuation of Session 1)

- 2:00- Chinese Room  
 5:00

### (9) Symposium: THE PASSING OF THE PUBLIC DOMAIN IN ALASKA; CHANGING PATTERNS OF LAND OWNERSHIP AND THE FUTURE OF ALASKA ARCHAEOLOGY

- Pan-American Room  
 Organizer: Karen W. Workman  
 2:00- Chaired by: Allen P. McCartney, Karen W. Workman  
 5:00 Participants:  
 Don E. Dumond, Allen P. McCartney, Jean Aigner, Robert A. McKennan, Froelich Rainey, John P. Cook, Ralph S. Solecki, Robert E. Ackerman, Wendell Oswald, Rob Bonnichsen, Charles R. McGimsey III, Richard E. Morlan, Edwin S. Hall, James Dixon, William E. Taylor, Charles E. Holmes  
 Representatives:  
 National Park Service, Bureau of Land Management, Department of the Air Force

### (10) Symposium: SPATIAL ANALYSIS IN ARCHAEOLOGY: THEORY AND PRAXIS

- Grand Ballroom  
 Organizer and Chaired by: Robert G. Reynolds  
 Participants:  
 2:00 Steve Plog, The Statistical Analysis of Spatial Variation in Stylistic Attributes

- 2:25 Waldo Tobler, Models of Spatial Autocorrelation: Their Development and Application
- 2:50 Gunnar Olsson, The Importance of Dialectics as a Tool in Spatial Analysis
- 3:15 Charles Sheffer, Computer Simulation as a Tool for Spatial Analysis in Archaeology: A Simulation of Food Procurement in a Semi-arid Plain
- 3:40 Robert G. Reynolds, Automata Theory and Its Applications in the Analysis of Adaptive Spatial Systems
- 4:05 Michael Dacey, Point Pattern Analysis and Archaeological Site Predictions
- 4:30 Discussants: Kent V. Flannery, George Frison

(11) Symposium: MOUND 72 AT THE CAHOKIA SITE: SOCIAL STRATIFICATION AND EXCHANGE IN THE FAIRMOUNT PHASE A.D. 900 TO 1050

- State Room  
Organizer and Chaired by: Melvin L. Fowler  
Participants:
- 2:00 Jerome Rose and Janice Cohen, Skeletal Biology, Mound 72
- 2:20 Prudence Precourt, The Typological Classification and Interpretation of Projectile Points from Mound 72
- 2:40 Barbara Vanderleest, An Analysis of Mound 72 Pottery
- 3:00 Melvin L. Fowler, Chunkey Stones, Sheet Copper and Other Exotic Artifacts from Mounds
- 3:20 Melvin L. Fowler, Interpretation of Burial Data, Stratigraphy and Artifacts from Mound 72
- 3:40 David Overstreet, Impressionistic and Programmed Typology—A Deductive and Inductive Comparison
- 4:00 James Anderson, The Excavation and Stratigraphic Data from Mound 72
- 4:20 Discussant: James Brown

(12) Symposium: THE LATE INTERMEDIATE CHIMU OCCUPATION OF THE NORTH COAST OF PERU

- Senate Room  
Organizer: James B. Richardson  
Chaired by: Michael Moseley  
Participants:
- 2:00 Margaret Hoyt, Chimu Domestic Ware
- 2:30 Alexandra Klymyshyn, Urban Growth at Chan Chan, on the Basis of Data from Intermediate Architecture
- 3:00 Geoffrey W. Conrad, The Burial Platforms of Chan Chan; Social and Political Interpretations through Ethnohistoric Analogy
- 3:30 Kent Day, The Late Intermediate Occupation of the Lambayeque Valley
- 4:00 James B. Richardson, The Holocene Beach Ridges of the Talara Coast and the Ceramic Sequence
- 4:30 Allison Heaps de Pena, The Chimu Occupation of Quebrada Parinas and the Chira River Valley

(13) Contributed Papers: SETTLEMENT PATTERNS AND SOCIAL ORGANIZATION

- East Room  
Chaired by: Frank W. Eddy  
Participants:
- 2:00 Robert L. Bettinger, Three Patterns of Prehistoric Settlements in Central Eastern California: Summary Interpretation of the Owens Valley Project, Years I and II
- 2:30 Frank W. Eddy, A Settlement Model for Reconstructing Prehistoric Social Organization at Chimney Rock Mesa, Southern Colorado
- 3:00 E. Pierre Morenon, A Model of Cultural Complexity: A Complex View of Change in the American Southwest
- 3:30 Joseph A. Tainter, The Social Dimensions of Mortuary Practices: Theory and Methods of Analysis
- 4:00 Jonathan E. Reyman, The Emics and Etics of Kiva Niche Placement
- 4:30 Susan B. Graham, "Art" and Archaeology: An Anthropological Approach

THURSDAY EVENING, 2 MAY

- 5:00- OPEN HOUSE
- 7:00 Promenade

(14) Plenary Session: SMITHSONIAN CONFERENCE ON BIOLOGICAL AND BIOGEOGRAPHICAL MODELS IN ARCHAEOLOGY. Conference panel summation and open discussion.

- State/East Room  
Organizers: John Terrell, William Fitzhugh  
Chaired by: John Terrell  
Participants:  
Richard Benson (Paleobiology, Smithsonian), L. L. Cavalli-Sforza (Genetics, Stanford), Albert Ammerman (Anthropology/Human Biology, Stanford),

Napoleon Chagnon (Anthropology, Pennsylvania State), Jared Diamond (Ecology, UCLA), William Durham (Zoology, Michigan), William Fitzhugh (Anthropology, Smithsonian), Jonathan Friedlander (Anthropology, Harvard), D. C. Gajdusek (Health and Human Ecology, NIH), Henry Harpending (Anthropology, New Mexico), Stephen Hubble (Zoology, Michigan), Anthony Leeds (Anthropology, Boston University), Richard Levins (Biology, Chicago), Olga Linares de Sapir (Anthropology, Smithsonian-STRI), Betty Meggers (Anthropology, Smithsonian), Rosario Morales (Anthropology, Chicago), Richard Salisbury (Anthropology, McGill), William Sanders (Anthropology, Pennsylvania State), Jonathan Sauer (Geography, UCLA), John Terrell (Anthropology, Field Museum), R. Brooke Thomas (Anthropology, Cornell), Richard Ward (Human Genetics, Michigan), James B. Watson (Anthropology, Washington), Henry Wright (Anthropology, Michigan), John Yellen (Anthropology, Smithsonian).

FRIDAY MORNING, 3 MAY

Breakfast Meeting: COMMITTEE ON ANTHROPOLOGICAL RESEARCH IN

7:30- MUSEUMS

10:30 Capital A Suite

(43) Demonstration and Workshop Session: THE USE OF COMPUTERS TO SOLVE LOGISTIC AND OTHER NON-STATISTICAL PROBLEMS

Pennsylvania Suite

9:00- Organizer: C. Irwin-Williams

12:00

(15) Symposium: NEW PERSPECTIVES ON THE EARLY INTERMEDIATE PERIOD OF PERU—PART I: NORTH AND CENTRAL COAST OF HIGHLANDS

- Senate Room  
Organizers: David L. Browman, Edward Dwyer, Jane P. Dwyer, Joel Grossman, William Isbell  
Chaired by: David L. Browman  
Participants:
- 9:00 Theresa L. Topic, Continuity and Growth at Moche (Discussant: Richard Keatinge)
- 9:30 Donald Proulx, The Early Intermediate Period on the Southern North Coast of Peru (Discussant: Ray Reichert)
- 10:00 John P. Thatcher, A View of the North Highlands as seen from Huamachuco (Discussant: James Kus)
- 10:30 Timothy Earle, Intersocietal Exchange during the Early Intermediate Period on the Central Coast of Peru (Discussant: Thomas Patterson)
- 11:00 David L. Browman, Demographic Pre-Conditions for Conquest in Junin (Discussant: William Isbell)

(17) Symposium: THE INDIVIDUAL IN PREHISTORY: STYLE VARIABILITY IN TECHNOLOGY—PART I

- East Room  
Organizers and Chaired by: James N. Hill, Joel Gunn  
Participants:
- 9:00 Fred Plog, Archaeology and Theories of the Individual
- 9:30 Jon Muller, Style and the Individual
- 10:00 Margaret E. Friedrich, The Boundary between Motor Habits and the Cognitive Structure: Instances in Deliberate Changes in Painting Technique
- 10:30 Charles L. Redman, The "Analytical Individual" and Prehistoric Style Variability
- 11:00 James N. Hill, Individual Variability in Ceramics, and the Study of Prehistoric Social Organization
- 11:30 Kathleen Gilmore, Caddoan Interaction in the Neches Valley, Texas

(19) Symposium: TRADE AND COMMUNICATIONS IN NORTHEASTERN NORTH AMERICA

- State Room  
Organizer: Ronald A. Thomas  
Chaired by: Howard D. Winters  
Participants:
- 9:00 Ronald A. Thomas, The Effects of Trade on Aboriginal Cultural Manifestations of the Delmarva Peninsula.
- 9:30 Joseph Granger, Cache Blades, Chert and Communication in the Early Woodland Period of New York State
- 10:00 James E. Fitting, Economic Theory and Late Period Trade in the Upper Great Lakes Region
- 10:30 Martha P. Otto, Trade Systems of the Early and Middle Woodland Period in the Ohio Valley
- 11:00 Ann Ottesen, Prehistoric Exchange Systems in the Eastern United States
- 11:30 Discussants: James B. Griffin, Howard D. Winters

(20) Symposium: CULTURAL AND NATURAL PATTERNING OF FAUNAL REMAINS

- Chinese Room  
Organizer and Chaired by: John E. Yellen  
Participants:  
9:00 Robin Robertson, The Detection of Food Preparation Practices from Faunal Remains  
9:20 Richard H. Meadow, Archaeological Context and Faunal Interpretation  
9:40 D. W. Von Endt, P. E. Hare, and D. J. Ortner, Environmental Factors Which Affect Protein Decomposition in Archaeological Specimens  
10:00 John E. Yellen, Cultural and Natural Processes in Faunal Assemblage Formation: A !Kung Bushman Example  
10:20 Dan C. Witter, Nunamuit Subsistence and Categories of Faunal Analysis  
10:40 Dinah Crader, Archaeological Ethnography: Observations among the Bisa of the Luangwa Valley, Zambia, as an Aid to Archaeological Interpretations—A Study of Faunal Accumulation Patterns in Relation to Dietary Economy  
11:00 Stanley Olsen, How Reliable are Faunal Analyses?  
11:30 Discussion

(21) General Session: ARCHAEOLOGICAL THEORY: HEY FELLA, CAN YA PARADIGM?

- Grand Ballroom  
Chaired by: Michael B. Schiffer  
Participants:  
8:30 Michael B. Schiffer and J. Jefferson Reid (CP), Toward a Behavioral Archaeology: I  
9:00 J. Jefferson Reid and Michael B. Schiffer (CP), Toward a Behavioral Archaeology: II  
9:30 Edward B. Jelks (CP), Observations on the Nature of Archaeological Inference  
10:00 Richard L. Taylor, James I. Ebert, and Robert K. Hitchcock (RR), Theoretical Linking Arguments and Their Role in the Construction of Archaeological Research Designs  
10:15 Patty Jo Watson (CP), Theory in Archaeology: The New Criticism  
10:45 Richard S. Crane (RR), Evaluating Anthropological Concepts with Archaeological Data: A Test of Carneiro's Evolutionary Hypothesis  
11:00 William A. Longacre (RR), Ethno-Archaeology of the Kalinga: Phase I  
11:15 Douglas W. Vetter (RR), The Use of Historic and Ethnographic Data in Archaeological Interpretation  
11:30 John R. Cole (CP), 19th Century Fieldwork and Boasian Professionalization: Two Influences on the Relationship between Archaeology and Anthropology

(27) General Session: MIDDLE AMERICA: SITES AND PERIODS

- Pan-American Room  
Chaired by: Robert E. Greeno  
Participants:  
8:00 Dennis E. Puleston (RR), Early Man in the Maya Lowlands?  
8:15 Anthony J. Ranere (RR), New Data on Preceramic Cultural Patterns in Lower Central America  
8:30 Mark E. Harlan (RR), Early and Middle Formative Figurines from the Site of Chalcatzingo, Morelos, Mexico  
8:45 Juergen Kurt Brueggemann (RR), Stratigraphic Studies in the Valley of Mexico: Preliminary Report  
9:00 Harold McBride (RR), Middle Formative Ceramics from the Cuauhtitlan Region, Valley of Mexico  
9:15 William O. Autry (RR), Post Formative Burial Practices in the Valley of Oaxaca, Mexico  
9:30 James W. Stoutamire (RR), Tula, Hidalgo—An Urban Survey  
9:45 Norman Hammond (RR), Archaeological Investigations in Northern Belize, 1974  
10:00 Arthur G. Miller (RR), The Tancha Archaeological Project: A Preliminary Report of the 1973-74 Season  
10:15 Kenneth Gale Hirth (RR), A System That Was Olmec: A Preliminary Report on Regional Settlement around Chalcatzingo in the Eastern Valley of Morelos, Mexico  
10:30 C. W. Clewlow, Jr. (RR), Stylistic and Chronological "Schools" in Olmec Monumental Sculpture  
10:45 Robert E. Greeno (RR), Prehistoric Architecture in Northeastern Guerrero  
11:00 David G. Opstad and Gary W. Pahl (RR), Computer Capers with Maya Glyph Analysis  
11:15 Marie K. Fredolano (RR), An Archaeological Investigation of the Relacion de Michoacan  
11:30 Nicholas M. Hellmuth (RR), Peten Ytza Maya Agriculture and Demography, A.D. 1667  
11:45 Warren R. DeBoer (RR), The Archaeological Evidence for Manioc Cultivation: A Cautionary Note

paper

FRIDAY AFTERNOON, 3 MAY

- Noon PAST PRESIDENTS OF SAA LUNCHEON  
D. W. Schwartz, host  
Capital A Suite  
12:15 TABLE TALK: Informal luncheon with table hosts George Cowgill, Frank Hole, William Longacre, Stuart Struever, Patty Jo Watson, Ed Wilmsen.  
EL BODEGON Restaurant, 1637 R Street, N.W.  
(43) Demonstration and Workshop Session: COMPUTER APPLICATIONS, continued.  
2:00- Pennsylvania Suite (43, p. 7)  
5:00

(16) Symposium: NEW PERSPECTIVES ON THE EARLY INTERMEDIATE PERIOD OF PERU—PART II: SOUTH COAST AND SIERRA

- Senate Room  
Chaired by: David L. Browman  
Participants:  
2:00 Catherine Wagner, The Nasca Creatures: Some Problems of Iconography (Discussant: Scott Raymond)  
2:30 Allison Paulsen, Late Nasca Pottery at Huaca del Loro, South Coast of Peru (Discussant: Dwight Wallace)  
3:00 Helaine Silverman, A Preliminary Reconstruction of Aspects of Nasca Culture during Epoch 2 of the Early Intermediate Period at Cahuachi (Discussant: Donald Proulx)  
3:30 Jane P. Dwyer and Edward B. Dwyer, The Development of Themes in the Early Intermediate Period Art of South Coastal Peru (Discussants: William Isbell and Dwight Wallace)  
4:00 Joel P. Grossman, Early Intermediate Period Settlements and the Impact of Huari in the South-Central Highlands of Andahuaylas, Apurimac, Peru (Discussant: Scott Raymond)

(18) Symposium: THE INDIVIDUAL IN PREHISTORY: STYLE VARIABILITY IN TECHNOLOGY—PART II

- East Room  
Organizers and Chaired by: James N. Hill and Joel Gunn  
Participants:  
2:00 James Adovasio, The Identification of Individual Style Variability in Basketry Manufacture  
2:30 Dale R. Croes and Jonathan O. Davis, Computer Mapping of Idiosyncratic Basketry Manufacture Techniques in the Prehistoric Ozette House, Cape Alava, Washington  
3:00 Joel Gunn, Individual Style Variability in Bifacial Chipping  
3:30 Guy Muto, A Proposed Model for Idiocultural Analysis of Chipped Stone Implements  
4:00 Marvin Kay, Wear Analysis and Unifacial Scraping Tool Morphology: A Possible Case of Individual Use  
4:30 Discussant: Arnold G. Rubin

(22) General Session: DEMOGRAPHIC MODELS AND TECHNIQUES

- Grand Ballroom  
Chaired by: William L. Rathje  
Participants:  
1:00 Janet D. Orcutt (CP), Problems in Measuring Prehistoric Population Size  
1:30 Mark N. Cohen (CP), Archaeological Evidence for Population Pressure in Pre-Agricultural Societies  
2:00 R. G. Matson (CP), The Use of Hutchinson's N-Dimensional Niche Space on Cedar Mesa  
2:30 Charles G. Kolb and James P. Loucky (RR), Demography and Archaeology: An Evaluation of Naroll and LeBlanc's Calculations  
2:45 George L. Cowgill (CP), On Population Growth as a Non-Explanation  
3:15 Ann I. Ottesen (CP), Prehistoric Population Size on the Island of Rarotonga

paper

(23) General Session: EXPERIMENTAL AND HISTORICAL ARCHAEOLOGY

- Grand Ballroom  
Chaired by: William L. Rathje  
Participants:  
3:45 William L. Rathje (CP), The Garbage Project Report 1973, Refuse and Relevance  
4:15 Nelson A. Reed (CP), Lessons from the Replications of Five Prehistoric House Types  
4:45 Albert F. Bartovics (CP), The Experiment in Archaeology: A Comparison of Two Case Studies  
5:15 Gerald H. Bentley (RR), Anglo-Saxon Archaeology Today

## (24) Symposium: THE THUNDERBIRD ARCHAEOLOGICAL PARK AND MUSEUM AND RELATED RESEARCH PROGRAM

- State Room  
Organizer and Chaired by: William M. Gardner  
Participants:
- 2:00 William M. Gardner, The Thunderbird Archaeological Park and Museum: Its Conception, Aims and Purposes and the Role of Commercial Enterprise in the Middle Shenandoah Valley Research Program
- 2:15 Antonio V. Segovia, Geology and Archaeology: Geomorphological Investigations of Prehistoric Sites, Methods, Techniques and Results
- 2:30 John R. Foss, Pedological Investigations along the South Fork of the Shenandoah
- 2:45 Victor A. Carbone, Paleo-Climatological Investigations along the South Fork of the Shenandoah
- 3:00 William P. Boyer, Kurt Carr, and James I. Gross, The Paleo-Indian Research Program
- 3:15 Deborah W. Harrison, Beyond Paleo-Indian: Chronology and Patterning in the Archaic
- 3:30 Dolores A. Hall, The Prehistoric Site Survey Program in the Middle Shenandoah Valley
- 3:45 Joan M. Walker, Mounds, Mounds, Mounds
- 4:00 Glenda F. Miller, The Ethnohistoric-Late Prehistoric Program, or Where Have All the Indians Gone
- 4:15 Joseph P. MacNamara, Field Schools and Students: Their Role in Archaeological Research
- 4:30 C. Lanier Rodgers, Jr., The Amateur, Local Resident and Landowner

## (25) Symposium: ANALYSIS OF SPATIAL DISTRIBUTION ON OCCUPATION FLOORS

- Pan-American Room  
Organizer and Chaired by: Robert Whallon  
Participants:
- 2:00 Michael B. Schiffer, Cultural Formation Processes of "Occupation Floors"
- 2:20 John D. Speth, Models for the Spatial Analysis of Paleolithic "Living Floors"
- 2:40 Robert K. Vierra and Richard L. Taylor, A Spatial Analysis Method for Isolating and Recognizing Overlapping Spatial Distributions
- 3:00 Del Dyreson, Boundary and Spatial Association Analysis with Peltó's D-function and Relative Entropy
- 3:20 Robert Paynter and Stanton Green, Spatial Clustering: Techniques of Discrimination
- 3:40 T. Douglas Price, Methods of Spatial Analysis of Occupation Floors: A Comparison Using Mesolithic Open-Air Sites in the Netherlands
- 4:00 John W. Rick, Differential Effects of Erosion on the Presence of Cultural Remains at a Pre-ceramic Peruvian Site
- 4:20 Robert Whallon, Jr., Tool Kits or Activity Areas?
- 4:40 Discussants: John Yellen, H. Daniel Roth

## (26) General Sessions: ANALYSIS OF ARCHAEOLOGICAL MATERIALS

- Chinese Room  
Chaired by: Melvin Aikens  
Participants:
- 1:15 John B. Huer (CP), Functional Assemblages of Some Ceramic Containers from the White River Lowlands, Arkansas
- 1:45 Jonathon E. Ericson and Suzanne P. De Atley (RR), Tijuana B.C. Revisited: Morphology and Capacity of Vessels
- 2:00 Bruce Rippeteau (CP), The Intelligent and Maximal Use of Radiocarbon Dates, Explicit Techniques for Averaging, Testing Contemporaneity, and Building Radiometric Chronologies
- 2:30 Jeanne Binning, Peggy McGuckian, Alan Garfinkel, and Ann Martz (CP), A Methodology for the Functional Classification of Flaked Lithic Tools
- 3:00 James W. Mueller (RR), Prehistoric Exchange and Incomplete Artifacts
- 3:15 Thomas R. Hester (RR), Analysis of Obsidian Artifacts from Beleh (Chinaulta Viejo) Central Guatemala
- 3:30 L. Lewis Johnson and Deborah Hanson (RR), A Technological Analysis of an Aguas Verdes Quarry-Workshop
- 3:45 Barbara Purdy (RR), A Process of Manufacture for Florida Archaic Projectile Points
- 4:00 Ervan Garrison, Charles McGimsey, and Otto Zinke (RR), Alpha Tracks: A Potential Dating Technique for Archaeology
- 4:15 Gary Hume (RR), Methods of Analysis for Lithic Surface Stations
- 4:30 David J. Ives (RR), Project Croesus: An Objective Method for Determining Heat-Treatment
- 4:45 Nancy P. Walter (RR), Getting a Mummy X-Rayed

## COMMITTEE ON THE PUBLIC UNDERSTANDING OF ARCHAEOLOGY

- 4:00- Columbia Room  
5:00 Chaired by: Hester Davis

ANNUAL BUSINESS MEETING

- 5:30- State-East Room  
7:30

## NEW MEMBERS RECEPTION, hosted by SAA Officers and Executive Committee

- 7:30- Pennsylvania Suite  
9:00

Rap Session: THE USE OF COMPUTERS TO SOLVE LOGISTIC AND NON-STATISTICAL PROBLEMS. Informal presentations and discussion

- 8:00- Maryland Room  
11:00 Moderated by: C. Irwin-Williams

## Rap Session: EDITORIAL POLICY OF AMERICAN ANTIQUITY

- 8:00- Senate Room  
11:00 Moderated by Frank Hole, Editor

## (28) General Session: WESTERN NORTH AMERICA AND THE ARCTIC

- East Room  
Chaired by: Dennis Stanford  
Participants:
- 8:00 Wakefield Dort (CP), Archaeo-Geology of Jaguar Cave, Upper Birch Creek Valley, Idaho
- 8:30 Eileen Johnson (RR), Lubbock Lake Avifauna
- 8:45 Charles A. Johnson (RR), Depositional Environments at the Lubbock Lake Site
- 9:00 Dennis Stanford (RR), The Jones-Miller Site, A Preliminary Report
- 9:15 W. James Judge (RR), An Evaluation of the Overkill Model
- 9:30 Larry D. Agenbroad (RR), Results of the Third Field Season: Hudson-Meng Paleo Indian Bison Kill, N.W. Nebraska
- 9:45 C. Melvin Aikens and David L. Cole (RR), Dirty Shame Rockshelter, S.E. Oregon
- 10:00 Richard M. Pettigrew (RR), Preliminary Cultural Sequence from the Lower Columbia Valley
- 10:15 William S. Dancy (RR), A Cayuse Phase Seasonal Camp in Central Washington
- 10:30 Gail Robinson (RR), Skagit Delta Area Prehistory, Washington
- 10:45 Robert E. Ackerman (RR), Archaeological Investigations in Southeastern Alaska, 1973
- 11:00 Charles E. Holmes (RR), Archaeological Investigations in Central Alaska

## (29) General Session: THE EAST AND MID-WEST

- State Room  
Chaired by: J. Cynthia Weber  
Participants:
- 8:00 William Fitzhugh (RR), The Brador Tumuli: Early Burial Mounds on the Straits of Belle Isle, Quebec
- 8:15 Louise Basa (RR), The Boucher Site (Vt-Fr-26): Implications for the Study of Early Woodland Mortuary Practices in Vermont
- 8:30 Wendell D. Rhodes (RR), Macauley Complex-Site #6, Livingston County, New York. A Multicomponent Stratified Archaic-Early Woodland Site (4390±100 B.P.-2705± B.P.)
- 8:45 Steve Wilke and Gail Robinson (RR), Environmental and Cultural Change in the Upper Chesapeake Bay Area
- 9:00 Harvard G. Ayers (RR), Cultural and Social Change during the Susquehanna Tradition in the Potomac River Valley
- 9:15 John W. Fuller (RR), Developmental Change in Prehistoric Community Patterns: Evidence from West Virginia
- 9:30 Burton L. Purrington (RR), The Jones Mound: Local Middle Woodland Traditions in Western Kentucky
- 9:45 James M. Heilman and Louise Robbins (RR), Incinerator Site (33 My 57), A Possible Fort Ancient Frontier Site
- 10:00 Frederick C. Hill (RR), Exploitation of Animal Resources by Inhabitants of the Koster Site
- 10:15 Patricia J. O'Brien (RR), A Seriation of Steed-Kisker Ceramics
- 10:30 Alfred E. and Ann S. Johnson (RR), A Model of the Kansas City Hopewell Subsistence-Settlement System
- 10:45 Robert W. Neuman (RR), Complicated Stamped Pottery in Louisiana: Its Age and Distribution
- 11:00 Charles A. Hoffman, Jr. and H. K. Brooks (RR), The Guest Mammoth Site in North Florida

(30) General Session: SOUTH AMERICA

- Pan-American Room  
 Chaired by: J. P. Marwitt  
 Participants:
- 7:30 Howard P. Goldfried (CP), The Criteria of Civilization and Operational Equivalents
- 8:00 Alana Cordy Collins (CP), The Possible Use of Textiles as a Catechism during the Early Horizon in Peru
- 8:30 Allison C. Paulsen and Eugene J. McDougale (CP), A Ceramic Sequence for the Machalilla and Engoroy Occupations of the Santa Elena Peninsula, South Coastal Ecuador
- 9:00 Mark Druss (RR), Chiuchiu Complex Phase Sequence
- 9:15 Gordon C. Pollard (RR), Research Development in JuJuy Province, N.W. Argentina
- 9:30 Robert Braun (RR), Excavations and Surface Survey along Rio Callaria, Eastern Peru
- 9:45 Louis J. Tartaglia (RR), Headless Burials: A Specialized Mortuary Practice at Guatacondo, Chile
- 10:00 Erika Wagner (RR), New Archaeological Evidence from the Lake Maracaibo Basin
- 10:15 Alberta Zucchi (RR), Archaeological Research in the Northwestern Venezuelan Llanos
- 10:30 Alan R. Sawyer (RR), Stone Forgeries in Chavin Style
- 10:45 Karen O. Bruhns (RR), The Moon Animal in the Northern Andes
- 11:00 John S. Athens and Alan J. Osborn (RR), Recent Archaeological Investigations at Several Ceramic Sites in the Highlands of Northern Ecuador

SATURDAY MORNING, 4 MAY

(31) Symposium: PROBLEMS IN SALVAGE ARCHAEOLOGY

- East Room  
 Organizer and Chaired by: Ellis E. McDowell  
 Participants:
- 9:00 Charles McNett, Jr. and Russell Handsman, Salvage in Pennsylvania
- 9:30 Fred Plog, Theory and Method in New York Highway Salvage
- 9:45 Eugene Sterud, Theory and Method in Salvage Archaeology
- 10:00 Marian White, Goals of the Highway Salvage Survey: The Northeast, an Example
- 10:15 Neal Trubowitz, Research Orientations in Salvage Archaeology
- 10:30 Ellis E. McDowell, Problems in Salvage Archaeology: Some Problems and Suggestions
- 11:00 John L. Cotter, Holistic Conservation: Personal Involvement in Saving Sites and Data
- 11:15 Alexander J. Lindsay, Jr., Research Orientations in Contract Archaeology: Examples from Arizona
- 11:30 Steven L. Fuller, Investigations near Ganado, Northeastern Arizona: A Test Case for Contract Archaeology

(32) Symposium: CURRENT APPLICATIONS OF SCIENTIFIC ANALYSIS TO THE STUDY OF ARCHAEOLOGICAL MATERIALS: SOME EXAMPLES FROM PRE-COLUMBIAN MESO- AND SOUTH AMERICA

- Pan-American Room  
 Organizers and Chaired by: William Potts, Jackie Olin  
 Participants:
- 8:00 Jeremy A. Sabloff, Introductory Remarks on the Interdisciplinary Study of Mesoamerican Fine Paste Ware: The Problem, the Rationale behind the Program, the Archaeological Implications
- 8:30 Robert L. Rands and Ronald L. Bishop, Petrographic Investigations of Western Maya Fine Paste Pottery: Methodological Procedures and Correlations with Brookhaven Analytical Data
- 9:00 Garman Harbottle and Edward V. Sayre, Scope and Analytical Procedures of the Brookhaven Program of Neutron Activation Analysis of Mesoamerican Fine Paste Pottery
- 9:30 Edward V. Sayre and Garman Harbottle, Methods of Data Handling for the Brookhaven Program of Neutron Activation Analysis of Mesoamerican Fine Paste Pottery
- 10:00 Gary W. Carriveau and Mark C. Han, Thermoluminescent Dating and the Mystery of Acambaro
- 10:30 Mary Elizabeth King, Analytical Methods and Prehistoric Textiles
- 11:00 C. H. Deputy, Sandra Quinlivan, and Mary Ann Tomasko Perry, The Identification of Ancient Organic Dyestuffs by Mass Spectrometry
- 11:30 Richard S. MacNeish, The Care and Feeding of Interdisciplinary Studies

(33) Symposium: CONTRIBUTIONS OF PHYSICAL ANTHROPOLOGY TO ARCHAEOLOGICAL INTERPRETATION

- Chinese Room  
 Organizer and Chaired by: Douglas Ubelaker  
 Participants:
- 9:00 Jane Buikstra, Bio-Cultural Dimensions of Archaeological Study: A Regional Perspective
- 9:20 Kenneth Weiss, The Use of Life Tables for Demographic Inference from Skeletal Populations
- 9:40 Douglas H. Ubelaker, Anthropological Interpretations from Demographic Reconstruction: A Case Study from the Tidewater Potomac
- 10:00 James Moore, Alan Swedlund and George Armelagos, Analysis of Mortality in Archaeological Populations
- 10:20 G. Armelagos, A Swedlund, and J. Moore, Paleoepidemiological Analysis of Disease in Prehistoric Populations
- 10:40 J. Lawrence Angel, Social Biology and the Archaeologist
- 11:00 Juan R. Munizaga, Biological Research Applicable to Archaeological Problems in South America
- 11:20 Richard L. Jantz, Multivariate Analysis of Human Crania: An Application to Some Archaeological Problems
- 11:40 Audrey Sublette, Physical Anthropology and Archaeology of a Multicomponent Site in New York State

(34) Symposium: WEEDEN ISLAND-ISM IN THE SOUTHEASTERN UNITED STATES: NEW PERSPECTIVES

- State Room  
 Organizer: Jerald Milanich  
 Chaired by: Charles Fairbanks  
 Participants:
- 9:00 Jerald Milanich, General and Specific Evolution of Weeden Island Cultures: An Overview
- 9:30 John W. Walker, Distribution and Significance of Weeden Island Sites in Georgia and Alabama
- 10:00 George W. Percy and David S. Brose, Weeden Island Ecology, Subsistence and Village Life: A Comparison of Coastal and Inland Manifestations in Northwestern and Central Gulf Coast Florida and Adjacent Sections of Alabama and Georgia
- 10:30 David S. Brose and George Percy, Weeden Island Ceremonialism: A Reappraisal
- 11:00 E. Thomas Hemmings, Cades Pond Subsistence, Settlement and Ceremonialism
- 11:30 Discussant: William H. Sears

(35) Symposium: PREHISTORY OF THE MOJAVE DESERT REGION, SOUTHERN CALIFORNIA

- Senate Room  
 Organizer and Chaired by: Leslie E. Wildesen  
 Participants:
- 9:00 Leslie E. Wildesen and Carol Mortland, The Fallacy of "The Desert" as a Prehistoric Culture Area
- 9:30 Carol Mortland, Ethnographic Analogy in Archaeological Prediction
- 10:00 T. J. King, Jr., Paleoenvironmental Hypotheses for the Western Mojave Desert
- 10:30 Jeanne Binning, Aboriginal Land Use in Southern Riverside County, California
- 11:00 Carole Connelly, Correlations of Archaeological Data with Paleoenvironmental Change
- 11:30 Amanda Marsh, The Archaeology of the Eastern Mojave Desert

(36) General Session: SUBSISTENCE AND RECONSTRUCTION OF PALEO-ENVIRONMENTS

- Grand Ballroom  
 Chaired by: Olga Linares  
 Participants:
- 9:00 Albert A. Dekin (CP), The Walrus and the Polished Burin: A Possible Dynamic Duo from Eastern Prehistory
- 9:30 Jefferson Chapman and Richard A. Yarnell (CP), A Reconstruction of Paleo-environmental and Subsistence Patterns at an Early Archaic Period Site in Tennessee
- 10:00 Joseph C. Winter (CP), The Spread of Agriculture in the Southwest and Great Basin
- 10:30 Olga Linares (CP), On the Absence of Animal Domestication in the New World Tropics: A Systems Approach
- 11:00 Bruce D. Smith (CP), Middle Mississippi Exploitation of Animal Populations: A Predictive Model
- 11:30 Lathel F. Duffield (RR), Caloric Value: An Aid in Reconstructing Prehistoric Diets



1145 Miksicek



- 11:45 Charles H. Miksicek (RR), Carbonized Botanical Remains as Frozen Sociological Process; Or You Are What You Eat  
 12:00 William Cremin (RR), Paleoethnobotany: Implications for Crab Orchard Exploitation of the Shawnee Hills, Southern Illinois

**SATURDAY AFTERNOON, 4 MAY**

(37) Symposium: ADAPTIVE STRATEGIES IN BIOLOGICAL AND CULTURAL TRANSITION ZONES: EXAMPLES FROM A CENTRAL ARIZONA ECOTONE

- State Room  
 Organizer and Chaired by: George J. Gumerman  
 Participants:  
 2:00 George J. Gumerman, The Central Arizona Ecotone Project  
 2:20 Claudia Chang and R. Roy Johnson, The Interrelationships of Cultural and Ecological Diversity  
 2:40 John A. Hanson and Steven C. Sessions, The Role of Cultural Diversity in the Exploitation of the Central Arizona Ecotone  
 3:00 Carol S. Weed, "... For the supply and profit of our hope..." A Model of Centralized Redistribution  
 3:20 Douglas C. Brew, Hydrologic Aspects of the Central Arizona Ecotone  
 3:40 David A. Phillips, Historic and Prehistoric Water Control Strategies in Southwestern Ecotones  
 4:00 Douglas Hanson, Nutrition and Disease in a Biological and Cultural Transition Zone  
 4:20 Discussants: Fred Plog, James E. Fitting

(38) Symposium: THE KOSTER SITE: A STRATIFIED ARCHAIC SITE IN THE CENTRAL MISSISSIPPI VALLEY AREA

- Grand Ballroom  
 Organizers: James A. Brown, Jane Buikstra, Stuart Struever  
 Chaired by: Lewis R. Binford  
 Participants:  
 2:00 Stuart Struever, History of the Koster Research  
 2:20 Carl Bebrich, Koster's Stratigraphy: The Methodology of Site Structure Analysis  
 2:40 Karl W. Butzer, Geomorphic History of the Koster Site Area  
 3:00 David Asch, Koster Site—The Natural Environment  
 3:20 Thomas Genn Cook, Archaic Lithic Technologies at Koster  
 3:40 James A. Brown, Patterns and Organization in the Koster Archaic Settlements  
 4:00 Jane Buikstra, Koster Site: Mortuary Activity and Human Biology  
 4:20 Lewis R. Binford, Remarks on the Koster Project  
 4:40 Discussant: Lewis R. Binford

(39) Symposium: APPROACHES TO ARCHAEOLOGICAL CHEMISTRY

- Pan-American Room  
 Organizer: Thomas Meyers  
 Chaired by: Thomas R. Hester  
 Participants:  
 2:00 Thomas Meyers, The Need for Standardization of Results in Archaeological Chemistry  
 2:25 Barbara Luedtke, Characterization of Chert Sources by Neutron Activation Analysis  
 2:50 Jeannette Jackson Thompson, Activation Analysis at the U.M.C. Laboratory for Nuclear Archaeology: I. Ceramics and Metals  
 3:15 David J. Ives, Activation Analysis at the U.M.C. Laboratory for Nuclear Archaeology: II. Lithics  
 3:40 Alvin H. Luckenbach, Ralph O. Allen, and C. G. Holland, The Use of Rare Earth Element Concentrations in Neutron Activation Analysis of Soapstone  
 4:05 M. James Blackman, An Analysis of Jasper Artifacts and Source Materials by Atomic Absorption and Flame Photometry  
 4:30 Discussants: Gary Wright, Edwin Wilmsen

(40) Symposium: QUANTITATIVE FAUNAL ANALYSIS

- Chinese Room  
 Organizer: David Yesner  
 Chaired by: David Yesner, Alan Bieber, Jr.  
 Participants:  
 2:00 Richard W. Casteel, A Comparison of the Methods for Estimation of Fish Size from Archaeological Remains  
 2:25 Donald K. Grayson, The Riverhaven No. 2 Vertebrate Fauna: Comments on Methods in Faunal Analysis and on Aspects of the Subsistence Potential of Prehistoric New York  
 2:50 Patrick Munson, Faunal Analysis, Sample Size, Differential Destruction, and Suggested Correction Factors



- 3:15 David Yesner and Alan Bieber, Jr., Application of Multivariate Analysis to Regional Faunal Assemblages  
 3:40 Alan P. Garfinkel, The Value of Fragmentary Faunal Remains: An Example from the Crowder Canyon Archaeological Research Project  
 4:05 Bert Salwen and John Vetter, Techniques for Delineation of Activity Areas in a Shell Midden Site  
 4:30 George Frison, The Animal Population Study and Its Use in Cultural Inference on the Plains  
 Stanley Olson, How Reliable Are Faunal Analyses? (Due to conflict this paper is being given in Session 20, but it will be discussed also in this Symposium.)

(41) Research Reports: CARIBBEAN AND MIDDLE AMERICAN ARCHAEOLOGY—TRADE, TRAILS, FRONTIERS

- East Room  
 Chaired by: Irving Rouse  
 Participants:  
 2:00 Irving Rouse, Cultural Development on Antigua, West Indies  
 2:15 Alfredo Figueredo, The Archaic Period of St. Thomas, Virgin Islands: New Evidence and Interpretations  
 2:30 Theodore Bradstreet and Alfredo Figueredo, Ceramic Culture Site Location Parameters for the Virgin Islands  
 2:45 Michael J. Snarskis, A New Ceramic Sequence from the Lowlands of Costa Rica  
 3:00 Florence P. Sloane, Archaeological Frontiers: A Highland Maya Example  
 3:15 Terrance Stocker, Robert Cobean, and Sheri Swibel, Obsidian Procurement Patterns in MesoAmerica  
 3:30 Garman Harbottle, Edward W. Sayre and Phil C. Weigand, The Turquoise Activation Project: Progress in Data Handling Techniques  
 3:45 Michael Spence and Phil C. Weigand, Obsidian Production and Trade in West Mexico  
 4:00 Phil Weigand and Joseph Mountjoy, The Teuchitlan and Providencia Sites: Possible Classic Period Urban Complexes in Jalisco, Mexico  
 4:15 Judith Connor, Preliminary Observations on the Ceramic Sequence of Cozumel, Quintana Roo, Mexico: Implications for Maya Trade  
 4:30 Richard E. Blanton, The Great Styles and Pre-State Trade in the New World  
 4:45 Marshal Becker, Moieties in Ancient MesoAmerica: Inferences on Teotihuacan Social Structure Derived from the Evidence of Mural Paintings and other Archaeological Data  
 5:00 Joseph L. Chertkoff, Exchange, Sedentism, and the Origins of Agriculture in the Near East

(42) Research Reports: THE SOUTHWEST

- Senate Room  
 Chaired by: Ruthann Knudson  
 Participants:  
 2:00 Frederick L. Briuer, An Analysis of Plant Remains from Chevelon Canyon Rock Shelters  
 2:15 Wilma W. Koschik, The Use of Archaeological Maize in Studying Prehistoric Pueblo Social Relationships  
 2:30 Suzanne P. De Atley, A Preliminary Analysis of Patterns of Raw Materials Use in Plainware Ceramics from Chevelon, Arizona  
 2:45 Fran J. Findlow, Further Investigations of Prehistoric Technological Specialization: The Ecology of Ceramic Constructional Change: Chevelon, Arizona  
 3:00 Donald A. Graybill, Measurement of the Amount and Rate of Site Destruction in Southwestern New Mexico  
 3:15 Henry G. Wylie, Archaeological Impact of Pinyon-Juniper Changing: A Test  
 3:30 Jeffrey L. Brown, Pueblo Viejo Salado Sites and Their Relationship to Western Pueblo Culture  
 3:45 Paul Grebinger, Hohokam Cultural Development: Expansion and Adjustment in the Santa Cruz Valley, Arizona

**RECORDING SESSIONS**

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

- 4:00 Paul G. Sneed, Archaeological Systematics and Basketmaker Cultural Ecology: Some Cedar Mesa Project Experiments
- 4:15 Peter J. Pilles, Jr., Post Sunset Crater Eruption Developments in the Sinagua Culture: A Reevaluation
- 4:30 Michael D. Metcalf, Archaeological Investigations on a Transect from Glen Canyon to the Virgin River
- 4:45 Donald C. Fiero, Prehistoric Resource Utilization Patterns on a Transect from Glen Canyon to the Salt River Valley
- 5:00 Ruthann Knudson, Inference and Imposition in Lithic Analysis
- 5:15 Charles A. Reher, Research on Human and Bison Populations in the Prehistoric Plains Ecosystem

#### SATURDAY EVENING, 4 MAY

- (32/39) Rap Session: SCIENTIFIC ANALYSIS OF ARCHAEOLOGICAL MATERIALS: GOALS, EXPECTATIONS, AND ORGANIZATIONAL STRUCTURE
- 8:00- Moderated by: William Potts and Jackie Glin, with invited specialists
- 11:00

#### ABSTRACTS OF ORGANIZED SYMPOSIA

(1, 2) ENVIRONMENT AND BEHAVIOR AT ANTELOPE HOUSE, CANYON DE CHELLY, ARIZONA. Using concepts of behavioral archaeology as a unifying theory, data from the recovered vegetal and artifactual array are used to test models explaining social group behavior, site location, subsistence, abandonment, and natural resource utilization. The perishable artifacts are reviewed for implications pertinent to inter-space and intra-site social structure and social group relationships. Diachronic dimensions of the above problems are discussed, with emphasis on changes within the Pueblo III time period.

(3) ROLES OF THE STATE ARCHAEOLOGIST: PROBLEMS AND PROSPECTS. One significant aspect of public archaeology is the development of the role of state archaeologist to various capacities of research, coordinating state programs, site preservation, data collecting, and public interpretation. Six state archaeologists review current programs from different administrative viewpoints. Each summarizes the problems and program administration from data analyzed from all other state archaeologists in the same administrative setting. The discussion following the papers will concentrate on common needs and developments in the public sector.

(4) CENTRAL PLACE THEORY AND OTHER LOCATIONAL MODELS IN ARCHAEOLOGY. Network and locational analysis and, more specifically, Central Place Theory have become more common in archaeological modeling of settlement systems. Although the integration into anthropological theory of a model that was originally the product of geographers is desirable, many archaeologists are apprehensive that a model originally designed to approximate a twentieth century urban industrial settlement system has not been adequately evaluated. The symposium explores the applicability of CPT to archaeology with data from a number of geographical areas.

(5) SOUTHEASTERN WOODLAND STUDIES: NEW DIRECTIONS. The Woodland period of Southeastern prehistory has long been a major concern of regional archaeologists. Traditionally, there has been a preoccupation with the construction of detailed regional and local culture histories based upon ceramic seriation and lithic typology. Utilizing these previous studies as a base, there has recently emerged a new perception of the Woodland traditions in the Southeast. Stress is now being placed upon environmental studies, systems analysis and culture process. The papers offered in this symposium present a sample of current research directed toward these new goals.

(9) Symposium: THE PASSING OF THE PUBLIC DOMAIN IN ALASKA: CHANGING PATTERNS OF LAND OWNERSHIP AND THE FUTURE OF ALASKA ARCHAEOLOGY. This past year two-thirds of the archaeologists applying for permits to do fieldwork in Alaska were unable to obtain them. This was in part due to the pending land selections under the Alaska Native Claims Settlement Act (increasing the number of agencies and organizations involved) and also to the fact that the present situation requires permit applications to be submitted much earlier than was necessary in years past. If there is to be a future for the past in the north, archaeologists must keep themselves informed of the rapid changes taking place regarding land ownership and management. They must also formulate a unified plan of action that will result in professional input to decision-making agencies throughout the state and nation. This symposium is to serve as a working session for the dissemination of information on how best to coordinate efforts prior to fieldwork, to acknowledge present and potential problems, and to present possible solutions to these problems.

(10) SPATIAL ANALYSIS IN ARCHAEOLOGY: THEORY AND PRAXIS. It is the intent of this symposium to provide a forum for the interaction of both archaeologists and geographers engaged in similar aspects of spatial analysis. Emphasis is on the development and application of new modes of spatial analysis. The present importance and future potential of the computer as a useful tool in the analysis of spatial distribution is stressed as well.

(11) MOUND 72 AT THE CAHOKIA SITE: SOCIAL STRATIFICATION AND EXCHANGE IN THE FAIRMOUNT PHASE A.D. 900 to 1050. The most elaborate burial mound ever excavated for the Cahokia site is known as Mound 72. This symposium presents an analysis of the unique features of the mound, the burial patterns, the biology of the populations represented, the description and distinction of the artifacts, and a summary of the implications in terms of social stratification at the Cahokia site and economic exchange with other areas of the United States during the time.

(12) THE LATE INTERMEDIATE CHIMU OCCUPATION OF THE NORTH COAST OF PERU. Recent investigations at Chan Chan, in the Lambayeque and Chira River Valleys, have shed new light upon the emergence of the Chimu state and its expansion as reflected in

ceramics and settlement patterns. This symposium emphasizes ceramic seriation, the growth of Chan Chan and its social and political organization, and the Chimu domination of the Peruvian coast from Trujillo to Talara.

(14) SMITHSONIAN CONFERENCE ON BIOLOGICAL AND BIOGEOGRAPHICAL MODELS IN ARCHAEOLOGY. A conference on theoretical biology and human biogeography as applied to archaeological interpretation of hunter-gatherer, horticultural, and complex societies took place 2 days prior to the SAA meeting. Held at the Smithsonian and sponsored by the Smithsonian and the Wenner-Gren Foundation, the conference investigated the degree of correspondence between human and non-human biological systems and the causes of cultural uniformity and diversity. Although the working sessions are closed, a final summation of the conference is being held as an open session for the SAA membership on Thursday evening. Conference participants were invited to attend the SAA sessions and to take part in the proceedings.

(15, 16) NEW PERSPECTIVES ON THE EARLY INTERMEDIATE PERIOD OF PERU—Part I: North and Central Coast and Highlands. Part II: South Coast and Sierra. The symposium seeks to outline new directions of cultural complexity during the Early Intermediate period, particularly in economic, demographic, and political domains. Though variations of style are important and need to be discussed, there is an overriding interest in process, and in asking questions such as when and under what conditions do various socioeconomic changes take place, etc.

(17, 18) THE INDIVIDUAL IN PREHISTORY: STYLE VARIABILITY IN TECHNOLOGY. Recent analyses indicate the feasibility of isolating individual style variability (both conscious and unconscious) in the manufacture and use of prehistoric artifacts. A variety of quantitative analyses employing ceramics, lithics, and basketry illustrate current promising results, as well as methods, techniques, and difficulties encountered in such analyses. It is suggested, and partially demonstrated, that this research is important with regard to delineating prehistoric residence units and patterns, degrees of craft specialization, exchange systems, trade routes, seasonal population movements, and other aspects of societal organization and change. And it may provide a direct measure of human physiological stress. Attention is also given to the nature and determinants of style variability in general, including consideration of the psychological and cognitive aspects of learning.

(19) TRADE AND COMMUNICATIONS IN NORTHEASTERN NORTH AMERICA. A series of papers are presented on prehistoric trade and communications systems as they operated in the northeastern portion of North America. An emphasis is placed on the mechanisms by which these systems operated and on the accommodations necessitated within the donor and recipient cultural manifestations. The last 3000 years of prehistory are considered as a unit and the suggestion is made that the system practiced during the earliest phases of European trade was modeled on the traditional system of the area.

(20) CULTURAL AND NATURAL PATTERNING OF FAUNAL REMAINS. Faunal remains uncovered in archaeological contexts reflect cultural patterns that are the result of conscious or unconscious human decisions. Natural factors that may cause the subsequent removal or destruction of bone, however, may serve to mask such patterns, and, in cultural reconstructions, must be taken into account. The purpose of this symposium is to examine both cultural and natural factors in some detail. Emphasis is focused on observational and experimental approaches, rather than studies that take excavated faunal assemblages as their starting point, the comparative data are presented that are drawn from several part- or full-time extant hunting and gathering societies.

(24) THE THUNDERBIRD ARCHAEOLOGICAL PARK AND MUSEUM AND RELATED RESEARCH. The development and the results to date of an integrated multidisciplinary research program into the prehistory, geomorphology, and paleoecology of the Middle Shenandoah Valley and adjacent areas are presented. Emphasis in the presented papers is on the aims, methods, and techniques of the multidisciplinary program and the results to date. Also included are a discussion of the conception and development of the Thunderbird Archeological Park and Museum and its Visitors and Research Center, and the roles of landowners, amateur archaeologists, and students in archaeological, pedological, geological, and paleoecological research.

(25) ANALYSIS OF SPATIAL DISTRIBUTIONS ON OCCUPATION FLOORS. An increasing number of archaeologists are plotting the distributions of artifacts and other items on excavated "living" or "occupation floors." It is generally hoped that the analysis of these floor plots will reveal something of the patterns of human activities at these sites in the past. This is to be accompanied by the isolation of "tool kits" and "activity areas" from the patterns of spatial distribution of materials on these floors. This symposium aims to critically review and assess the models and the methods whereby we currently attempt to attain these goals.

(31) PROBLEMS IN SALVAGE ARCHAEOLOGY. Salvage archaeology creates major problems in the current archaeological picture of research in anthropology. The methods and theories utilized require modification of those that apply to research planned around

sites chosen for their content and/or expected content. Further, this type of research pertains to lands which may or may not contain archaeologically significant materials. The proposed symposium consists of papers discussing various topics and orientations. These relate to salvage situations encountered in the eastern United States as well as elsewhere. Handsman describes the salvage situation in Pennsylvania and the Potomac River area; Marian White and Neil Trubowitz describe the political and strategic facets of salvage work in New York and certain factors that are of national import; Fred Plog describes theoretical issues in the SUNY, Binghamton salvage program, while Eugene Sterud indicates methodological considerations of this program; Ellis McDowell provides some general considerations that apply to salvage archaeology in any area, with specific reference to Maryland, Virginia, West Virginia, and New York.

(32) CURRENT APPLICATIONS OF SCIENTIFIC ANALYSIS TO THE STUDY OF ARCHAEOLOGICAL MATERIALS: SOME EXAMPLES FROM PRECOLUMBIAN MESO- AND SOUTH AMERICA. This symposium attempts to present "state of the art" applications of scientific analytical techniques to archaeological materials. Emphasis is placed on the presentation of the assumptions and parameters of the analytical methods considered: on the role of data manipulation in arriving at and maximally utilizing the analytical results; on the frequent advantage in applying several complementary analytical techniques to the same body of archaeological material; and, generally, on the anthropological knowledge that can be gained through the judicious use of chemical and physical studies of archaeological materials. The relationship between archaeologists and natural scientists involved in such interdisciplinary research, from the planning stage through publication, is also considered. No attempt is made to cover all archaeological materials or analytical methods, the emphasis being rather on specific cases of the productive utilization of analytical techniques in ongoing research in Meso- and South American Precolumbian studies.

(33) CONTRIBUTIONS OF PHYSICAL ANTHROPOLOGY TO ARCHAEOLOGICAL INTERPRETATION. Many of the questions now being asked by archaeologists concerning settlement patterns, migrations, and population origins and evolution are essentially biological questions that necessitate biological answers. Using recent methodological advances, physical anthropologists can now begin to provide such answers, assuming adequate samples can be obtained. This symposium presents specific examples of how method and theory in physical anthropology has been applied to the solution of certain anthropological problems and discusses the prerequisites and limitations of such research.

(34) WEEDEN ISLAND-ISM IN THE SOUTHEASTERN UNITED STATES—NEW PERSPECTIVES. Over the last 2 decades archaeological research on the Southeast coastal plain has given the term Weeden Island expanded meaning. Weeden Island has come to refer to a ceremonial or sacred ceramic series, a ceremonial religious complex, a secular or utilitarian ceramic series, and at least 4 geographically distinct cultures. The 4 cultures, Cades Pond in north-central Florida, Wakulla Weeden Island in the Alabama-Georgia-Florida tri-state area, Gulf coast Weeden Island, and coastal plain Weeden Island, inhabited mutually exclusive environmental zones, yet shared a quite similar ceremonial life. The multi-concept of Weeden Island is examined, and descriptions, comparisons, and interpretations of village life and ceremonialism are made.

(35) PREHISTORY OF THE MOJAVE DESERT REGION, SOUTHERN CALIFORNIA. The vast Mojave Desert has been inhabited at least since post-glacial times. Until recently, no coordinated program of research has been carried out in the desert. This symposium will present a synthesis of archaeological, ethnographic, and paleoenvironmental data from recent research in the eastern and western portions of the Mojave Desert, and a testable model of prehistoric adaptations to the changing environments in each area, and for the desert as a whole.

(37) ADAPTIVE STRATEGIES IN BIOLOGICAL AND CULTURAL TRANSITION ZONES: EXAMPLES FROM A CENTRAL ARIZONA ECOTONE. Little attention has been paid by archaeologists to cultural boundary situations and those who have usually suggest cultural boundaries are relatively coterminous with environmental boundaries. Not much consideration is given to the causative factors regarding this fit of cultural and environmental boundaries, except to suggest that the reasons are due to "cultural adaptation." This symposium examines, from a number of points of view, the interface between cultures and between cultures and environment in major environmental transition zones, or ecotones. The study area is in central Arizona in the ecotone between the Upper and Lower Sonoran life zones and the cultural contact is between the prehistoric Pueblo and Hohokam.

(38) THE KOSTER SITE: A STRATIFIED ARCHAIC SITE IN THE CENTRAL MISSISSIPPI VALLEY AREA. Since 1969, James Brown and Stuart Struever of Northwestern University, together with a number of collaborators in archaeology and the natural sciences, have been excavating the Koster site located in the Illinois valley, 50 miles north of St. Louis. Major excavations have been conducted in 10 stratified cultural units, with limited work completed on the 11th habitation level. The subject of this symposium is

reports and interpretations by various cooperating investigators in the Koster project. A synthesis of the cultural and environmental evidence is attempted and a broader interpretation of Archaic adaptations in the central Mississippi drainage is presented.

(39) APPROACHES TO ARCHAEOLOGICAL CHEMISTRY. Recent interest in the chemical analysis of archaeological materials has become great, and a number of reports of analytical results have appeared in the literature. However, almost no standardization has been attempted in the reporting of these results, and there has been little standardization of the results themselves. Papers at this symposium are devoted to: (1) brief descriptions of several analytic studies of artifact materials; and (2) proposals for improved techniques for reporting and comparing analytic results in archaeology. It is hoped that the authors, discussants, and interested members of the audience generate in discussion some initial guidelines toward standardization.

(40) QUANTITATIVE FAUNAL ANALYSIS. A commonly occurring problem in the analysis of faunal materials either from regions or from individual sites is the quantification of materials in such a way that more meaningful interpretations of prehistoric subsistence activities can be achieved. The symposium is constructed to explore both new techniques for handling faunal materials and new interpretations of prehistoric subsistence patterns. Data from several major ecological zones of North America are used as illustrative material, thus allowing a comparison of the application of techniques in different environments. Cautionary strictures are stressed as well as new approaches. Format of Symposium: Several 20-minute papers, interrupted by a 20-minute intermission, and followed by 2 20-minute discussions by 2 discussants and a few short concluding remarks by the symposium chairmen.

(43) THE USE OF COMPUTERS TO SOLVE LOGISTIC AND OTHER NON-STATISTICAL PROBLEMS. Archaeologists often use computers for statistics, but neglect other potential applications. These applications include storage and retrieval of information; finding and remedying discrepancies in existing collection archives; inventorying large collections; making direct measurements from specimens and maps; keeping track of other material in the field; preparing and up-dating dictionaries of current terms; interactive mapping; preparation of final maps from stored information. Many of these applications are based on the SELGEM system or are designed to be compatible with it. The SELGEM system was originated and developed by the Information Systems Division of the Smithsonian Institution. Participating Institutions: Eastern New Mexico University, Southwestern Anthropological Computer Consortium, Arizona State Museum, U.S. Forest Service, Inter-Mountain Regional Division, Washington State University, Northwestern University, University of California, Santa Barbara, Smithsonian Institution Information Systems Division, University of Kansas, Arizona State University.

## ABSTRACTS OF PAPERS

Ackerman, Robert E. (Washington S), ARCHAEOLOGICAL INVESTIGATIONS IN SOUTHEASTERN ALASKA, 1973. During the 1973 field season, members of the Icy Strait Archeological Research project of Washington State University, returned to the Juneau region of Southeastern Alaska to continue further excavations at the 9000-10,000-year-old GHB 2 site, conduct an archaeological survey of the mainland to the west and east of the GHB 2 area, obtain ethnohistorical data relevant to the survey area, and investigate the geochronology of the region by study of terrace relationships. This report presents in summary form the results of the field investigations, the preliminary analysis of the data, and the significance of the findings to northern Northwest Coast prehistory. (28)

Adovasio, James (Pittsburgh), THE IDENTIFICATION OF INDIVIDUAL STYLE VARIABILITY IN BASKETRY MANUFACTURE. A series of measurements on isolated manufacturing and stylistic attributes seems to provide a basis for distinguishing the workmanship of individual prehistoric basketmakers. Moreover, the same techniques allow for the delineation of separate populations of prehistoric basketmakers in any given locality when perishables are numerous and well controlled chronologically. (18)

Adovasio, James (Pittsburgh), BASKETRY REMAINS FROM ANTELOPE HOUSE. (1, 2)

Agenbroad, Larry D. (Chadron S), RESULTS OF THE THIRD FIELD SEASON: HUDSON-MENG PALEO INDIAN BISON KILL, N.W. NEBRASKA. The 1973 field season provided additional artifact and butchering information. A population dynamics study allows refinement of post cranial skeletal data. Stratigraphic, palynological, and geochronological evidence allows a tentative model of post-kill environmental change. (28)

Aikens, C. Melvin, and David L. Cole (Oregon), DIRTY SHAME ROCKSHELTER, S.E. OREGON. The Dirty Shame Rockshelter is located in dissected lava plateau country on the edge of the Northern Great Basin in Malheur County, Oregon, near the juncture of the Oregon, Nevada, and Idaho boundaries. A dry deposit approximately 2 meters deep, estimated on grounds of artifact typology to span 7000-8000 years, was excavated during July and August of 1972. The few Great Basin sites for which detailed environmental, as well as cultural information has so far been obtained are all caves located near the shores of now-extinct Pleistocene lakes. The Dirty Shame investigations were undertaken to obtain detailed environmental and cultural information from an upland, non-lakeshore situation, and thus to provide a perspective on human ecological relations in an environmental context heretofore inadequately investigated in the Great Basin region. Preliminary results of the investigation are reported. (28)

Allen, Ralph O. (see Luckenbach, Alvin H.) (39)

Anawalt, Patricia (UCLA), PAN-MESOAMERICAN COSTUME DISTRIBUTION AT THE TIME OF SPANISH CONTACT. It is the contention of this paper that the same basic forms of costume, differing only regionally, were worn over all of Mesoamerica at the time of Contact. This hypothesis is investigated through examination and comparison of pan-Mesoamerican regional styles. Costume examples are drawn from extant codices, and these data are analyzed using a method of abstract costume analysis. Garments are dealt with in terms of the basic principles around which they are constructed, the forms they take, and the utilitarian functions they serve. Comparative diagrams illustrate both regional variation and pan-Mesoamerican similarities of dress. (6)

Anderson, James (Cahokia Mounds Mus), THE EXCAVATION AND STRATIGRAPHIC DATA FROM MOUND 72. Mound 72 was excavated because of its unique shape and orientation. These factors dictated the original excavation strategy. As a result, a post pit where a marker had been located was found. Following this, excavations into the mound proper suggested that it had been built in a series of sequential stages of small platform mounds that were ultimately connected together to form one large ridge-topped mound. What had been planned as a single season or two of excavation expanded into a 5-year project that has completed most of the excavation of Mound 72. (11)

Angel, J. Lawrence (Smithsonian), SOCIAL BIOLOGY AND THE ARCHAEOLOGIST. The Eastern Mediterranean from the end of Wurm glaciation to the present was ecologically challenging and varied (rainfall, soils) and historically critical (population density change, mixture, inventiveness). There is a striking time correlation between female longevity, reproductive efficiency, population density, biological heterogeneity, disease, and historical rise or decline. Human biology and culture are inseparable and archaeologist and physical anthropologist must work together closely. Skeletons are seldom well preserved and demand care. Each site, such as Lerna (Jack Caskey), Mycenae (George Mylonas), or Karatas

(Machteld Mellink) shows a different social biological picture: movement of genetic traits in family or clan groupings, selection, occupation and social status differences, nutrition, disease, war injuries, and immigration. (33)

Armstrong, G., A. Swedlund, and J. Moore (Massachusetts), PALEOEPIDEMOLOGICAL ANALYSIS OF DISEASE IN PREHISTORIC POPULATIONS. Paleoepidemiology or the study of ancient disease patterns in human populations can be an important source of both demographic and archaeological interpretation when considered in the appropriate context. This presentation uses paleopathological data as a demographic variable in the analysis of material from the Dickson Mounds, Illinois. (33)

Arnold, J. Barto III (Texas Antiquities Committee), and George B. Kegley III (Texas Parks and Wildlife Dept), A MAGNETOMETER SURVEY OF A PREHISTORIC VILLAGE IN WESTERN TEXAS. Results of a magnetometer survey at Hueco Tanks State Park (41EP2) suggest a high correlation between magnetic anomalies and pit house structures and other areas of cultural activity at this site. Hueco Tanks is a late prehistoric site of the Jornada Branch of the Mogollon near El Paso, Texas. Two techniques of magnetometer surveying were employed. One consisted of a tightly controlled "in site" mode that produced a magnetic contour map. The second method employed a "search mode" technique of a more wide-ranging nature. Anomalies discovered by the proton magnetometer were tested by excavation. (8)

Asch, David (Northwestern), KOSTER SITE—THE NATURAL ENVIRONMENT. Members of the Koster research project have collected and analyzed a variety of botanical, zoological, and geomorphological data pertaining to prehistoric environments of the site. Some preliminary reconstructions are presented in the paper, with assessments of the evidence for stability and change. Interpretation requires recognition that, to varying extents, the environmental indicators are affected both by locally and regionally controlled variables. It is necessary to take account of the consequences of human occupation for environments of the site and surrounding areas, as well as man's direct impact upon the archaeological indicators. (38)

Athens, John Stephen, and Alan J. Osborn (New Mexico), RECENT ARCHAEOLOGICAL INVESTIGATIONS AT SEVERAL CERAMIC SITES IN THE HIGHLANDS OF NORTHERN ECUADOR. A small-scale program of archaeological survey and test excavations has been initiated in order to investigate energy-capture and its sociocultural ramifications in prehistoric cultural systems in the northern provinces of Pinchincha and Imbabura. The high altitude site, La Chimba, is situated on the northern slopes of Mt. Cayambe. Its rich midden deposits contained an abundance of ceramics, faunal remains, lithic debitage, etc. A radiocarbon date of ca. A.D. 753 was obtained from an occupational surface near the center of the deposits. Additional test excavations in the intermontane valley near Otavalo have recently been completed as well as several maps of large mound groups in various environmental zones throughout the highlands. (30)

Autry, William O., Jr. (North Carolina), POST FORMATIVE BURIAL PRACTICES IN THE VALLEY OF OAXACA, MEXICO. Accepting the assumption that an individual's treatment at death is a reflection of his social persona in life, and that the social status system of a society is reflected in the differences between interments, then social status systems of extinct societies can be derived from archaeological burial data. This study presents the results of an analysis of some 75 Post Formative burials from archaeological sites in the Valley of Oaxaca. Two techniques of analysis are employed. First, the burials are examined for regular trends in disposal through examination of such attributes as sex, age, body placement, and associated grave goods. The second method involves the use of a computer-based typological program—Monothetic Subdivisive Classification in Archaeology (Whallon 1971). Results of the 2 methods are compared and contrasted in order to outline an hierarchy of status positions. (27)

Ayers, Harvard G. (Appalachian S), CULTURAL AND SOCIAL CHANGE DURING THE SUSQUEHANNA TRADITION IN THE POTOMAC RIVER VALLEY. The social and cultural correlates of several material culture changes in the Susquehanna Tradition (1000 B.C.-500 B.C.) are presented. The material changes include changes in projectile point and vessel manufacture. Means of introduction as well as implied behavioral changes are discussed. (29)

Ball, Joseph W., (Wisconsin, Madison), and D. F. Potter (Tulane), PRECLASSIC ARCHITECTURE AT BECAN, CAMPECHE, MEXICO. Excavations at the southeastern Campeche Maya site of Becan during the years 1969 through 1973 have revealed evidence of habitation starting in the Middle Preclassic times. Structural activity was prolific from the Late Preclassic on. The present paper describes and discusses the architecture of the Late Preclassic period and its relationship to that of the immediately sequential Early Classic phases. (6)

Bartel, Brad (Missouri, Columbia), LOCATIONAL ANALYSIS OF THE ANATOLIAN EARLY NEOLITHIC. Factor and locational analysis has delineated a distinct grouping of settlements spaced along 4 ecozones during the Anatolian Early Neolithic. A shape index and nearest-neighbor analysis have shown sites to be uniformly spaced in a circle,

approaching hexagonal fields of interaction with the large "town" of Catal Huyuk in the center. To account for the highly efficient obsidian exploitation, a corridor configuration of transport networks is hypothesized. Settlements show a pattern of socioeconomic alignment to a "gateway town" (Catal Huyuk), and further to the area of resource (salt and obsidian). (4)

Bartovics, Albert F. (Brown), THE EXPERIMENT IN ARCHAEOLOGY: A COMPARISON OF TWO CASE STUDIES. A critical comparison is made between 2 recent case studies in American archaeology, The Dynamics of Stylistic Change in Arikara Ceramics by Deetz, and Archaeology as Anthropology by Longacre. The notion of experiment is introduced as a standard of comparison that results in a lesson about archaeology as a science. (23)

Basa, Louise (Vermont), THE BOUCHER SITE (Vt-Fr-26): IMPLICATIONS FOR THE STUDY OF EARLY WOODLAND MORTUARY PRACTICES IN VERMONT. The Boucher site has yielded the most extensive, documented evidence of an Early Woodland cemetery site in the Northeast. The pit graves contained both flexed bundle burials and cremations deposited, in most cases, with some of the following attributes: red ochre, graphite, copper beads, "blocked-end tubes," "Beaver-tail" ("Adena style") points, Marginella-shell beads, and others. Many of the artifacts accompanying the burials were manufactured from raw materials foreign to Vermont. Organic preservation at the site was relatively good with 82 features containing human skeletal material and/or artifacts. The Boucher site relates to 3 poorly reported sites in Vermont assigned by Ritchie to his Middlesex phase: the East Creek site (Heye Foundation, 1934-36), the Swanton Burial Ground (published in 1873), and the Bennett site (1942). This paper will present a summary of the Boucher site data, its implications for a reassessment of the data from other similar sites in Vermont, and hypotheses for the study of burial patterns within the Boucher site. (29)

Bebrich, Carl (Northwestern), KOSTER'S STRATIGRAPHY: THE METHODOLOGY OF SITE STRUCTURE ANALYSIS. Using the Koster site as test case and example, the methodology of stratigraphic analysis is critically examined in terms of the data requirements of process-oriented archaeology. These include the isolation of single occupations and the delineation of associations and discontinuities in the distribution of cultural and ecological items and features. Acquisition of these data is essential for the understanding of settlement function and more broadly for formulating models of man-environment interaction. To achieve these objectives stratigraphic analysis must entail at least 5 basic tasks: (1) reconstruction of the physical stratigraphy in which archaeologically significant items and features are enmeshed; (2) stratigraphic isolation of single occupations; (3) definition of associations and discontinuities in the distribution of items and features within single occupations; (4) delineation of the activity structure of single occupations; and (5) cross-tabulation of excavation units within defined activity and settlement components. The successful execution of these tasks will ensure a high level of coherency between collateral lines of investigation (e.g., artifact analysis, botany, zoology, etc.), while maximizing their number in studying those habitation units that hold the greatest promise of solving basic research problems. (38)

Becker, Marshal Joseph (West Chester S), MOIETIES IN ANCIENT MESOAMERICA: INFERENCES ON TEOTIHUACAN SOCIAL STRUCTURE DERIVED FROM THE EVIDENCE OF MURAL PAINTINGS AND OTHER ARCHAEOLOGICAL DATA. The recently published interpretation of 2 Teotihuacan mural paintings and other related evidence from Mesoamerica appear to provide direct archaeological evidence for the existence of moieties among the Teotihuacanos. The carefully documented analysis of art forms provided by Millon enables this archaeological problem to be studied through the application of concepts of social structure. This process furthers our understanding of an anthropological situation that can only be studied through the various techniques of archaeology. (41)

Bentley, Gerald H. (SUNY, Buffalo), ANGLO-SAXON ARCHAEOLOGY TODAY. The archaeology of the Anglo-Saxon settlement of Britain is focusing on 3 areas such as the Continental experience, the Migration to England and the Saxon dominance of England from about A.D. 450 to A.D. 1066. This paper notes some of the problems involved in archaeological research where there are some historical records. (23)

Bettinger, Robert L. (American Mus of Nat His), THREE PATTERNS OF PREHISTORIC SETTLEMENTS IN CENTRAL EASTERN CALIFORNIA: SUMMARY INTERPRETATION OF THE OWENS VALLEY PROJECT, YEARS I AND II. Two years of survey sampling in Owens Valley document changing resource utilization in that area. Three distinct patterns apparent in the period 7000-100 B.P. are described. Archaeological, climatic, and limited linguistic data are presented to account for each pattern. (13)

Bieber, Alan, Jr. (see Yesner, David) (40)

Binning, Jeanne D., and Peggy McGuckian (UCR), Alan Garfinkel (CSU, Northridge), and Ann Martz (California State Div of Highways), A METHODOLOGY FOR THE FUNCTIONAL CLASSIFICATION OF FLAKED LITHIC TOOLS. A methodology is presented using factor, cluster, chi-square, and discriminate computer analysis to determine the relationships between variables that are considered to be germane to lithic tool function.

The resulting classifications are discussed and hypotheses made concerning their significance. The importance of such a strategy in the description of prehistoric subsistence behavior will be delineated. (26)

Binning, Jeanne (UCR), ABORIGINAL LAND USE IN SOUTHERN RIVERSIDE COUNTY, CALIFORNIA. A model based on ethnographic data is presented to describe aboriginal land use in southern Riverside County, California. The model will stress resource acquisition and settlement pattern, 2 facets of land use that are best documented archaeologically. Intra-regional variations will be discussed, and a set of test implications for the Eastern Mojave region will be presented. (35)

Bishop, Ronald L. (see Rands, Robert L.) (32)

Blackman, M. James (Section of Archaeology, State of Delaware), AN ANALYSIS OF JASPER ARTIFACTS AND SOURCE MATERIALS BY ATOMIC ABSORPTION AND FLAME PHOTOMETRY. Samples of Pennsylvania and Newark Jaspers have been collected from outcroppings, from quarrying debris, and from workshop debris in the immediate vicinity of the quarry sites. These samples, together with artifacts allegedly manufactured from Pennsylvania or Newark Jasper and found in sites further south on the Delmarva peninsula, have been subjected to analysis by atomic absorption and flame photometry. The study has sought to determine if characteristic minor and trace element "fingerprints" can be found that would enable one to differentiate between these 2 jaspers with a high degree of confidence; to assign artifactual material to one of the 2 jaspers and, if possible, to quarry groups; and, to demonstrate the utility of atomic absorption and flame photometry in the chemical analysis of artifactual material. Preliminary results are presented. (39)

Blanton, Richard E. (Hunter), THE GREAT STYLES AND PRE-STATE TRADE IN THE NEW WORLD. There is nothing exactly comparable, in an evolutionary sense, to the regional exchange networks associated with the "Great Styles" in the Old World centers where pristine states evolved. The "Early Horizons" in both Mesoamerica and the Central Andes were times when small, autonomous populations engaged in regional exchange networks in which exchange involved, in part, the movement of valuable, high-status items usually invested with symbols pertaining to a powerful supernatural system. This behavior was largely absent in the Old World, I argue, in general, because of the importance there of domesticated animals, which were used as exchangeable items rather than valuable, sanctified goods. (41)

Boyer, William P., and Kurt Carr (Catholic), and James Ivor Gross (Thunderbird Archeological Park and Museum), THE PALEO-INDIAN RESEARCH PROGRAM. The results of research into the Paleo-Indian occupation of the Middle Shenandoah Valley are summarized. Emphasis is on what has been recovered to date, methods of analysis, and plans for future research. (24)

Bradstreet, Theodore E. (SUNY, New York), and Figueredo, Alfredo E. (Virgin Islands Mus), CERAMIC CULTURE SITE LOCATION PARAMETERS FOR THE VIRGIN ISLANDS. Archaeological reconnaissance of the islands of St. Thomas and St. John coupled with recently available data on the climate and soils of the islands make possible the delimitation of the major location parameters for ceramic culture sites in the Virgin Islands. The factors apparent are (1) shelter from prevailing winds, and (2) the availability of Jaucas (and perhaps Glynn) Series soils. Rainfall, and navigational and other factors seem to be unimportant. This important first step in understanding the adaptation of such cultures to the insular environment leads directly to interesting, archaeologically testable hypotheses. (41)

Braun, Robert (Illinois, Urbana-Champaign), EXCAVATIONS AND SURFACE SURVEY ALONG RIO CALLARIA, EASTERN PERU. A series of test cuts and surface collections in 1973 along the Rio Callaria, an eastern tributary of the Rio Ucayali, Departamento de Loreto, Peru, has yielded several ceramic complexes comparable to the Pacacocha-Cumancaya tradition described by Lathrap, Myers, and others. The sites in question are, generally speaking, situated in a backwoods area. The virtuosity of artistic expression, the control of execution, and the breadth of form categories, however, are quite unlike the crude ceramics formerly hypothesized for early non-riverine Panoan-speaking groups. This, along with evidence of sizeable and enduring occupations, suggests that the role of "backwoods" groups in the development and spread of the Panoans has been unduly minimized. A model emphasizing backwoods-to-riverine cultural and population inputs is presented in order to reconcile these new archaeological data with the ethnographic reality of such groups as the Cashinahua and Remo. (30)

Brew, Douglas C. (Prescott), HYDROLOGIC ASPECTS OF THE CENTRAL ARIZONA ECOTONE. Current hydrologic studies in the central Arizona ecotone seek answers to the following questions. What was the mean annual runoff? What was the distribution of runoff in time? How are these factors reflected in site locations, population densities, and the nature of agricultural and water control systems? Although data gathered describe the present-day conditions, they also provide a departure point from which further analyses lead to inferences about the effects of hydrologic conditions on the prehistoric populace. (37)

Briuer, Frederick L. (UCLA), AN ANALYSIS OF PLANT REMAINS FROM CHEVELON CANYON ROCK SHELTERS. Plant remains from dry cave archaeological sites are analyzed for the purpose of testing hypotheses dealing with the nature of depositional processes responsible for refuse accumulation in archaeological sites. Pollen as well as micro- and macroflora remains are useful for recognizing cultural and natural refuse, seasonality, human economic activities and past environmental conditions in the Chevelon Canyon region of Northern Arizona. (42)

Brooks, H. K. (see Hoffman, Charles A.) (29)

Brose, David S. (Case Western Reserve), and George Percy (Florida S), WEEDEN ISLAND CEREMONIALISM: A REAPPRAISAL. The ceremonial content of Weeden Island mounds in Northwest Florida yields several models concerning the structure of ritual in Weeden Island contexts. These structural models may be integrated with hypotheses, advanced in the previous paper, concerning the nature of the socioeconomic units responsible. Some attempt will be made to articulate these models with regional and chronological variations, and to evaluate their implications in terms of suggestions for further research. Finally, some indication of possible contributions of previous investigations will be explored. (34)

Brose, David S. (see Percy, George W.) (34)

Browman, David L. (Washington, St. Louis), DEMOGRAPHIC PRE-CONDITIONS FOR CONQUEST IN JUNIN. The Pastoral oriented population of the Jauja-Huancayo area suffered a demographic crisis along the lines postulated by the Boserup model during the Early Intermediate Period. The carrying capacity of the region with respect to primary pastoralism was apparently reached, forcing the population to rely on and utilize other exploitative resources. Agriculture replaced pastoralism as the primary subsistence pattern; the basin's economic ties were strengthened along the Mantaro to the south, and the area incorporated in a pre-Huari Huarpa expansion. (15)

Brown, James A. (Northwestern), PATTERNS AND ORGANIZATION IN THE KOSTER ARCHAIC SETTLEMENT. This paper outlines the present status of research on the patterns of site utilization present in each of the Archaic occupations. A review of our research strategy focuses on the interpretive strengths provided by the main data classes (viz., features, artifacts and debris) and the procedures useful in eliciting patterns of site utilization. Particular attention is placed on some of the major distinctions existing between Horizons 4, 6, and 8. (38)

Brown, Jeffrey L. (Tennessee, Chattanooga), PUEBLO VIEJO SALADO SITES AND THEIR RELATIONSHIP TO WESTERN PUEBLO CULTURE. The Pueblo Viejo region of the Safford Valley is one of the least known archaeological areas of the American Southwest. As yet, no major excavation has been attempted there. In this paper data drawn from early investigators, collectors, and my own investigations are used to define a Pueblo Viejo Salado trait complex. Comparisons are made between this complex and the Salado complexes of the Tonto Basin, Gila Basin, and Reeve Ruin. A number of specific resemblances between the Kayenta-Hopi and Pueblo Viejo ceramic traditions are noted. A close cultural relationship between the Pueblo Viejo Salado complex and the Point of Pines-Reserve "Western Pueblo" complex is proposed. (42)

Brown, Margaret K. (Southern Illinois), TRAVERSE SAMPLING: A CASE STUDY. The technique of traverse sampling in archaeology is discussed using the example of an historic Indian village in Illinois. Initial testing of this village by random squares proved unsatisfactory and too time consuming. A new strategy was adopted, sampling the site by random traverses. These were used to cut trenches over the entire site. This method proved highly satisfactory for obtaining an adequate sample from the site and for the disclosure of the distribution of features over the site. This technique enabled the examination of a greater area than other techniques considered. (8)

Bruder, J. Simon, E. G. Large, and Barbara L. Stark (Arizona S), REMOTE SENSING AS AN AID TO ARCHAEOLOGICAL SURVEY IN ESTUARINE MANGROVE SWAMPS: A FIELD TEST IN VERACRUZ, MEXICO. Many archaeological survey and mapping problems in the estuarine, mangrove zone of the Papaloapan River are solved by use of color and color infrared aerial photographs. Ground survey verified that the photographs greatly facilitate the identification and mapping of (1) various landforms, vegetation zones, and waterways, and (2) archaeological sites ranging from small, low sites to clusters of large, artificial mounds. Soil and vegetation factors were identified that account for the aerial visibility of sites. Some implications for prehistoric settlement pattern research are summarized. (8)

Brueggemann, Juergen Kurt (Inst of Anthropology and History, Mexico City), STRATIGRAPHIC STUDIES IN THE VALLEY OF MEXICO: PRELIMINARY REPORT. The National Institute of Anthropology and History of Mexico is working out a program of delimitation of archaeological zones inside the Mexican Republic. The result will be the unification of criteria for delimitation of archaeological zones, easy identification of

archaeological information and its codification in a clear system—of archaeological and organizational relevance. Its use is for: (1) an Information Center of archaeological data; (2) mapping of archaeological finds; (3) more effective institutional administration of the archaeological monuments in Mexico. (27)

Bruhns, Karen O. (San Francisco S), THE MOON ANIMAL IN THE NORTHERN ANDES. The Moon Animal, a mythical figure prominent in the art of the North Coast of Peru, appears in several art styles of Colombia and Panama. There is no question of parallelism and analysis of stylistic features of these northern representations suggests introduction of this motif via several different routes and at least 2 different times. This in turn raises some questions about the nature of long distance trade via Amazonas and via the Pacific Coast of South America. (30)

Bulkstra, Jane (Northwestern), BIO-CULTURAL DIMENSIONS OF ARCHAEOLOGICAL STUDY: A REGIONAL PERSPECTIVE. The study of prehistoric cemeteries and skeletal series is critical to archaeological documentation of local histories and the derivation of deductively testable models of human behavior. Questions frequently asked by archaeologists concerning population size and density, nutritional adequacy, population movement and social organization can be effectively answered through the study of the actual physical remains of prior populations and their associated cemetery contexts. Other information, such as genetic relationship and disease profiles, can only be derived from the study of skeletal series. Critical to the study of these population attributes is the effective integration of archaeological and biological data—not as isolated phenomena, but as part of an interactive system that includes social, biological, and environmental factors. This paper will examine the utility of a regional program in mortuary site archaeology and bio-anthropology for the development of this bio-cultural perspective. (33)

Bulkstra, Jane (Northwestern), KOSTER SITE: MORTUARY ACTIVITY AND HUMAN BIOLOGY. Burial features and human skeletal remains comprise an important source of information at Koster site. To date, excavations have indicated the presence of cemetery areas in Horizon 6, as well as isolated burials in 4 other horizons. Initially, this report will define the burial program for Horizon 6, emphasizing rules related to biological parameters, such as age at death, sex, and pathology. Next, skeletal indicators of environmental stress will be considered as measures of adaptive efficiency. Finally, information from the Koster horizons will be combined with data from other Archaic sites in order to examine temporal change in parameters defining Archaic burial programs and the human biological system. (38)

Butzer, Karl W. (Chicago), GEOMORPHIC HISTORY OF THE KOSTER SITE AREA. Preliminary geomorphological studies of the Koster site, its stratigraphy and its regional context were carried out in 1972. A geomorphological sequence from pre-Illinoian times to the Historic Period has been defined for the Koster site area. Seven Holocene episodes are defined for the period during which the site was occupied. Current analysis of soils is focusing specifically on the problem of how these episodes relate to changing environmental conditions and human uses of the Koster locality. (38)

Carbone, Victor A. (Thunderbird Archeological Park and Mus), PALEOCLIMATOLOGICAL INVESTIGATIONS ALONG THE SOUTH FORK OF THE SHENANDOAH. Standard palynological techniques are discussed, particularly pollen recovery from floodplain soils with low pollen counts. The application and hoped for results of the study of phytoliths in reconstructing past environments are also outlined. The results of the work to date for the Late Pleistocene of the Valley are summarized. (24)

Carr, Kurt (see Bayer, William P.) (24)

Carriveau, Gary W., and Mark C. Han (U of Pennsylvania Mus), THERMOLUMINESCENT DATING AND THE MYSTERY OF ACAMBARO. We have dated a selection of figurines from the Julsdur Collection, excavated near Acambaro, Guanajuato, Mexico. The controversial nature of this collection made us especially alert to any problems that may arise through the use of the thermoluminescent (TL) dating technique. A general description of TL dating is presented. Also, a number of special additional tests will be described. These include variations in TL sensitivity to various types of radiation, the effect of firing temperature (annealing) on the TL dates and the elemental analysis of the ceramic material and surrounding soil. (32)

Casteel, Richard W. (Washington), A COMPARISON OF THE METHODS FOR ESTIMATION OF FISH SIZE FROM ARCHAEOLOGICAL REMAINS. This paper examines the characteristics of several methods currently used to make estimates of fish size from the size of bones. These methods are compared on the basis of the accuracy of their estimates as tested against animals of known size and on the parsimony of each method. Some suggestions are made regarding the presentation of results from these various methods and the differing requirements of each with regard to the size of comparative collections are discussed. (40)

Chang, Claudia (Mus of Northern Arizona), and R. Roy Johnson (Natl Park Service), THE INTERRELATIONSHIPS OF CULTURAL AND ECOLOGICAL DIVERSITY. Investiga-

tions in the central Arizona ecotone suggest that diversity in ecological systems may result in correlative diversity in cultural systems, since a diverse ecosystem allows for a greater number of alternative exploitative strategies. Ecologists have demonstrated that greater ecological diversity results in greater ecological stability. As a consequence, in these situations we hypothesize a corresponding stability in cultural systems. Feedback mechanisms between the ecosystems and cultural systems should serve as indicators of impending imbalance of the ecological systems and, therefore, instability of the associated cultural systems. (37)

Chapman, Jefferson, and Richard A. Yarnell (North Carolina), A RECONSTRUCTION OF PALEOENVIRONMENTAL AND SUBSISTENCE PATTERNS AT AN EARLY ARCHAIC PERIOD SITE IN TENNESSEE. The discovery in 1973 of an Early Archaic LeCroy phase site in eastern Tennessee has led to the recovery of large amounts of carbonized plant remains. Radiocarbon assays range from 6850-6110 B.C. making the site the oldest stratified occupation in Tennessee and the subsequent analysis of the paleobotanical material has yielded data generally lacking for this time period. Quantified analysis of flotation samples shows almost exclusive exploitation of hickory nuts and acorns. Analysis of wood charcoal indicates a probable climax mixed mesophytic forest with little evidence of disturbed habitats. (36)

Chartkoff, Joseph L. (Michigan S), EXCHANGE, SEDENTISM, AND THE ORIGINS OF AGRICULTURE IN THE NEAR EAST. Recent archaeological evidence for the Near East suggests that exchange systems developed over wide areas prior to the adoption of agricultural technology. In several cases evolving exchange systems became associated with preagricultural sedentary settlements, increased population density, and increased social stratification. This evidence demonstrates that the argument that agriculture is a precondition to sedentism and social stratification in the Near East can be rejected. The paper argues for a cybernetic understanding of the adaptive significance of exchange to a population's carrying capacity. It argues that the raised carrying capacity which exchange brought to early post-glacial Near Eastern populations promoted and required increased population density and increased sedentism, from which social stratification necessarily developed. These conditions created a situation under which the promotion of agricultural technology was highly advantageous if not requisite. It is finally argued that the same processes appear to have been at work on the coast of Peru to lead to a "Neolithic" way of life there. (41)

Clark, G. A. (Arizona S), L. G. Strauss (Chicago), and C. Fuentes (Inst Nacional Villajunco), PRELIMINARY SITE SURVEY IN THE CANTABRIAN MOUNTAINS, BURGOS, SPAIN. A site survey was conducted in the Ebro headwaters during June-August, 1972. Following stratification of the topography, potential sites were located through local informants, foot survey, and by recourse to detailed topographic maps. Fifty-nine potential sites were recorded, 57 in caves and rockshelters. Ten sites were tested by excavation: 4 yielded no evidence of human occupation; 1 produced sparse Upper Paleolithic material; 5 yielded late Bronze and early Iron Age industries and fauna. An Iron Age cave/open site was more intensively investigated using testpits and a transect sampling design. Faunal remains recovered from the cave shed light on early Iron Age subsistence patterns. (8)

Clewlow, C. W., Jr. (UCLA Archaeological Survey), STYLISTIC AND CHRONOLOGICAL "SCHOOLS" IN OLMEC MONUMENTAL SCULPTURE. Three large sites, Laguna de los Cerros, San Lorenzo, and La Venta, have produced most of the monumental sculpture from the Olmec heartland. The corpus of pieces from each site may be characterized stylistically and chronologically, and several "schools" may be isolated on the basis of trait definition. These "schools" are presented and discussed for cultural and chronological implications. (27)

Cobean, Robert (see Stocker, Terrance) (41)

Cohen, Janice (see Rose, Jerome) (11)

Cohen, Mark N. (SUNY, Plattsburgh), ARCHAEOLOGICAL EVIDENCE FOR POPULATION PRESSURE IN PRE-AGRICULTURAL SOCIETIES. The intent of this paper is to criticize contemporary methodology in prehistoric demography and to suggest several new types of archaeological evidence which may be indicative of population growth and population pressure. Standard methodologies have tended to underestimate population growth in pre-agricultural societies and to underestimate the role of population pressure in causing economic change. It is argued that with increased sensitivity to additional sources of evidence, it becomes abundantly clear that population growth and population pressure are ubiquitous in the archaeological record and can readily be perceived as leading to economic and technological growth culminating in the origins of agriculture. (22)

Cole, David L. (see Aikens, C. Melvin) (25)

Cole, John R. (Drew), 19TH CENTURY FIELDWORK AND BOASIAN PROFESSIONALIZATION: TWO INFLUENCES ON THE RELATIONSHIP BETWEEN ARCHAEOLOGY AND ANTHROPOLOGY. New World archaeology is a part of anthropology for historical reasons and not just because we are all students of culture. The fact that European

archaeology has remained more allied with academic history rather than anthropology departments is an example of this. Two historical factors are examined here: the influence of 19th century fieldwork areas which were different for Europeans and Americans, and the form our "institutionalization" took under the aegis of Franz Boas. Since Boas's day the marriage between ethnographic anthropology and archaeology has been more or less faithful but frequently uneasy. Current seeds of unrest are shown to be traceable to circumstances and events long past, not just to contemporary formal theoretical concerns. (21)

Collins, Alana Cordy (UCLA), THE POSSIBLE USE OF TEXTILES AS A CATECHISM DURING THE EARLY HORIZON IN PERU. The Early Horizon in Peru was dominated by 2 cultural systems, Chavin in the north-central sierra and Paracas in the south coast. These 2 groups were separated from one another by a distance of ca. 350 miles. Ten years ago a study of Paracas pottery conducted by Menzel, Rowe, and Dawson showed the intrusion of specific Chavin traits. Since no pure Chavin material was known from the area at that time, it could not be ascertained how or why the Chavin influence had been exerted. Three years ago a quantity of Chavin textiles were reported from the south coast. The author feels that these textiles were the vehicle which brought the Chavin traits to the south coast area. This paper presents an hypothesis to account for the presence of the textiles in an area far removed from the place of origin, and for the subsequent inclusion of the Chavin motifs in the Paracas pottery. (30)

Connelly, Carole (UCR), CORRELATIONS OF ARCHAEOLOGICAL DATA WITH PALEOENVIRONMENTAL CHANGE. Computer-aided analysis of site types and distributions in the western Mojave Desert indicates that both types and distributions vary through time. These variations best correlate with climatic and vegetation changes in the southern California desert, and support the predictions derived from ethnographic data. (35)

Connor, Judith (Arizona), PRELIMINARY OBSERVATIONS ON THE CERAMIC SEQUENCE OF COZUMEL, QUINTANA ROO, MEXICO: IMPLICATIONS FOR MAYA TRADE. The island of Cozumel, known to have been an important trade and pilgrimage center at the time of the Spanish conquest, was the focus of a joint Harvard University-University of Arizona archaeological project during 2 field seasons, 1972-1973. The results of a preliminary analysis of ceramic collections are presented. These include: the definition of a tentative Cozumel ceramic sequence; a discussion of evidence for Cozumel's role as a trade center in Classic and Postclassic times; and an outline for future analyses centered on a possible shift in Maya trade networks during the Classic-Postclassic transition. (41)

Conrad, Geoffrey W. (Harvard), THE BURIAL PLATFORMS OF CHAN CHAN: SOCIAL AND POLITICAL INTERPRETATIONS THROUGH ETHNOHISTORIC ANALOGY. Chan Chan was the capital city of Chimor, a powerful Late Intermediate period kingdom of the north coast of Peru. The dominant architectural components of the city's civic center are 9 large compounds and 9 elaborate mortuary structures known as burial platforms. Archaeological evidence and ethnohistoric analogy demonstrate that the burial platforms served as the tombs of the kings of Chimor, that the compounds were the palaces of those kings, and that the compounds and platforms were built and utilized in accordance with a set of organizational principles common to Chimor and the Inca Empire. (12)

Cook, Thomas Genn (Northwestern), ARCHAIC LITHIC TECHNOLOGIES AT KOSTER. The contribution of this paper is to define technologically 3 Late and Middle Archaic phases, namely Titterton (Horizon 4), Helton (Horizon 6 upper), and Godar (Horizon 6 lower) and to indicate some of the major technological differences existing among them. (38)

Cotter, John L. (Nat'l Park Service), HOLISTIC CONSERVATION: PERSONAL INVOLVEMENT IN SAVING SITES AND DATA. Archaeological conservation is not a selective matter of saving certain artifacts simply because they are threatened by destruction, or because they are prehistoric and finite in number, or because they are already preserved as landmarks. Conservation is rather concerned with a whole entity of sites, artifacts, and data—prehistoric, ethnological, and historical—including documentation and the living memory. Hence, conservation must be truly holistic and is not limited to any one, or a number, of its elements. With this concept in mind, this writer in 1971 made the proposal to the American Revolution Bicentennial Commission as delegate from the Society for American Archaeology that an illustrated booklet be offered to students throughout the nation, with focus upon the high school years, challenging them to recognize the whole gamut of archaeological and historical resources and assume responsibility for conserving these assets. In the booklet, *Above Ground Archaeology*, recently published and made available on a nationwide basis to high school students, the reader is shown how, in lieu of digging archaeological sites except when trained and expertly led, he can discover artifacts of historical significance in home and community. He is shown how to identify inventory and conserve such objects, together with other memorabilia—photographic, written, and oral—so that the evidence of the past may give perspective to the present and future, and introduce him to the basic humanities. (The last a hopeful assist to university departments in a declining youth population.) (31)

Cowan, Wesley (Kentucky), CULTURAL-ECOLOGICAL STUDIES IN THE SOUTHEAST: SOME PERSPECTIVES. Archaeological studies focusing on "cultural ecology" are increasing in popularity in the southeastern United States. These can contribute to our understanding of human behavior. Only the integration of botanical, ecological, and anthropological perspectives can lead to fruitful research. (5)

Cowgill, George L. (Brandeis), ON POPULATION GROWTH AS A NON-EXPLANATION. Population growth as an autonomous "prime mover" in cultural change is questioned. Empirical data and quantitative considerations are cited to show that chronic difficulties in controlling population growth cannot be assumed. Moreover, even when population problems exist, it is drastically oversimple to suppose that they will generally be an effective stimulus for developmental innovations. Development is more apt to be stimulated by more effective economic demand, while stresses due to resource shortages may actually reduce demand. Finally, overreliance on population growth as an autonomous variable encourages neglect of other factors that are highly relevant for understanding developmental episodes. (22)

Crader, Dinah (UCB), ARCHAEOLOGICAL ETHNOGRAPHY: OBSERVATIONS AMONG THE BISA OF THE LUANGWA VALLEY, ZAMBIA, AS AN AID TO ARCHAEOLOGICAL INTERPRETATIONS—A STUDY OF FAUNAL ACCUMULATION PATTERNS IN RELATION TO DIETARY ECONOMY. Contemporary studies of bone accumulations and the processes that form them are part of a general trend among prehistorians toward understanding and interpreting the natural and cultural processes involved in forming the archaeological record. During July and August, 1973, a case study of contemporary bone refuse patterns was undertaken among the Bisa of the Luangwa Valley in Zambia. The Bisa are subsistence cultivators, but due to the presence of the tsetse fly they keep no domesticated animals other than chickens and pigeons. Consequently, they hunt wild game as their major source of meat, leaving bone debris at various butchery and kill sites. During the study the following research activities were conducted: (1) examination and recording of bone scatters—accumulations of bone as a result of human, or carnivore, kills or natural death; (2) butcheries—performed by the Bisa; (3) collection of bones after preparation and consumption of meat; and (4) an experimental project relating to the effect of scavenging on bone removal and dispersal. (20)

Crane, Richard S. (Tulane), EVALUATING ANTHROPOLOGICAL CONCEPTS WITH ARCHAEOLOGICAL DATA: A TEST OF CARNEIRO'S EVOLUTIONARY HYPOTHESIS. General anthropological theory has often been the source of an explanatory framework for the interpretation of archaeological data. Too often, necessity has sharply limited the amount of critical evaluation given to the sociocultural concepts employed. This paper presents the results of an attempt to move in the opposite direction. Using archaeological data from the Tehuacan Valley, the validity of Carneiro's concept of an evolutionary sequence of cultural development is tested, weaknesses in formulation with respect to its potential for archaeological evaluation described, and improvements outlined. Results of this procedure are then used to comment on the nature of archaeological inference. (21)

Cremin, William M. (Southern Illinois), PALEOETHNOBOTANY: IMPLICATIONS FOR CRAB ORCHARD EXPLOITATION OF THE SHAWNEE HILLS, SOUTHERN ILLINOIS. Construction of the Cedar Creek Reservoir 6 miles southwest of Carbondale has afforded SIU Museum archaeologists an opportunity to reexamine previous assumptions relating to the Crab Orchard occupation of the Shawnee Hills, southern Illinois. Sites tested during the conduct of research are contemporaneous with Havana-Hopewell in the lower Illinois Valley. Data presented reflect concern for maximizing the recovery of food plant materials, as yet a poorly understood aspect of the Crab Orchard subsistence-settlement strategy. Certain hypotheses concerning Crab Orchard exploitation of this environment are advanced, and difficulties encountered during each phase of research are discussed. (36)

Croes, Dale R., and Jonathan O. Davis (Washington S), COMPUTER MAPPING OF IDIOSYNCRATIC BASKETRY MANUFACTURE TECHNIQUES IN THE PREHISTORIC OZETTE HOUSE, CAPE ALAVA, WASHINGTON. A huge mudslide encased and preserved a section of the prehistoric Ozette village on the northwest coast of North America. The basketry artifacts in the first completely excavated house have been programmed for computer mapping. The computer draws representational symbols of the basketry types. Any distribution of basketry modes or types can be graphically shown. From this system, several idiosyncratic combinations of specific basketry modes can be easily traced throughout the house area. The results can indicate individual idiosyncracies in basketry manufacturing in this single prehistoric northwest coast household. (18)

Crumley, Carole L. (Carleton), POLEIS, PARADIGMS, PORT-OF-TRADE: THE ROLE OF CENTRAL PLACE THEORY IN HYPOTHESIS FORMATION. This paper reviews the major criticisms levelled against Central Place Theory by geographers and surveys recent archaeological literature in which CPT has been employed. Particular problems related to its use in archaeology are discussed, and examples of its potential as a dynamic rather than a static model are given. Finally, it is suggested that the functions-of-centers approach of the geographers may be favorably employed by archaeologists using multiple overlapping lattices to explain more fully the wide variety of urban patterns observed in early states. (4)



Cunningham, Robert (Arizona), **COULD FIELD RESEARCH ADMINISTRATION BE ECONOMICALLY IMPROVED AND SO AID SCIENTIFIC ACHIEVEMENT?** Scientific—distinct from mere mechanical—results are seen to relate directly to administration that increases the effectiveness of the project director, of funds and other factors. Such administration is seen to require a specialist, often with other duties, on-site integration with the director, and contribution exceeding cost. It is also seen as economically feasible for all but the most limited projects. Yet it is found infrequently used. Causes for its non-use and means for applying it are reviewed. (7)

Dacey, Michael (Northwestern), **POINT PATTERN ANALYSIS AND ARCHAEOLOGICAL SITE PREDICTIONS.** (10)

Dancey, William S. (Ohio S), **A CAYUSE PHASE SEASONAL CAMP IN CENTRAL WASHINGTON.** Excavation of 45-KT-209 in the vicinity of Ellensburg, Washington, has produced evidence of an early 14th century campsite probably utilized in the spring months as a base camp for the collection and processing of edible camas (*Camassia quamash*). (28)

Davis, Jonathan O. (see Croes, Dale E.) (18)

Day, Kent (Royal Ontario Mus), **THE LATE INTERMEDIATE OCCUPATION OF THE LAMBAYEQUE VALLEY.** During 1973, an extensive survey was carried out in the Lambayeque Valley. The initial results of the survey are discussed and emphasis is placed upon the Chimu occupation of the Valley. (12)

De Atley, Suzanne P. (UCLA), **A PRELIMINARY ANALYSIS OF PATTERNS OF RAW MATERIALS USE IN PLAINWARE CERAMICS FROM CHEVELON, ARIZONA.** Diversity in the use of raw materials in ceramic manufacture can be understood in terms of constraints operating on the potter's selection which tend to standardize utilization of resources in terms of primary functional categories and economy of labor. A preliminary petrographic analysis was performed on a sample of plainware sherds from sites in the Chevelon Drainage, Arizona, and physical tests performed to isolate paste types that would correspond to pottery used for the categories of cooking and storage tasks. These types were used to lay the groundwork for understanding the exploitative strategy employed with regard to those resources that are available and those that are technologically equivalent. (42)

De Atley, Suzanne P. (see Ericson, Jonathan E.) (26)

DeBlois, Evan I. (U.S.D.A. Forest Service), **A TEST OF RANDOM SAMPLING IN ARCHAEOLOGICAL SURVEYING.** To test the reliability and validity of random sampling as a field surveying technique, a computer-generated sampling program was applied to data collected during 3 years of intensive archaeological fieldwork in southeastern Utah. The computer program allowed variation in 3 sampling parameters: (1) sampling unit size; (2) sampling intensity; and (3) number of sampling repetitions. The program allowed the testing of various combinations of sampling designs. Those combinations which were the most efficient were then tested against survey data from 4 other areas. Results show that sampling units of medium size (300-700 meters on a side) produced the most reliable results. Sampling intensity verified the square-root relationship between observations and accuracy. (8)

DeBoer, Warren R. (Queens, CUNY), **THE ARCHAEOLOGICAL EVIDENCE FOR MANIOC CULTIVATION: A CAUTIONARY NOTE.** In the humid tropics of the Americas, where preservation of plant materials is unlikely, archaeological evidence for manioc cultivation largely consists of artifacts which are similar to artifacts associated with manioc cultivation in the ethnographic record and which, by analogy, were similarly used in the prehistoric past. The validity of this inference by analogy is examined in terms of ceramic platters and stone grater teeth, 2 of the most commonly cited evidences for manioc cultivation. (27)

Dekin, Albert A. (SUNY, Potsdam), **THE WALRUS AND THE POLISHED BURIN: A POSSIBLE DYNAMIC DUO FROM EASTERN ARCTIC PREHISTORY.** Recent discussions of the paleo-Eskimo occupations of the eastern American Arctic have utilized the concept of a "core area" in which Pre-Dorset flourished and developed into Dorset culture and from which ideas and populations have spread into peripheral areas of the eastern Arctic. As one step towards the development of this concept, this paper explores the coincidence of the range of walrus during the historic period and the utilization of increased numbers of polished burins. The hypothesis that polished burins were invented to increase the efficiency of grooving ivory is presented. (36)

Dennis, Arthur (Arizona Archeological Center), **ANTELOPE HOUSE PROJECT: THE NATURAL VEGETATION.** This ethnobotanically oriented report illustrates that from Anasazi times to the present day, 7 distinct plant associations have been available for human exploitation within the boundaries of Canyon de Chelly National Monument. These groups, in order from greatest to least extent, are: Pinyon-Juniper Continuum; Canyon Bottom Communities; Sagebrushland Communities; Low Shrub-Grassland Communities; Canyon

Rim, Cliffs, and Ledges; Talus Communities; Springs, Seeps, and Other Wet Places. Familiarization with the vegetal subsistence and raw material base of the Antelope House inhabitants is done using photographic slides. Floristic composition, areal distribution, topographic situation, and some specific human usages are considered. (1, 2)

de Pena, Allison Heaps (Pittsburgh), **THE CHIMU OCCUPATION OF QUEBRADA PARINAS AND THE CHIRA RIVER VALLEY.** The Chimu occupation of the Chira Valley and of Quebrada Parinas, represents the first well-defined state level organization in this area of northwest Peru. The settlement-subsistence pattern data from the Secura period, preceding Chimu domination, reflects small village farming units in the interior and fishing villages on the coast. The ceramic and settlement pattern evidence for the emergence of the Chimu state in extreme northwest Peru will be discussed and contrasted with that of the Secura period. (12)

DePuy, C. H., Sandra Quinlivan, and Mary Ann Tomasko Perry (Colorado), **THE IDENTIFICATION OF ANCIENT ORGANIC DYESTUFFS BY MASS SPECTROMETRY.** Mass spectrometric analysis of organic dyestuffs has the potential advantage of extremely small sample size coupled with positive identification from the complex, yet reproducible, fragmentation patterns exhibited by most dyes in the mass spectrometer. Indigo, for example, can be unequivocally identified by placing an extremely small thread directly in the heated probe of the instrument. Mordanted dyes require prior extraction from the fiber. Advantages and limitations to the method will be illustrated with reference to Peruvian and other Pre-Columbian textiles and wall paintings. (32)

Dort, Wakefield, Jr. (Kansas), **ARCHAEO-GEOLOGY OF JAGUAR CAVE, UPPER BIRCH CREEK VALLEY, IDAHO.** Recently revised theories, applicable to other sites as well, indicate this cave was formed by frost fracturing (not solution) of limestone and concurrent gravitational removal of resulting angular detritus. Portal blockage by a rising level of external debris caused internal material to accumulate and ultimately fill the cavity. The oldest hearth is dated at  $11,580 \pm 250$  years; the cave floor is not much older. Layers of Glacier Peak and Mazama ash provide reliable time lines and delineate stages of the rising fill surface. The cave was self-sealed shortly after 3900 B.P. Remains of 6 extinct mammals occur with this temporal framework. (28)

Druss, Mark (York, CUNY), **CHIUCHIU COMPLEX PHASE SEQUENCE.** An 18 phase sequence, based on 8 radiocarbon dates, 21 stratified components, and a 43 feature occurrence seriation, is presented for the Preceramic Chiuchiu Complex, ca. 2700-1600 B.C., northern Chile. Elements of the seriation include projectile point and boring tool attributes, the latter being sensitive indicators of temporal change. Attributes rather than types were used to avoid the inherent theoretical problems of typing and to maximize the information potential of the collections. The sequence attempts micro-chronological control for the 70 components of the complex. This order of precision is deemed necessary for studies of the settlement and subsistence systems of hunter-gatherers. (30)

Duffield, Lathel F. (Kentucky), **CALORIC VALUE: AN AID IN RECONSTRUCTING PREHISTORIC DIETS.** The procedure of calculating the pounds of meat per species has become standard for estimating the relative food values of various vertebrates in prehistoric societies. It is suggested that caloric values of various animals may be more meaningful in examining prehistoric diets. (36)

Dwyer, Edward B. (see Dwyer, Jane Powell) (16)

Dwyer, Jane Powell (Brown), and Edward B. Dwyer (Rhode Island), **THE DEVELOPMENT OF THEMES IN THE EARLY INTERMEDIATE PERIOD ART OF SOUTH COASTAL PERU.** The study of a carefully controlled sample of decorated materials dating from the Early Horizon epoch 10 through Early Intermediate period epoch 2 suggests that there was a shift in iconic emphasis from an interest in depicting mythical themes to concern with the natural world and scenes of a more secular nature. It is argued that this is an artistic manifestation of important cultural changes which can be seen to be taking place in south coastal culture. The archaeological record is examined to determine the degree of correlation between the iconographic systems and the developing social, political, and religious patterns of the Early Intermediate period. (16)

Dyreson, Del (Florida S), **BOUNDARY AND SPATIAL ASSOCIATION ANALYSIS WITH PELTO'S D-FUNCTION AND RELATIVE ENTROPY.** Some sturdy techniques for analyzing site survey data are examined. The techniques are sturdy in the sense that they do not require "nice" statistical distributions of variables. This type of analysis is aimed at detecting spatial associations in multi-component systems. The analytical results make possible the mapping of associations and the detection of boundaries. (25)

Earle, Timothy K. (UCLA), **INTERSOCIETAL EXCHANGE DURING THE EARLY INTERMEDIATE PERIOD ON THE CENTRAL COAST OF PERU.** Exchange systems articulate the local organization of a specific population with the regional interaction of several populations. Therefore, exchange is critical for studies of both local and regional problems of adaptation. During the Early Intermediate period, the 3 state societies of Moche, Lima, and Nazca dominated the coastal areas of Peru. Previous research has analyzed

these societies without reference to their interactions with contemporaneous, non-state society that occupied peripheral valley sections; but it is felt that analysis of such interactions is necessary to explain the development of state organization. Various models of intersocietal exchange between state and non-state societies will be proposed and evaluated for Lurin Valley populations. Specific models include: linear exchange, middlemen exchange, and peripheral markets. (15)

Ebert, James I. (see Lyons, Thomas R. [8]; Hitchcock, Robert K. [8]; and Taylor, Richard L. [21])

Eddy, Frank W. (Colorado), A SETTLEMENT MODEL FOR RECONSTRUCTING PREHISTORIC SOCIAL ORGANIZATION AT CHIMNEY ROCK MESA, SOUTHERN COLORADO. Interpersonal relations at prehistoric Chimney Rock Mesa were solved by group affiliation in terms of kinship, economic, ritual, locality, and cultural considerations. The social groups derived from these forms of integration have been "read out" of the patterns of settlement organization according to a model proposed by Trigger with analytical procedure suggested by Clarke. (13)

Ericson, Jonathon E., and Suzanne P. De Atley (UCLA), TIJUANA B.C. REVISITED: MORPHOLOGY AND CAPACITY OF VESSELS. A set of modern Tijuana vessels has been used to test some problems involved in the reconstruction of the morphology and capacity of vessels in ceramic assemblages. The technique employs the Ericson and Stickel morphological criteria to partition and reconstruct the modern assemblage. The results of these experiments are presented. (26)

Fiero, Donald C. (Mus of Northern Arizona), PREHISTORIC RESOURCE UTILIZATION PATTERNS ON A TRANSECT FROM GLEN CANYON TO THE SALT RIVER VALLEY. From 1970 to 1973, the Museum of Northern Arizona conducted site surveys and excavations along a power line project having a 330-foot wide right-of-way, extending 256 miles from Page to Phoenix, Arizona. This transect crosses the 4 major environmental zones in Arizona—plateau, mountain, transition, and desert—and portions of 6 prehistoric culture areas. A total of 88 sites was recorded, of which 24 were tested or excavated. Differential patterning in settlement locations, architecture, and functionally related artifact assemblages is apparent between the culture areas. Temporal-spatial similarities between these variables are also present. Among the important researches conducted during the project was the investigation of a previously unknown archaeological area, Perry Mesa, in central Arizona. (42)

Figueredo, Alfredo E. (Virgin Islands Mus), THE ARCHAIC PERIOD OF ST. THOMAS, VIRGIN ISLANDS: NEW EVIDENCE AND INTERPRETATIONS. Activities of the Virgin Islands Museum have added 3 Archaic sites to the 4 already known. Excavations at 1 of these and at Krum Bay have revealed new evidence that will relate more intimately the St. Thomian Archaic culture(s) to similar ones in Venezuela and the Greater Antilles. The degree of environmental efficiency found at the <sup>14</sup>C-dated Krum Bay complex argues for at least an earlier, less specialized phase. (41)

Figueredo, Alfredo E. (see Bradstreet, Theodora E.) (41)

Findlow, Fran J. (UCLA), FURTHER INVESTIGATIONS OF PREHISTORIC TECHNOLOGICAL SPECIALIZATION: THE ECOLOGY OF CERAMIC CONSTRUCTIONAL CHANGE: CHEVELON, ARIZONA. Investigations were undertaken in order to determine the relative importance of a series of demographic and environmental variables on the development of specialized manufacturing techniques in the construction of prehistoric ceramics. Ceramic materials from the Chevelon Drainage, together with ceramic samples from adjacent areas in northeastern Arizona, served as the test universe for these investigations. (42)

Fitting, James E. (State Archaeologist, Michigan History Div), ECONOMIC THEORY AND LATE PERIOD TRADE IN THE UPPER GREAT LAKES REGION. There had been a long history of inter-regional and inter-group trade in the Upper Great Lakes prior to the introduction of European trade goods in the 17th century. It is most likely that the formal mechanisms of trade in the late Prehistoric period were similar to those of the Early Historic period and there may have been a continuation of existing trade relationships even with the large scale dislocation of population which took place at that time. The generation of new wealth, through the European trade, led to greater cultural distortion than took place during the late Prehistoric period. Archaeological sites in the Mackinac region, both Late Prehistoric and Early Historic, can be compared in terms of economic base, trade involvement, surpluses, and surplus utilization to demonstrate the cultural distortion caused by an increase in both real and conceived wealth. This model of 17th century culture change may be applicable to the trade networks of the Late Archaic and Middle Woodland periods. The European trade model does not differ significantly from those of the prehistoric period until the 18th and early 19th centuries when the effects of the industrial revolution forced the indigenous population into operating through European, rather than traditional, exchange networks. (19)

Fitzhugh, William (Smithsonian), THE BRADOR TUMULI: EARLY BURIAL MOUNDS ON THE STRAITS OF BELLE ISLE, QUEBEC. Recent research by Rene Levesque has resulted in the discovery and excavation of 2 tumuli of stratified sand and rock construction. A slab-lined burial chamber containing a deposit of ocher and ground and chipped stone tools was found at the base of 1 mound. Associated unidentifiable bone remains and charcoal produced radiocarbon ages of ca. 3200-3400 B.P., suggesting earlier use of sub-mound tumulus burial than known elsewhere in eastern North America. (29)

Foss, John R. (Maryland), PEDOLOGICAL INVESTIGATIONS ALONG THE SOUTH FORK OF THE SHENANDOAH. Soil analysis of the Thunderbird and associated archaeological sites have provided considerable insight into soil forming processes, rates of colluviation and alluviation, the conditions under which soils form and the rates of soil formation. This knowledge has helped immeasurably in chronological and paleoecological assessments of archaeological sites. (24)

Fowler, Melvin L. (Wisconsin, Milwaukee), CHUNKEY STONES, SHEET COPPER, AND OTHER EXOTIC ARTIFACTS FROM MOUNDS. Included in the exotic burial goods of Mound 72 were chunky stones, rolled sheet copper, shell beads, and raw mica. These artifacts are analyzed in terms of their form and location within the burial groups. The chunky stones indicate that they were used before burial. The relationship of chunky stones to burials is discussed. (11)

Fowler, Melvin L. (Wisconsin, Milwaukee), INTERPRETATION OF BURIAL DATA, STRATIGRAPHY, AND ARTIFACTS FROM MOUND 72. The physical data show a definite sequence of events in the construction of Mound 72. The positioning of the individuals within the mound suggests a stratification of the persons included in this burial complex. It is suggested that the sequence of events and the positioning of the burials indicate a special treatment for 1 or 2 individuals and at the time of their death, the inclusion of other segments of the society in the burial mound. This is followed by specific burial ceremonies to commemorate the social status these highly placed individuals had. The types of burial goods accompanying the burial inclusions suggest economic relationships over much of the Midwestern United States. (11)

Freddolino, Marie K. (Kenyon), AN ARCHAEOLOGICAL INVESTIGATION OF THE RELACION DE MICHOCACAN. The main purpose of this study was to evaluate the Relacion de Michoacan as an ethnohistorical source. Using the definition of and the criteria for migration as given by Haurly and Rouse, the account of the Tarascans' arrival in Michoacan at Zacapu was tested for archaeological evidence in support of such migration and/or invasion. Since archaeological investigation showed no evidence to support the Relacion's account, alternative explanations were sought. Migration by a lineage or clan group is suggested as the most likely alternative. It is further suggested that the Relacion be viewed as a lineage history whose major purpose was to validate the claim to power of the pre-Conquest Tarascan ruling lineage. (27)

Friedrich, Margaret E. (Loyola), THE BOUNDARY BETWEEN MOTOR HABITS AND THE COGNITIVE STRUCTURE: INSTANCES IN DELIBERATE CHANGES IN PAINTING TECHNIQUE. This paper seeks to assess the roles played by motor habit and conscious manipulation of style in Tarascan (Michoacan, Mexico) pottery painting. The complex of tools, materials, and techniques for their use is described. Variation in the design system is analyzed at the levels of design element and brush stroke. Both familial and personal patterning are examined. Instances in which a painter deliberately manipulated the manner in which he rendered design elements are given. A mechanism for conscious variation of style below the level of design element is described. (17)

Frison, George (Wyoming), THE ANIMAL POPULATION STUDY AND ITS USE IN CULTURAL INFERENCE ON THE PLAINS. Communal kills of various animals provide the greatest archaeological visibility of all sites on the high plains. We can assume these to be catastrophic events that give a reliable representation of the animal population at the moment of death. Analysis of these animal remains can give the time of year of the kill and the structure of the animal population. This in turn can tell much of the cultural activities of the human population involved. (40)

Fry, Gary, and H. J. Hall (Youngstone S), HUMAN COPROLITES FROM ANTELOPE HOUSE: PRELIMINARY ANALYSIS. Preliminary analysis of the human coprolites from Antelope House indicates that corn and squash were the primary domestic foods. These resources were greatly supplemented by a wide variety of wild plant foods, apparently indicative of adaptation to a broad spectrum pattern of resource utilization. Meat consumption is inferred from the presence of bone, hair, and feathers in the coprolites. Parasite analysis has demonstrated the presence of the ubiquitous, but exclusively human, pinworm (*Enterobius vermicularis*); as well as possible infestation by other parasitic nematodes (*Ascaris* and *Acanthocephala*). In addition free living rhabditoid nematodes and mites have been identified in the samples. (1, 2)

Fuentes, C. (see Clark, G. A.) (8)

Fuller, John W. (Washington), DEVELOPMENTAL CHANGE IN PREHISTORIC COMMUNITY PATTERNS: EVIDENCE FROM WEST VIRGINIA. Two seasons of intensive systematic survey and controlled surface collection in the northern Panhandle of West Virginia have been designed to determine the developmental sequence of Late Prehistoric communities in the area. Earlier work in the area indicated the existence of 2 temporally related community forms—very small hamlet communities and much larger, denser town communities. During the recent fieldwork evidence was recovered that would indicate that nucleated towns develop by the relatively sudden conglomeration of several hamlets, rather than by the growth of individual hamlets. Several new hypotheses regarding the development of the area settlement pattern will be discussed. (29)

Fuller, Steven L. (Mus of Northern Arizona), INVESTIGATIONS NEAR GANADO, NORTHEASTERN ARIZONA: A TEST CASE FOR CONTRACT ARCHAEOLOGY. In 1973 and 1974, the Museum of Northern Arizona conducted archaeological survey and excavations in the vicinity of Ganado, Arizona, under a contract with the Bureau of Indian Affairs and the National Park Service. A total of 13 sites was tested or excavated representing a temporal span from Basketmaker II to Historic Navajo. A sampling survey, utilizing a multi-stage framework of both transects and quadrats, was then conducted in the surrounding Pueblo Colorado Valley in order to provide complementary data for more fully understanding the temporal shifts in cultural relationships and environmental adaptations. (31)

Gardner, William M. (Catholic), THE THUNDERBIRD ARCHAEOLOGICAL PARK AND MUSEUM: ITS CONCEPTION, AIMS, AND PURPOSES AND THE ROLE OF COMMERCIAL ENTERPRISE IN THE MIDDLE SHENANDOAH VALLEY RESEARCH PROGRAM. The Thunderbird Archaeological Park and Museum represents a combined scientific, educational, and commercial enterprise. Through a combination of indoor and outdoor displays with tours of archaeological excavations in progress, tourists, for a fee, will be able to see the results of the research program. Although a profit is anticipated for the developer, a considerable portion of the revenue will be used to support the scientific investigations and the training of students. (24)

Garfinkel, Alan P. (CSU, Northridge), THE VALUE OF FRAGMENTARY FAUNAL REMAINS: AN EXAMPLE FROM THE CROWDER CANYON ARCHAEOLOGICAL RESEARCH PROJECT. A method is outlined that can assist the archaeologist in analyzing fragmentary faunal remains. The assumption is that differences in the widths of fragments of the long bone elements of small and large mammals vary and may be placed into a dichotomous system of classification. This method is illustrated using the faunal data recovered from archaeological sites in the Crowder Canyon Area, San Bernardino County, California. (40)

Garfinkel, Alan P. (see Binning, Jeanne D.) (26)

Garrison, Ervan, Charles R. McGimsey III, and Otto Zinke (Arkansas Archeological Survey), ALPHA TRACKS: A POTENTIAL DATING TECHNIQUE FOR ARCHAEOLOGY. Alpha tracks appear in mica which occurs naturally or intentionally in pottery or other fired clays. The tracks are annealed during firing and then form at a statistically standard rate related to the uranium and thorium present in the mica. Tests by the Arkansas Archeological Survey on pottery from Snaketown and elsewhere indicate that counting these tracks provides a potential method for determining the time elapsed since the clay was fired. (26)

Gilmore, Kathleen (Texas, Austin), CADDOAN INTERACTION IN THE NECHES VALLEY, TEXAS. The trend from nuclear centers to dispersed villages of the Caddoan settlement pattern in the Neches Valley, Texas, is investigated by testing ceramics from 8 sites. Intra-site variability coefficients for 2 behavioral dimensions were obtained for each site. Test results, including ethnohistorical and archaeological data, indicate that variability in consciously executed attributes is likely to reflect the influence of trade, whereas the variability in unconsciously executed attributes is more likely to reflect the movement of potters. Two sites are proposed as probably having interacted with a nuclear site (the George C. Davis site). Interaction seems to have been more closely associated with exchange in goods or services than in wife exchange. (17)

Goldfried, Howard P. (CSU, Sacramento), THE CRITERIA OF CIVILIZATION AND OPERATIONAL EQUIVALENTS. Attempts to define civilization have argued as to the validity of writing as a criterion without considering either the function of writing or the possibility of operational equivalents to writing. Peru and Dahomey are used as examples of such operational equivalents. The possibility that the Mochica possessed such an operational equivalent is suggested. (30)

Graham, Susan B. (Arizona), "ART" AND ARCHAEOLOGY: AN ANTHROPOLOGICAL APPROACH. This paper argues the necessity of considering the functional consequences of "art" objects and artifacts for the people who produced them. Using materials from the Olmec, lowland Maya, and "Southern Cult," it attempts to relate symbols and their embodiments in artifacts to different cultural settings in which they are found. It argues that these objects were the material expressions of revitalization processes occurring as reactions to different stress situations, and further that these processes were an integral part of shifts in levels of sociocultural organization. (13)

Granger, Joseph (Louisville), CACHE BLADES, CHERT, AND COMMUNICATION IN THE EARLY WOODLAND PERIOD OF NEW YORK STATE. Recent studies of several habitation sites of Meadowood phase have disclosed that manufacture of chert tools, some of a distinctive type known as cache blades, is an important activity. This activity is represented by all stages of production from raw material to finished products. The production sequence is discussed along with the nature and location of high-grade Onondaga Chert sources from which the material of cache blade manufacture is derived. Exploitation of these chert sources as an integral part of the Meadowood procurement system is analyzed. The discovery of caches of large numbers of these blades in burial sites of the Meadowood phase is then examined together with the distribution of these items in New York, Pennsylvania, New England, and Canada. It is suggested that cache blades were a major article in a trade network operating along Late Archaic trade routes; that burial inclusions of these items may represent disposal of surpluses from this trade cycle in ways that reinforce the social system and that export of Onondaga Chert, in the form of cache blades, was an example of the communication network that brought new ideas and goods into the central and western portions of New York State during the Early Woodland period. (19)

Graybill, Donald A. (Georgia), MEASUREMENT OF THE AMOUNT AND RATE OF SITE DESTRUCTION IN SOUTHWESTERN NEW MEXICO. Current professional literature decries the spoilage of archaeological resources and current popular literature reports qualitative accounts of site or artifact destruction, yet few accurate data bases are available that provide useful information regarding both rates and amounts of destruction. Recent (1968-1973) and complete (100%) survey of about 60 square kilometers in the Mimbres Region, New Mexico, provided continuing observation and measurement of nearly 200 pueblo structures. From these data, the amount and rate of purposeful vandalism can be considered in detail. Modest predictions of future destruction can be made. (42)

Grayson, Donald K. (Kirkland C), THE RIVERHAVEN NO. 2 VERTEBRATE FAUNA: COMMENTS ON METHODS IN FAUNAL ANALYSIS AND ON ASPECTS OF THE SUBSISTENCE POTENTIAL OF PREHISTORIC NEW YORK. Riverhaven No. 2, an Early Woodland site on Grand Island in western New York, provided a sample of approximately 3000 identified animal bones and bone fragments obtained by 2 different excavation strategies. The comparability of the minimum numbers of individuals from these 2 strategies is discussed, as is the general problem of sample size in archaeological vertebrate faunal studies. A comparative attribute analysis of all identified New York archaeofaunas of sufficient size allows statements concerning food mammals favored by the prehistoric occupants of New York State during a 5000-year period of time, and comments concerning the subsistence productivity of New York's deciduous forests regarding these preferred taxa are made. (40)

Greninger, Paul (Eisenhower), HOHOKAM CULTURAL DEVELOPMENT: EXPANSION AND ADJUSTMENT IN THE SANTA CRUZ VALLEY, ARIZONA. The problem of the Hohokam occupation and utilization of the tributary drainages of the Gila and Salt Rivers has not received systematic treatment since Schroeder's (1966) synthesis. The aim of the present paper is to provide a systems model of Hohokam cultural development during the Colonial, Sedentary, and Classic periods. Hohokam occupation of tributary streams is treated as a product of indigenous population expansion, and, utilization of the tributaries as a process of adjustment to changing features of the environment, both natural and cultural. The basic processes of development are described in terms of positive and negative feedback. The model was first developed in conjunction with research into Hohokam cultural development in the middle Santa Cruz Valley between 1968-1970. Since then some preliminary tests of 2 different aspects of the model have produced both positive and negative results. (42)

Green, Stanton (see Paynter, Robert) (25)

Greengo, Robert E. (Washington), PREHISTORIC ARCHITECTURE IN NORTHEASTERN GUERRERO. Most sites recorded thus far in the region of the upper Rio Tepeacoaculco have architectural remains that tend to be primarily located on low hills and uplands. Construction was largely of unhewn stone, both dry laid and with adobe mortar. Dressed stone included squared blocks, cylindrical columns, and rather unique conical pieces. Painted lime plaster is evident in some floors and walls. Relationships of units within and between sites is discussed in terms of density and site plan as they vary through time. Although the Mesoamerican structure-plaza arrangement is well represented, rectangular, pyramidal substructures are infrequent and may have been quite late in the region. (27)

Grønnes-Ravitz, Ronald A. (VMI), THE QUINTESSENTIAL ROLE OF OLMEC IN THE CENTRAL HIGHLANDS OF MEXICO: A REFUTATION. The ceramic assemblage that characterizes the enigmatic Tlatilco burials is duplicated in the stratigraphy of the El Terror Phase at Iglesia Vieja, Morelos, where 2 components have been isolated and defined. The earlier of the 2 is found to be regional, pre-eminent, and pre-Olmec, rather than Olmec inspired as previously thought. Radiocarbon dates from charcoal associated with Olmec figurines and vessels are as early as those from the Olmec heartland. (6)

Gross, James I. (see Bayer, William P.) (24)

Grossman, Joel W. (Brooklyn, CUNY), EARLY INTERMEDIATE PERIOD SETTLEMENTS AND THE IMPACT OF HUARI IN THE SOUTH-CENTRAL HIGHLANDS OF ANDAHUAYLAS, APURIMAC, PERU. From 1969 to 1971 a combined program of site survey and excavation in the province of Andahuaylas revealed a long sequence of Pre-Inca ceramic cultures. Although radiocarbon determinations are not available for the latter part of the sequence, based on stratigraphic and stylistic evidence an argument is made that the Qasawirka style represents the Early Intermediate period occupation in the area and that this style persisted in time up until, and possibly after, the advent of Huari influence in Middle Horizon 18. The Qasawirka people developed a local indigenous fancy pottery style. Although some Huari influence is evident toward the end, it appears that the Qasawirka style may have continued as a prestige ware into the Middle Horizon. Although the evidence is inconclusive, some tentative speculations are warranted concerning the nature and impact of Huari influence in the region. (16)

Gumerman, George J. (Southern Illinois), THE CENTRAL ARIZONA ECOTONE PROJECT. This paper provides a history and an introduction to the basic techniques and goals of the Central Arizona Ecotone Project which forms the base of this symposium. Participants in this interdisciplinary project are working with the broadly stated hypothesis that environmental transition zones are characterized by increased diversity and variety of plant and animal species and that in these situations human behavioral systems also have increased diversity and variety. These areas of cultural diversity are usually characterized by archaeologists as cultural boundaries. The study area is transitional between the Hohokam and prehistoric Pueblo-like groups and between the low and high deserts of central Arizona. (37)

Gunn, Joel (Pittsburgh), INDIVIDUAL STYLE VARIABILITY IN BIFACIAL CHIPPING. Individual style variability in bifacial stone chipping could be helpful in delineating economic and social practices in prehistoric societies. In this paper several sources of style variability are isolated and a tentative model suggested to explain individual variability. Scar pattern orientation is tested for ability to discriminate between modern stone knappers. Laser diffraction is used to convert the scar patterns into numerical data. Principal components and discriminant function models are developed and tested for applicability. The results indicate that scar patterns can contribute to the identification of individual knappers. (18)

Hall, Dolores A. (Catholic), THE PREHISTORIC SITE SURVEY PROGRAM IN THE MIDDLE SHENANDOAH VALLEY. The methods and techniques of site location surveys, controlled surface collection, and a discussion of the prehistoric settlement system are outlined. (24)

Hall, H. I. (see Fry, Gary) (1, 2)

Hall, Robert L. (Arizona Archeological Center), CULTIVARS FROM ANTELOPE HOUSE. A review of the evolutionary, racial, utilitarian, and morphological aspects of maize of archaeological and ethnobotanical interest is presented. Data collected from Antelope House are examined and discussed on these bases. A brief summary of the beans, cotton, and cucurbits from this site is included. (1, 2)

Hammond, Norman (Cambridge), ARCHAEOLOGICAL INVESTIGATIONS IN NORTHERN BELIZE, 1974. A brief report is given on the 1974 field season of the British Museum/Cambridge University Corozal Project. Following an area survey and establishment of a regional ceramic sequence in 1973, work has been concentrated at the major ceremonial center of Nohmul; the paper describes the results of excavations there. (27)

Han, Mark C. (see Carriveau, Gary W.) (32)

Handsman, Russell (see McNett, Charles) (31)

Hanson, Deborah J. (see Johnson, L. Lewis) (26)

Hanson, Douglas (Mus of Northern Arizona), NUTRITION AND DISEASE IN A BIOLOGICAL AND CULTURAL TRANSITION ZONE. A disease model using nutritional anemia and the ecological concept of ecotone as parameters is devised for the Southwest. Although specifically applicable to the central Arizona ecotone, the model encompasses the major environmental zones and culture areas of the prehistoric Southwest. Iron deficiency anemia and protein malnutrition as it is manifested in human skeletal material will be discussed in terms of the environmental and sociocultural variables affecting the nutritional complexes of prehistoric populations. Nutrition and the implications for the occurrence of infectious disease is considered in relation to the exploitative potential of the ecotone and the adaptive strategies used. (37)

Hanson, John A. (Mus of Northern Arizona), and Steven C. Sessions (Arizona State Mus), THE ROLE OF CULTURAL DIVERSITY IN THE EXPLOITATION OF THE CENTRAL ARIZONA ECOTONE. This paper focuses on the prehistoric exploitation of a transition zone marked by a physiographic and biological heterogeneity expressing ecological diversity. This ecotonal area appears to have been exploited by 2 distinct cultural systems, their

uniqueness, in part, being due to different exploitative systems. We propose that: (1) where 2 cultural systems are in direct competition for land characterized by ecological diversity, that system possessing the less specialized exploitative strategy will be best equipped to utilize the resources of that ecological zone; (2) an early northern movement represents the expansion of a specialized economic system based on irrigation agriculture; and (3) the later southern and western movement into the area are representative of a diverse exploitative system that provided greater numbers of options for mitigating the effects of environmental fluctuations on subsistence. (37)

Harbottle, Garman, and Edward V. Sayre (Brookhaven Natl Lab), SCOPE AND ANALYTICAL PROCEDURES OF THE BROOKHAVEN PROGRAM OF NEUTRON ACTIVATION ANALYSIS OF MESOAMERICAN FINE PASTE POTTERY. Clays from possible Mesoamerican ceramic source areas and ceramic samples drilled from sherds of archaeological interest have been analyzed by the technique of neutron activation followed by gamma counting on Ge-Li detectors. Combinations of short and long neutron bombardments permit the determination of about 20 elements. We have also utilized x-ray fluorescence measurements to estimate 3 additional elements—nickel, calcium, and titanium—in sherd and clay materials. (32)

Harbottle, Garman, and Edward V. Sayre (Brookhaven Natl Lab), and Phil C. Weigand (SUNY, Stony Brook), THE TURQUOISE ACTIVATION PROJECT: PROGRESS IN DATA HANDLING TECHNIQUES. The problems of dealing with large artifact and source sample populations have required the development of refined data handling techniques. In order to cluster artifacts on the basis of their chemical profiles, computer programs in numerical taxonomy are being employed. Examples of turquoise artifact and source clusterings will be presented. (41)

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

Hare, P. E. (see von Endt, D. W.) (20)

Harlan, Annita S. (Arizona Archeological Center), THE WILD PLANT REMAINS. Wild plant utilization by the Antelope House inhabitants is discussed 3 ways: (1) The behavioral chain. From ethnographic and other data, a model is created that delineates the physical evidences pointing back to usages of a given plant species. The archaeological evidence for various Yucca usages is explored within this frame. (2) The seasonal availability chart. Each species has its harvest time for a given usage. The total array available in the spring is detailed. (3) The plant community store. For one plant zone, the Canyon Talus, the useful plant materials are inventoried. (1, 2)

Harlan, Mark E. (Arizona), EARLY AND MIDDLE FORMATIVE FIGURINES FROM THE SITE OF CHALCATZINGO, MORELOS, MEXICO. The results of an attribute based analysis of more than 3500 Early and Middle Formative figurines from Chalcatzingo are presented. The range of variability in the collection is indicated and the methodology of the computer assisted analysis is presented. The attribute based analysis is related to the traditional figurine typology from the Basin of Mexico and the relative utility of the 2 types of analyses for solving various kinds of archaeological problems is assessed. (27)

Harlan, Mark E. (see Manire, Larry) (1, 2)

Harrison, Deborah W. (Thunderbird Archeological Park and Museum), BEYOND PALEO-INDIAN: CHRONOLOGY AND PATTERNING IN THE ARCHAIC. The Paleo-Indian to Early Archaic continuum from the Flint Run area does not provide the framework for post 7000 B.P. developments in the Middle Shenandoah; however, analysis of private collections and strata cuts in selected sites are providing the beginnings of a chronology of the Middle Shenandoah during the Middle and Late Archaic. This important period is at present little known in this area, but the recent series of investigations has provided considerable insight into cultural patterning and process during and following the establishment of the Eastern Deciduous forest. (24)

Healy, Paul F. (Harvard), THE CUYAMEL CAVES: PRECLASSIC SITES IN NORTHEAST HONDURAS. The southern border of Mesoamerica is traditionally drawn at the Ulua River of western Honduras before dipping southward to northwest Costa Rica. Recent work in the Department of Colon, northeast Honduras, provides the earliest evidence of aboriginal occupation in the region and extends the established chronological sequence back 1000 years or more. An examination of the ceramics, and a comparison to other Preclassic sites indicates that eastern Honduras, despite its later affiliation with Lower Central American cultural patterns, was probably participating in the cultural developments and long-distance trade network of Formative period (ca. 1000 B.C.) of Mesoamerica. It is suggested that the cultural frontier of Mesoamerica in the southeast be extended eastward for the Preclassic time horizon. (6)

Heilman, James M. (Dayton Mus of Nat His), and Louise Robbins (Mississippi S), INCINERATOR SITE (33 My 57), A POSSIBLE FORT ANCIENT FRONTIER SITE. Incinerator Site, an Anderson Focus-Fort Ancient site, is located on the flood plain of the Great Miami River in Dayton, Ohio. Excavation within the circular stockade has revealed apparent rigid

patterning of concentric rings of houses, trash pits, and burials about a central plaza that appears to have contained some type of structure yet to be identified. The distribution of the pottery types and burial styles indicate that each household controlled the use of the area in front of their houses. The range of the ceramics from the site and the physical variation within what appear to be family grave plots suggest that this was a cultural frontier site. (29)

Hellmuth, Nicholas M., **PETEN YTZA MAYA AGRICULTURE AND DEMOGRAPHY, A.D. 1667**. Previously unpublished manuscripts in the Archivo General de Indias, Spain, provide fascinating detail about the subsistence of the 17th century Peten Maya. Zapote and cacao and other tree crops (but no ramon), potatoes and other root crops, maize, and a dozen lesser plant foods coupled with fish, shellfish, wild deer, and wild and domestic turkeys, provided a relatively balanced diet. Also, the Spanish friars mention the population figures for houses and villages. Other vivid descriptions of the land and its resources allow a reconstruction of political geography and land use. More than 4000 pages of manuscripts have been culled for the information to be reported in this presentation. This ethnohistorical information will contribute to our understanding of the Classic Maya of the same central Peten region. (27)

Hemmings, E. Thomas (Florida State Mus), **CADES POND SUBSISTENCE, SETTLEMENT, AND CEREMONIALISM**. The Cades Pond archaeological period and culture in north central Florida was defined by Goggin 25 years ago. It was seen as a dim reflection of more complex cultures of the St. Johns Valley (St. Johns IB) and Gulf Coast (Weeden Island I) by Goggin and his successors. Subsequent excavations and analyses by the Florida State Museum and the University of Florida, especially those at the Melton Village Site and Melton Mounds near Gainesville, provide excellent initial data for Cades Pond subsistence, settlement, and ceremonialism. The extent to which Cades Pond peoples were stimulated by or shared in economic and ceremonial aspects of the St. Johns and Weeden Island traditions remains to be shown. Tabulating ceramic type frequencies contributes little to the solution of this problem. In the light of new evidence, Cades Pond is a significant developmental stage in the Formative sequence of central Florida. (34)

Hester, Thomas R. (Texas, San Antonio), **ANALYSIS OF OBSIDIAN ARTIFACTS FROM BELEH (CHINAUTLA VIEJO) CENTRAL GUATEMALA**. This paper reports the results of intensive analysis of a large collection of obsidian artifacts excavated by Pennsylvania State University at the protohistoric site of Beleh ("Chinautla Viejo"), central Guatemala. Major aspects of the research include: technological studies of the core-blade process; microscopic wear pattern analysis of obsidian tools; tool utilization and breakage patterns; and a consideration of the temporal and spatial distributions of the obsidian materials. Special attention is given to the horizontal patterning of obsidian artifacts, particularly the recognition of workshops and specific activity areas. (26)

Hill, Frederick C. (Louisville), **EXPLOITATION OF ANIMAL RESOURCES BY INHABITANTS OF THE KOSTER SITE**. More than 130 species of animals represented by hundreds of thousands of skeletal remains have allowed us to make qualitative and quantitative distinctions among several of the cultural horizons at the Koster Site in west central Illinois. Comparison of species-utilized, habitats exploited, seasons of occupation, trace element analysis of mussel shells, studies of growth rates of various animal species, and morphological differences of certain species with respect to time are among the many faunal analysis techniques that are being used to study the differences and similarities of occupation of the Koster Site over its nearly 7000 years of habitation. (29)

Hill, James N. (UCLA), **INDIVIDUAL VARIABILITY IN CERAMICS, AND THE STUDY OF PREHISTORIC SOCIAL ORGANIZATION**. Controlled experiments on a collection of contemporary Mexican pottery demonstrate that the works of individual artisans can be distinguished on the basis of minute quantitative differences in the ways in which individuals paint their pots. Both cluster and discriminant analyses were employed in developing a successful set of techniques for isolating this individual and unconscious motor-habit variability. The techniques have also been applied to handwriting samples with equal success—and to a sample of prehistoric pottery from a site in the American Southwest. The relevance of this research to studying aspects of prehistoric social organization is discussed, together with difficulties yet to be surmounted. (17)

Hirth, Kenneth Gale (Wisconsin, Milwaukee), **A SYSTEM THAT WAS OLMEC: A PRELIMINARY REPORT ON REGIONAL SETTLEMENT AROUND CHALCATZINGO IN THE EASTERN VALLEY OF MORELOS, MEXICO**. The nature of the "Olmec presence" at Chalcatzingo, Morelos is represented by La Venta style elements blended throughout a local Middle Formative cultural system. Results of a settlement survey conducted throughout the Rio Amatsinac valley reveal a settlement and organizational system of greater size and complexity than previously reported for any other contemporaneous part of the Mexican highlands. The lack of any regional development of similar complexity until influence from Teotihuacan during the Middle Classic suggest a regional dependence upon some sort of supra-regional interaction. An analysis of the structural nature of this system is attempted along with reasons for its post-Olmec oblivion. (27)

Hitchcock, Robert K., James I. Ebert (New Mexico), and Thomas R. Lyons (Chaco Center, Natl Park Service), **THE ROLE OF REMOTE SENSING IN A REGIONAL ARCHAEOLOGICAL RESEARCH**. Recent archaeological investigations carried out with the use of aerial imagery by the Chaco Center, National Park Service, suggest some facets of the utility of remote sensing techniques in archaeological survey. The case in point is an ongoing survey of prehistoric facilitative systems at Chaco Canyon, New Mexico; this effort has included an examination on a regional scale of roadway systems, irrigation, and architecture associated with the Anasazi florescence of A.D. 1000-1150. It can be argued that the frame appropriate to many productive archaeological questions in the region; large areas and complex relationships can only be approached, however, through the employment of a stringently followed research design, data-to-problem feedback, and a sampling regime specific to questions asked. Remote sensing techniques, including the use of various types of imagery, microtopographic mapping, and electronic image manipulation, cannot only be of use to archaeologists in such pursuits, but can result in increased economies over tedious traditional methods as well. (8)

Hoffman, Charles A., Jr. (Northern Arizona), and H. K. Brooks (Florida), **THE GUEST MAMMOTH SITE IN NORTH FLORIDA**. This paper concerns extension of evidence of the association of man and extinct megafauna into the southeastern United States as the result of excavations at a site in the Silver River of north Florida. The nature of the evidence is presented: recovery techniques; man-made artifacts; cut mammoth bone; paleoecology (pollen, chiefly); fairly well articulated mammoth skeletons; 2 meters of overburden. (29)

Holland, C. G. (see Luckenbach, Alvin H.) (39)

Holmes, Charles E. (Alaska Methodist), **ARCHAEOLOGICAL INVESTIGATIONS IN CENTRAL ALASKA DURING 1973**. On the basis of test excavations in 1972, extensive excavations were carried out at the Minchumina site in 1973. A local sequence is suggested characterized throughout by lanceolate point forms, grooved stone abraders, and a microblade and burin industry. While a certain homogeneity exists throughout the sequence, significant changes between earlier and later periods of occupations are seen. Minchumina was apparently occupied from ca. 400 B.C. until ca. A.D. 800. In addition, a stratified site was located and tested in the Nenana River Valley. Geological and radiometric data indicate an age in excess of 10,500 B.P. for a cultural horizon bearing a microblade and burin industry together with bifacial tools. (28)

Hoyt, Margaret A. (Wesleyan), **CHIMU DOMESTIC WARES**. A stylistic seriation of Chimu utilitarian vessels from various sites on the north coast of Peru, including material excavated by Uhle, Bennett, Olson, the Viru Valley Project, The Harvard/Chan Chan Project, and others is presented. The sample consists of grave lots and of groups of vessels with provenience but without grave lot associations. (12)

Hume, Gary W. (American), **METHODS OF ANALYSIS FOR LITHIC SURFACE STATIONS**. This paper illustrates the use of various methods for the analysis of surface lithic stations, especially workshops, by reference to fieldwork conducted on 2 Lower Paleolithic sites in Iran and a quarry-workshop in New Mexico. Included are analyses of desert varnish for temporal variation within assemblages, lithic association analysis, and complementary analysis (or reconstitution of cores). Overlapped core-reduction areas, details of core-reduction processes, limited activity areas as indicated by clusters of edge retouch flakes and scrapers involved in haft production, and data related to the size and composition of work units are revealed by these methods. (26)

Huner, John B. (Oakland), **FUNCTIONAL ASSEMBLAGES OF SOME CERAMIC CONTAINERS FROM THE WHITE RIVER LOWLANDS, ARKANSAS**. The majority of ceramic typologies used in archaeology are based on stylistic attributes and hence models of prehistoric cultural dynamics are based on underlying assumptions about the behavior of aesthetic value systems. In this paper, it is demonstrated that there are limitations placed on ceramic vessels due to physical properties of low-fire clay bodies and inherent forms that containers must assume in order to function. Based on such attributes as porosity, shape, and volume, a taxonomy is created which implies certain functions of some ceramic vessels from the White River Lowlands, Arkansas. By utilizing a functional taxonomy, ceramic assemblages may be constructed that, when controlled by standard stylistic taxonomy, allows models to be postulated as to variations in family size and structure as well as reveal changes in the economic systems. (26)

Ives, David J. (Missouri, Columbia), **PROJECT CROESUS: AN OBJECTIVE METHOD FOR DETERMINING HEAT-TREATMENT**. Determination of the prehistoric heat-treatment of chert has traditionally been based on such factors as color, flake scar luster, and a "greasy" feel. These factors are based solely on observer perception and lack quantification. The strength of thermoluminescence lies in its objectivity and in the quantifiable nature of its results. Tests have revealed a definite differentiation in electronic charge between cherts heated in a muffle furnace and those not so treated. Similar tests indicate that the same differentiation exists in cherts from archaeological contexts and does not always correspond to such subjective factors as color and luster. (26)

Ives, David J. (Missouri, Columbia), **ACTIVATION ANALYSIS AT THE U.M.C. LABORATORY FOR NUCLEAR ARCHAEOLOGY: II. LITHICS.** Visual identification of chert from archaeological sites is non-quantifiable. Because of the dependence on observer judgment and its attendant errors, sole use of such identification is rejected. Utilizing neutron activation, a quarrying area can be quantifiably "fingerprinted" and distinctly separated from other such areas via multi-elemental analysis. Lithic material from Ohio to Wyoming has been thus analyzed and results indicate that quarrying areas within this region are mutually distinguishable. (39)

Jantz, Richard L. (Tennessee), **MULTIVARIATE ANALYSIS OF HUMAN CRANIA: AN APPLICATION TO SOME ARCHAEOLOGICAL PROBLEMS.** Multivariate analysis of human crania can be a powerful tool in solving biological problems within an archaeological context. Once adequate skeletal samples have been obtained, such problems as biological affinities of populations and the roles of language, culture, and geography as barriers to or mechanisms of gene flow can be resolved. This presentation demonstrates how such problems have been investigated in the North American Plains to resolve some key archaeological problems within that region. (33)

Jelks, Edward B. (Illinois S), **OBSERVATIONS ON THE NATURE OF ARCHAEOLOGICAL INFERENCE.** The primary goal of archaeology is to make valid inferences about past human cultures on the basis of observations made on the archaeological record. The processes involved in making such inferences are analyzed, and the fundamental requirements for a general deductive-inductive methodology for archaeology are enumerated. (21)

Jenkins, Ned J. (Mound State Monument), **SETTLEMENT AND SUBSISTENCE PATTERNS IN THE WESTERN MIDDLE TENNESSEE VALLEY DURING THE TRANSITIONAL PERIOD.** Cultures are systems within larger ecosystems. Segments of modern archaeology attempt to explain the history of culture change within an ecological framework. The archaeological unit to be dealt with in this paper is the transitional period, that period of time between the end of the Archaic period and the beginning of the Woodland period. The ecosystem is the western part of the Middle Tennessee Valley. The limited studies of the food remains indicate that certain plant and animal genera were more important than others. The 3 primary procurement systems were shellfish gathering, collection of nut foods, and hunting. This paper will discuss the degree to which local environmental variations differentiated subsistence activities and resultant settlement patterns. (5) *WRITE*

Johnson, Alfred E., and Ann S. Johnson (Kansas), **A MODEL OF THE KANSAS CITY HOPEWELL SUBSISTENCE-SETTLEMENT SYSTEM.** Data on the Kansas City Hopewell complex, gathered by archaeological survey and excavation parties from the Museum of Anthropology at the University of Kansas, are integrated to develop a systemic model of subsistence practices and settlement patterns. Components of the model include an environmental setting that provided the potential of abundant natural resources; hunting and gathering territories exploited from sedentary villages and seasonally-occupied camps; exponential population growth resulting in the formation of new settlement units; extensive, rapid, change to a significantly different model after 500 years of growth and development. (29)

Johnson, Ann S. (see Johnson, Alfred E.) (29)

Johnson, Charles A. (Texas Tech), **DEPOSITIONAL ENVIRONMENTS AT THE LUBBOCK LAKE SITE.** Although reported in the literature primarily as a Folsom period kill-site ca. 10,000 B.P., the Lubbock Lake site contains a well-stratified sequence of occupation over the last 12,000 years. Geologic evidence appears to substantiate the extension of the alluvial chronology eastward across the Llano Estacado. Stratigraphic and sedimentologic studies supported by pedologic evidence may provide time markers for many of the major drainage-ways of the Southern High Plains. (28)

Johnson, Eileen (Texas Tech), **LUBBOCK LAKE AVIFAUNA.** Few avifaunas have been reported from Early Man sites. While bird remains are not numerous from the Lubbock Lake site, a variety of species are represented. Remains of both migratory and non-migratory birds are recovered. These birds represent an important part of the site's fauna and contribute to the data on the local environment, seasonality of the site and dietary habits of the aborigines. (28)

Johnson, L. Lewis, and Deborah J. Hanson (Vassar C), **A TECHNOLOGICAL ANALYSIS OF AN AGUAS VERDES QUARRY-WORKSHOP.** A small quarry-workshop in northern Chile was collected in its entirety after all retouched artifacts had been numbered and plotted. The locations of all chips were also recorded. During analysis, matching fragments of retouched artifacts have been discovered and their dispersion across the site has been plotted. This has led to hypotheses concerning the number of knappers working and their location on the site. Analysis in progress is directed at discovering reasons for the breakage of artifacts and their implications for understanding the manufacturing process. (26)

Johnson, Roy R. (see Chang, Claudia) (37)

Judge, W. James (New Mexico), **AN EVALUATION OF THE OVERKILL MODEL.** Martin (1973) has recently restated his basic Pleistocene overkill hypothesis in more positive terms. He now suggests the New World megafaunal extinction to be a function of an "advancing front" or high density wave of Paleo-Indian big-game hunters moving quite rapidly from north to south in a relatively short period of time. His basic model is drawn from analogy with the colonization of an area by an exotic species. For Martin's hypothesis to be supported, it is essential to secure evidence of the systematic predation of a variety of extinct megafauna by Paleo-Indian hunters of the Clovis period. A review of the existing Paleo-Indian data from the Plains and Southwest, reported herein, indicates that such evidence is not yet available. Evidence does suggest that a specialized subsistence adaptation, focusing on the exploitation of one species (bison) in the low-diversity Plains grassland environments, was not obtained until Folsom times. Rather than that of specialized predation, the Clovis adaptation may be more appropriately viewed as transitional from a broad-spectrum generalized subsistence strategy on the part of early pre-Clovis occupants of North America, to the specialized focal economies of the post-Clovis Paleo-Indian period. This view is more in line with the evidence available at this time, and does not support the overkill hypothesis. (28)

Kay, Marvin (Colorado), **WEAR ANALYSIS AND UNIFACIAL SCRAPING TOOL MORPHOLOGY: A POSSIBLE CASE OF INDIVIDUAL USE.** Multiple discriminant function analysis indicates no correspondence between edge wear and tool morphology for a sample of 69 scrapers from a Middle Woodland site, the Imhoff site, Cooper County, Missouri. Individual use is posited from this disparity in scraper morphology and edge wear and from the spatial configuration of cultural remains. The relatively general, or primitive, scraping tool morphology allowed for successful completion of a series of scraping tasks. As such, edge wear is variable, depending upon the task, and individual responses or preferences in tool manipulation. (18)

Kegley, George B. (see Arnold J. Barto) (8)

Kelley, James E. (Arizona), **ZOOARCHAEOLOGICAL ANALYSIS AT ANTELOPE HOUSE: BEHAVIORAL INFERENCES FROM DISTRIBUTION DATA.** Zooarchaeological analysis of vertebrate material from Antelope House in Canyon de Chelly National Monument examines occurrences and frequencies of procured animal species and also relationships between man and other living animals at the site. Prehistoric behavior patterns of domestic animals are suggested from distributional analysis of archaeologically recovered material. Preferred area utilization or prescribed confinement is also inferred for the domesticates. Non-domesticates are discussed as potential indicators of the abandonment patterns of specific human activity spaces. (1, 2)

King, Mary Elizabeth (Texas Tech), **ANALYTICAL METHODS AND PREHISTORIC TEXTILES.** The methods of analysis used in the study of prehistoric textiles and the kinds of information that can result and have resulted from them are described. Fiber, dye, and structural analysis are discussed, with examples drawn primarily from pre-Columbian Peruvian and Mexican textile studies. The paper will also note those areas that present major problems for future research. (32)

King, T. J., Jr. (UCR), **PALEOENVIRONMENTAL HYPOTHESES FOR THE WESTERN MOJAVE DESERT.** Climatic and other paleoenvironmental change over the last 30,000 years in the western Mojave is correlated with known archaeological sites, spring locations, and other data to produce a hypothesis which postulates a lacustrine-woodland resource biome for the western Mojave from about 30,000 B.P. to about 9000 B.P. A downward shift in the pinyon-juniper zones is considered in producing a predictive model for certain kinds of archaeological sites in the western Mojave. Means for experimentally checking these hypotheses are suggested. (35)

Klymyshyn, Alexandra M. Ulana (Harvard), **URBAN GROWTH AT CHAN CHAN, PERU, ON THE BASIS OF DATA FROM INTERMEDIATE ARCHITECTURE.** Chan Chan, the large urban center in the Moche Valley, served as the capital of the Chimu empire. The architectural remains have been divided into monumental, intermediate, and barrio. This paper is limited to the intermediate structures: enclosed room and plaza complexes, sharing features with both monumental and barrio architecture yet distinct from either. The structures are examined, first, in terms of their wide range of variation, and second, in relation to other features on the site. Interpretation focuses on the implications for urban growth at Chan Chan, drawn from the data on intermediate architecture (12)

Knudson, Ruthann (Idaho), **INFERENCE AND IMPOSITION IN LITHIC ANALYSIS.** Tool utilization analysis is finding problems in observation and interpretation of archaeological data. Frequently, such analysis involves both (1) observation and description of attributes with inferred interpretations based on as complete an ethnographic model as possible, and (2) imposition of attributes and inferences, based on what we want and expect to see. To review the conflict between these activities, a small sample of retouched flakes from a dated component are described and interpreted. Ethnographic verification of utilization patterns at the site is available, and can be compared with the archaeological explication to check the validity of the method and interpretations. (42)

Kolb, Charles C. (Pennsylvania S), and James P. Loucky (UCLA), DEMOGRAPHY AND ARCHAEOLOGY: AN EVALUATION OF NAROLL AND LEBLANC'S CALCULATIONS. Raoul Naroll (1962:587-589) has devised a method for estimating the probable demography of a particular archaeological site based on cross-cultural ethnographic analogy. Steven Le Blanc (1971: 210-211) suggested a more detailed analysis and an addition to Naroll's "formula," but agreed that the average floor area per person was reasonably close to 10 square meters. Neither researcher controlled their data for subsistence mode technological level, or settlement type. Their demographic calculations have been examined with specific regard to Mesoamerican maize-tilling peasants. A critique of methods and results is offered, and a revision of the 10 square meter figure suggested. (22)

Koschik, Wilma W. (Michigan), THE USE OF ARCHAEOLOGICAL MAIZE IN STUDYING PREHISTORIC PUEBLO SOCIAL RELATIONSHIPS. The study of social relationships and residence patterns in prehistoric societies has been limited to nonperishable artifacts and human burials. This report will explore some ways in which maize remains may be used to supplement such studies. Carbonized maize cobs from the Arroyo Hondo Site, a Coalition-Classic period pueblo near Santa Fe, New Mexico were measured for several quantitative traits. Variability throughout the site was statistically tested. Using the assumption that seed corn passed from one generation to the next would be uniform, hypotheses dealing with social relationships were proposed and tested with the maize data. (42)

Large, E. G. (see Bruder, J. Simon) (8)

Levy, Janet E. (Washington, St. Louis), A TEST OF CENTRAL PLACE THEORY IN AN ARCHAEOLOGICAL CONTEXT. Although Central Place Theory has been applied mainly in the context of industrial society, Christaller's original work establishes a very general concept of central place that is a provocative model to be applied to prehistoric data. It can be useful in the context of a stratified, heterogenous—but not necessarily urbanized—society, beginning with the chiefdom level of sociocultural integration. The main methodological problems for the archaeologist are control of chronology, sample completeness, and the definition, in archaeological terms, of centrality. These points will be discussed and the model applied to data from Bronze Age Greece. (4)

Linares, Olga (Smithsonian Tropical Research Inst), ON THE ABSENCE OF ANIMAL DOMESTICATION IN THE NEW WORLD TROPICS: A SYSTEMS APPROACH. In spite of the natural occurrence of gregarious and potentially domesticable mammalian species such as deer and 2 kinds of peccary, plus the more solitary caviomorph rodents (agouti and Paca) and even tapir, tropical forest people apparently never attempted to raise animals systematically for food. A presumed abundance of wild species cannot be an explanation; within a single species, tropical animal populations are relatively small and widely fluctuating, accounting in part for the frequent move of hunting peoples in search of game. Neither were fish and shellfish protein resources entirely adequate by themselves, to judge from the presence of numerous mammal bones in most tropical riverine and littoral sites. Explanations must be sought on the conditions that restricted other parts of the subsistence system of tropical forest groups. The difficulty of intensifying agricultural production in order to feed captive animals, and the demands of nomadic slash and burn agriculture, must have been important factors. In addition, natural selection in the tropics had worked against human selection pressures by favoring few births, long life and crypticness in wild mammalian populations. (36)

Lindsay, Alexander J., Jr. (Mus of Northern Arizona), RESEARCH ORIENTATIONS IN CONTRACT ARCHAEOLOGY: EXAMPLES FROM ARIZONA. As part of its continuing program in contract archaeology, the Museum of Northern Arizona has been attempting to build research goals into its contract programs. Recent work at the Museum has emphasized a pre-investigation formulation of problem-oriented research designs. Two examples of this posture toward contract work are reconnaissance level surveys conducted for selection procedures of alternative power line corridors. Location analysis of sites in extensive systems of corridors was attempted based on an environmentally stratified sampling design and predictive projections of site density. Other research has centered around inserting after the fact research problems into ongoing or rush contract projects initiated without previous research design. Experiments with this procedure on highway salvage projects indicate that research-oriented problems can be successfully applied to well-controlled field data. (31)

Longacre, William A. (Arizona), ETHNO-ARCHAEOLOGY OF THE KALINGA: PHASE I. Archaeologists are examining the interface between patterns in material culture and aspects of behavior and organization responsible for them. One way is to undertake ethnographic fieldwork where direct observation of both cultural materials and behavior is possible. The results of such work among the Kalinga, a tribal group in the mountains of northern Luzon, Philippines, is reported. This group produces and uses pottery on a household basis and not for sale in a market or to tourists. Mothers teach daughters and the effects of the learning frameworks and co-residence in pottery-making and the native system of classification are explored. (21)

Loucky, James P. (see Kolb, Charles C.) (22)

Luckenbach, Alvin H., Ralph O. Allen, and C. G. Holland (Virginia), THE USE OF RARE EARTH ELEMENT CONCENTRATIONS IN NEUTRON ACTIVATION ANALYSIS OF SOAPSTONE. In a study of the trace and minor element content of soapstone artifacts samples from quarry and habitation sites from Rhode Island to North Carolina have been analyzed through the use of instrumental neutron activation analysis. Significant variations have been found to be present in the source deposits of this material. A method familiar to geochemists is used to order and plot the data. It involves study of the rare earth elements, found in all common rocks. Geological processes cause fractionation of this group, and the method of measuring fractionation, the results obtained by this method, and its potential for application to similar problems are discussed. (39)

Luedtke, Barbara (Michigan), CHARACTERIZATION OF CHERT SOURCES BY NEUTRON ACTIVATION ANALYSIS. The activation analysis program of the University of Michigan Museum of Anthropology has analyzed a large number of chert sources in the midwestern United States and in the Colorado-Wyoming area, in order to determine the original sources of archaeological artifacts. The resulting data is being used in 3 regional projects. This paper discusses the trace element variation within and between the various geologic formations studied, and the statistical procedures used to characterize sources and to assign artifacts to them. In addition, the archaeological implications of our findings are detailed. (39)

Lyons, Thomas R. (Chaco Center, Natl Park Service), James I. Ebert (New Mexico), Basil G. Pouls (Koogle and Pouls Engineering, Inc.), PHOTOGRAMMETRIC MAPPING AND LOCATION DIGITIZATION OF PRE-ARCHITECTURE: TECHNIQUES AND APPLICATION. The planimetry and microtopography of 5 major Anasazi pueblo ruins at Chaco Canyon National Monument in northwestern New Mexico has been mapped utilizing controlled aerial photography and a precision stereo plotter. The technique, far more accurate than traditional on-the-ground engineering survey, is also demonstrably faster and more economical. A projected extension of this method is the phased mapping of a major ruin excavation that will permit the employment of a feedback sampling design in terms of a continually refined problem orientation. Another potentially useful technique, the computer storage and manipulation of x, y, and z coordinates within a site promises to be of utility in the analysis, stabilization, and restoration of prehistoric architecture. These and other aerometric techniques can be generally applied to a wide range of site situations, and are compatible with any stated research orientation, be it old or new. (8)

MacNamara, Joseph P. (Catholic), FIELD SCHOOLS AND STUDENTS: THEIR ROLE IN ARCHAEOLOGICAL RESEARCH. The structure, function, and value of field schools and student participation in archaeological research programs are discussed and evaluated from a student's point of view. (24)

MacNeish, Richard S. (R. S. Peabody Fdn), THE CARE AND FEEDING OF INTER-DISCIPLINARY STUDIES. This will be a discussion and reminiscences about interdisciplinary studies in Tamaulipas and Tehuacan, Mexico, and Ayacucho Peru. In these 3 areas interdisciplinary studies, for historical reasons, were done in slightly different manners. These are compared and discussed. Of particular importance is a discussion of how to make working with archaeologists sweet for the interdisciplinary scientist and his career. This means a coordination of the problems of the interdisciplinary scientist and those of the archaeologist with particular emphasis on what the archaeologist and his project will be able to do for the other scientists and their particular fields. A second aspect of the interdisciplinary studies that is discussed are the field efforts of the interdisciplinary scientists on the archaeological expedition. This means not only providing him facilities but giving him a real understanding of just what the archaeologist is doing. A third major problem discussed is the coordination of the interdisciplinary studies with each other as well as with the data of the archaeologist. The crass financial aspect of interdisciplinary studies is also touched upon and suggestions are made as to how archaeologists may save some money. (32)

Magers, Pamela C. (Arizona Archeological Center), THE COTTON INDUSTRY AT ANTELOPE HOUSE. Evidence for the range of behavior associated with cotton at Antelope House during Pueblo III times is examined in the light of an ethnographic model based on Schiffer's technique of behavioral chain analysis. It is hypothesized that cotton was grown in the Canyon de Chelly area and possibly traded to non-cotton producing regions. Included is discussion of the differential effects of cultural activities, preservation factors, and archaeological techniques on the recovery of textiles and raw cotton material from Antelope House in comparison with other Anasazi sites. (1, 2)

Manire, Larry, and Mark E. Harlan (Arizona), DATA MANAGEMENT AND PROCESSING FOR THE NATIONAL PARK SERVICE'S ANTELOPE HOUSE PROJECT. The very large amount of data recovered by the National Park Service's project at Antelope House presents both a challenge and a problem in terms of management and analysis. To assist in solving this problem and meeting the challenge, the Park Service has contracted with the data processing division of the Department of Anthropology at the University of Arizona to assist them in computerizing the analytical phase of the project. As they are analyzed, the data are coded for entry into the SELGEM management and retrieval system developed by the Smithsonian Institution. This management and retrieval system is then interfaced with various other program systems to obtain the results needed for the archaeological analysis of

the remains. This paper describes the methods used in both data management and analysis and presents a few brief examples of actual problem-solving to indicate the power and utility of the systems being used. (1, 2)

Marsh, Amanda (UCR), THE ARCHAEOLOGY OF THE EASTERN MOJAVE DESERT. Site types and distributions in the Eastern portion of the Mojave Desert reflect adaptations to drier, more mountainous environments than in the western portion. The lack of detailed environmental data does not permit detailed correlation between climatic change and variations in site distribution through time, although the ethnographic record suggests that adaptation rather than migration was the normal response to changing environmental conditions in the desert. (35)

Martz, Ann (see Binning, Jeanne D.) (26)

Matson, R. G. (British Columbia), THE USE OF HUTCHINSON'S N-DIMENSIONAL NICHE SPACE ON CEDAR MESA. In this paper an attempt is made to apply G. E. Hutchinson's N-Dimensional hypervolume concept on niche space to the prehistoric Anasazi inhabitants of Cedar Mesa, Utah. This elegant concept of adaptation is shown to be applicable by first using multivariate analysis (multi-dimensional scaling) to find the environmental determinants of the present flora and then by looking at the different kinds of sites. While not all dimensions were interpretable, the majority were and clear changes through time are shown; the environmental constraints shown in the hypervolume are in agreement with those found by other means but important added advantages are found using the hypervolume approach. (22)

McBride, Harold W., MIDDLE FORMATIVE CERAMICS FROM THE CUAUHTITLAN REGION, VALLEY OF MEXICO. A nucleated village site of 300 to 600 persons existed on a low ridge overlooking the Rio Cuauhtitlan throughout the Middle and Late Formative. The ceramics are very similar to other Valley sites such as Zacatenco and Middle Formative Tlatilco and Tlapacoya. The early La Pastora phase is identified by a thick black ware with geometric incisions and curvilinear excisions and by a distinctive White-on-Red ware and Red-on-White ware. The figurines for this phase include type C3, C5, C9, B-C, and B. The later Cuauhtitlan phase is identified by a thin black-brown ware with curvilinear incisions and by distinctive Red-on-White and Red-on-Buff wares. The figurine style for this phase may be limited to type A. The Cuauhtitlan phase was succeeded by the distinctly new ceramic complex of Ticoman I and II which shows many points of similarity with the figurines and ceramics of the state of Puebla. (27)

McDougle, Eugene J. (see Paulsen, Allison C.) (30)

McDowell, Ellis E. (SUNY, Cortland), SALVAGE ARCHAEOLOGY: SOME PROBLEMS AND SUGGESTIONS. Archaeological consultants, hired by various agencies because of new antiquities legislation, are encountering unique problems. Systems to provide referral services, to insure use of reputable professional archaeologists, to standardize procedures, fees, and time estimates, are some of the factors requiring attention. Examples and suggestions from Eastern U.S. cases are presented. (31)

McGimsey, Charles R. (see Garrison, Ervan) (26)

McGuckian, Peggy (see Binning, Jeanne D.) (26)

McKusick, Charmion R. (Southwest Bird Lab), AVIFAUNA FROM ANTELOPE HOUSE. Avifauna from Antelope House consists mainly of Large Indian Domestic Turkeys, some of which were apparently eaten, but most of which were raised for their feathers as indicated by the presence of 3 aberrant colorations—erythristic, silver phase, and pied—that occur in unusual numbers. Although a predominance of turkeys is reminiscent of the San Juan area, and the use of Scarlet Macaw feathers is also found in the Kayenta area, Antelope House avifauna is an independent and important center of domestic turkey development. (1, 2)

McNett, Charles, Jr., and Russell Handsman (American), SALVAGE IN PENNSYLVANIA. (31)

Meadow, Richard H. (Harvard), ARCHAEOLOGICAL CONTEXT AND FAUNAL INTERPRETATION. The degree to which faunal remains can be used to shed light upon past lifeways is heavily dependent upon the nature of the contexts from which these remains are recovered. A review of disposal practices and post-depositional activities permits identification of factors that are likely to affect interpretation. Suggestions are made which should serve to increase the validity of both intra-site and inter-site comparison of faunal materials. (20)

Metcalf, Michael D. (Mus of Northern Arizona), ARCHAEOLOGICAL INVESTIGATIONS ON A TRANSECT FROM GLEN CANYON TO THE VIRGIN RIVER. In 1972 and 1973, the Museum of Northern Arizona conducted an archaeological survey and excavations along the 170-mile long Los Angeles Department of Water and Power power line right-of-way across northern Arizona and southern Utah. A total of 61 sites were recorded, of which 32 were excavated. Seventeen of the excavated sites have ceramic components identified with

the Virgin and Kayenta Anasazi and Southern Paiute traditions. The remaining sites are lithic scatters, mostly lacking culturally diagnostic artifacts. Detailed analysis of the chipped stone tool industries of both the ceramic and non-ceramic sites has been directed toward a description of attributes sufficient for cultural identification of the lithic sites. A study of the differing resource utilization patterns of each identified cultural group was then conducted, based on functional analysis of the lithic tools plus habitat analysis of the sites. (42)

Meyers, Thomas (Michigan), THE NEED FOR STANDARDIZATION OF RESULTS IN ARCHAEOLOGICAL CHEMISTRY. A noteworthy failure of many published chemical analyses of archaeological specimens is that no standardized results are reported which would allow independent comparisons to be made of materials described in different studies. In dealing with this problem, the University of Michigan Museum of Anthropology has analyzed over 6500 archaeological and geological specimens in studies of traded cherts and obsidians. Since 1970, a great deal of effort has been spent in standardizing our procedures and results. For this we have used the U.S.G.S. rock standards W-1 and BCR-1 and the Lawrence Radiation Laboratory pottery standard. From our experience, we make several proposals concerning the comparative use of standard materials in chemical analyses of artifacts, and concerning the determination and reporting of experimental error. Without adoption of these or similar approaches to standardization, future comparisons of analytic results obtained by archaeological chemists will be meaningless. (39)

Miksicek, Charles H. (Washington, St. Louis), CARBONIZED BOTANICAL REMAINS AS FROZEN SOCIOLOGICAL PROCESS; OR, YOU ARE WHAT YOU EAT. Cultivated plant remains are dependent upon man for their survival and development and may therefore be considered artifacts, indicative of past human activities. For example, Pueblo Indian farmers select seed corn according to rigid criteria, segregate varieties by field, and maintain selected varieties as the exclusive property of a household. Careful study of the cultivated plant remains from one site enables comparison to other collections from neighboring sites. It is also possible to study the amount and nature of temporal and spatial variation within the site. This paper is a preliminary analysis of the archaeobotanical material recovered from test excavations by the Cibola Archeological Research Project during the 1972 and 1973 field seasons. (36)

Milanich, Jerald T. (Florida), GENERAL AND SPECIFIC EVOLUTION OF WEEDEN ISLAND CULTURES: AN OVERVIEW. Research carried out in the Southeast since Gordon R. Willey's pioneering work on the Florida Gulf coast in the 1930s has shown that the term Weeden Island is applicable to several geographically distinct yet temporally equivalent cultures. These cultures, located in the coastal plain east of the Alabama River and west of the Altamaha River and from the fall line south into north peninsular Florida, participated in a similar ceremonial life while maintaining different adaptations (or adjustments) to their respective environments. These adjustments evidently supported similar levels of subsistence, though not types of subsistence, at least as far as this can be inferred from ceremonialism. The growth of Weeden Island-ism is examined and placed in the context of Southeast prehistory and cultural processes. Also, suggestions are made for future research on Weeden Island-ism and Weeden Island cultures. (34)

Miller, Arthur G. (Dumbarton Oaks), THE TANCAH ARCHAEOLOGICAL PROJECT: A PRELIMINARY REPORT OF THE 1973-74 SEASON. Exploratory test pitting of the Archaeological site of Tancah, Quintana Roo, Mexico, was carried out in order to collect data to begin to establish a complete ceramic sequence for the east coast of Yucatan from Preclassic to the Postclassic period. Two mural-bearing structures were explored for ceramic and artifactual data bearing on their date of construction. The excavations were carried out with the financial support of the National Geographic Society, The Center for Pre-Columbian Studies of Dumbarton Oaks, and the Brooklyn Institute of Arts and Sciences, and under a concession from the Instituto Nacional de Antropología e Historia, Mexico. Plans for future intensive and extensive excavations at Tancah are presented. (27)

Miller, Glenda F. (Catholic), THE ETHNOHISTORIC-LATE PREHISTORIC PROGRAM, OR WHERE HAVE ALL THE INDIANS GONE. Archival research including county histories, folkways, and recent discoveries of contact sites in the Valley are discussed, providing insight into what has heretofore been considered a Contact period no man's land. (24)

Moore, J., A. Swedlund, and G. Armelagos (Massachusetts, Amherst), ANALYSIS OF MORTALITY IN ARCHAEOLOGICAL POPULATIONS. In spite of recent criticism, the life table can be a valuable expression of prehistoric demographic data and an important factor in archaeological interpretation. This presentation discusses the assumptions behind life table reconstruction and how tables have been used in previous studies. The results of simulation studies are presented to suggest the effect of sample limitations and other variables on the life table and to compare the life table with other methods of demographic expression. (33)

Moore, J. A. (see Armelagos, G.) (33)



Morenon, E. Pierre (Wake Forest), A MODEL OF CULTURAL COMPLEXITY: A COMPLEX VIEW OF CHANGE IN THE AMERICAN SOUTHWEST. Information derived from cross-cultural research is used to develop a model of "cultural complexity." It is argued that the cultural system at the Salmon ruin is decreasing in complexity, and 3 hypotheses dependent on this argument are then tested with architectural data. The paper finally suggests applications of the model of "cultural complexity" to regional studies and includes additional information to support the particular application of this model to the Salmon ruin. (13)

Morris, Don P. (Arizona Archeological Center), ARCHITECTURAL DEVELOPMENT AND MASONRY STYLE AT ANTELOPE HOUSE. The development sequence of the Pueblo III pueblo at Antelope House is described and tentatively related to population changes within the Canyon de Chelly region. Changing masonry styles are related to declining amounts of available raw material and a hypothesized need for more efficient labor. Hypothetical room functions are delineated. (1, 2)

Mortland, Carol (UCR), ETHNOGRAPHIC ANALOGY IN ARCHAEOLOGICAL PREDICTION. Ethnographic data from the western Mojave Desert suggest that seasonal transhumance may have developed recently as a response to desiccation of lakes that formerly filled many basins in the desert. The application of the ethnographic model to archaeological data does not, by itself, predict the known distribution of prehistoric sites, without incorporating evidence of environmental change. (35)

Mortland, Carol (see Wildesen, Leslie E.) (35)

Mount, James E. (Arizona Archeological Center), ANTELOPE HOUSE PROJECT SURVEY. Emphasis is on defining the local canyon community of which Antelope House was a part. A wide range of environmental niches is available for several types of exploitation and a listing of critical criteria for decision-making is attempted. Access to other sites and to natural resources is studied emphasizing inter-site communication. The effects of growing population pressure are sought. One hypothesis is that there is a growing efficiency in the use of available space. Another is that isolated ceremonial sites serve the needs of inter-pueblo integration. The definition of a pre-abandonment settlement pattern is attempted. (1, 2)

Mountjoy, Joseph (see Weigand, Phil C.) (41)

Mueller, James W. (Bridgewater S), PREHISTORIC EXCHANGE AND INCOMPLETE ARTIFACTS. Artifacts that have only been through part of the productive process and have not been finished provide useful, but limited, insight into prehistoric exchange. The relative provenience and context of incomplete artifacts help to distinguish self-sufficient householding units from specialized and interdependent economics (e.g., reciprocal, redistributive, and state-controlled exchanges). The value of incomplete artifacts is demonstrated with Hopewell data. (26)

Muller, Jon (Southern Illinois), STYLE AND THE INDIVIDUAL. Two major problems in dealing with individual variation in style are how to identify such variation and how to account for such variation. This paper discusses some of the theoretical and practical difficulties encountered, and suggests what kinds of formal solutions exist. Examples are drawn from prehistoric materials in the southeastern United States. (17)

Munizaga, Juan R. (Santiago, Chile), BIOLOGICAL RESEARCH APPLICABLE TO ARCHAEOLOGICAL PROBLEMS IN SOUTH AMERICA. This presentation examines 3 problems in physical anthropology that in South America are correlated with archaeologically well-defined cultural changes: (1) artificial mummification; (2) intentional cranial deformation; and (3) the appearance of the brachycephalic populations. (33)

Munson, Patrick (Indiana), FAUNAL ANALYSIS, SAMPLE SIZE, DIFFERENTIAL DESTRUCTION, AND SUGGESTED CORRECTION FACTORS. Faunal analyses, at least as traditionally practiced in eastern North America, have proceeded essentially oblivious to potential skewing resulting from inadequate sample sizes. The estimation of minimum number of individuals (and resulting meat weight equivalents) from small samples compound such errors, and certain procedures of analysis almost insure inadequate samples of most species encountered in archaeological contexts. The question of what constitutes an adequate sample for remains of various classes of animals is explored and various alternatives of analysis are suggested in those instances where samples are inadequate. Another potentially very serious source of error in any attempt to reconstruct prehistoric subsistence patterns is differential destruction of various classes of faunal remains. Although there is a general awareness that this problem exists, we have not yet come to grips with what it might represent quantitatively. Here also certain "correction factors" are suggested. (40)

Muto, Guy R. (Washington S), A PROPOSED MODEL FOR IDIOCULTURAL ANALYSIS OF CHIPPED STONE IMPLEMENTS. A graphic and conceptual model is presented for cultural and individual analysis of chipped stone implements. Suggested means of separation of technological traditions at both the cultural and individual level are shown. Some

particular data from the Columbia Plateau are incorporated as illustrative of its operation. The model is presented as an heuristic device to elicit comment and criticism relevant to its predictive and descriptive power. (18)

Neuman, Robert W. (Louisiana S), COMPLICATED STAMPED POTTERY IN LOUISIANA: ITS AGE AND DISTRIBUTION. Twelve sites in southern Louisiana have yielded complicated stamped pottery. The sherds, from Saint Bernard, Tangipahoa, Terrebonne, Saint Martin, Assumption, Iberville, Avoyelles, Iberia, and Cameron parishes, occur as a minority ware. At least 6 different motifs are represented and, where excavated, the sherds are associated with Troyville-Coles Creek ceramic types. (29)

O'Brien, Patricia J. (Kansas S), A SERIATION OF STEED-KISKER CERAMICS. In the past, ceramics from Steed-Kisker sites have been used to argue for relationships with Cahokia as well as to support a hypothesis for the origin of Nebraska culture from Steed-Kisker. Through an attributional analysis based on the presence and absence of specific designs and design elements plus a quantitative analysis of Steed-Kisker and Nebraska sherds, these theories are tested. Data from over 10 sites, and especially from the Young (23PL4) and Coons (23PL16) sites, are used to develop a refined stylistic chronology. The data are then integrated into the ceramic sequence from Powell Tract particularly period IV. The stylistic evolution of the ceramics developed suggests northern Steed-Kisker sites are later in time than the southern ones that are stylistically earlier. That data, plus statistical information on Nebraska pottery types in northern Steed-Kisker sites would seem to support the suggestion by Calabrese that Nebraska culture develops out of Steed-Kisker. (29)

Olsen, Stanley J. (Arizona), HOW RELIABLE ARE FAUNAL ANALYSES? It is a fact, accepted by most archaeologists, that determinations of animal bones must be positive ones to be of any real interpretive value. Identifications that are "guessed" at or that are listed as positive, when in fact they are not, result in more confusion to the site analyst than if there were listed only in the broad sense. Many times overconfidence in the identifier as to his ability to recognize species or sub-species is the cause for this type of error. This and other taxonomic problems, of importance to the archaeologist, are discussed. (20)

Olsson, Gunnar (Michigan), THE IMPORTANCE OF DIALECTICS AS A TOOL IN SPATIAL ANALYSIS. The utility of the dialectical method in the development of spatial paradigms is discussed, largely in terms of examples drawn from the historical sciences. Its advantages relative to other frequently used research paradigms in anthropology and geography are then detailed. (10)

Opstad, David G., and Gary W. Pahl (UCLA), COMPUTER CAPERS WITH MAYA GLYPH ANALYSIS. For almost as many years as computers have been around, their use in the mathematical sciences has been great; yet, it has only been recently that the social sciences have awakened to the usefulness of the computer. This paper describes one such use—that of correlation of the hieroglyphic texts on Maya monuments. Also discussed is the use of computers for calculation of dates in the Maya calendar system, and how computers, in one instance, managed to show an error of over 1 year in a particular popularly accepted hand calculation. (27)

Orcutt, Janet D. (UCLA), PROBLEMS IN MEASURING PREHISTORIC POPULATION SIZE. This paper deals briefly with 3 problems involved in the measurement of prehistoric population size. These are the definition of system boundaries, sampling within these boundaries for population size, and the methods for measuring population size, with an emphasis on the latter. A substantive example of these problems is presented using survey data from the Chevelon Drainage in Arizona. It is demonstrated that the definition of boundaries is important in developing population curves appropriate to any particular hypotheses. A comparison of 5 different methods through the use of graphs of curves and multiple regression analysis is presented. (22)

Ortner, Donald J. (see von Endt, D. W.) (20)

Osborn, Alan J. (see Athens, John S.) (30)

Ottesen, Ann (NYU), PREHISTORIC EXCHANGE SYSTEMS IN THE EASTERN UNITED STATES. This paper is concerned with the delineation of prehistoric exchange patterns in the eastern United States, with special emphasis on the Ohio, Illinois, Tennessee, and Mississippi River Valleys. The exchange networks which functioned from the Late Archaic through the Mississippian period is traced by the distribution of certain non-local or exotic raw materials. In addition, an attempt is made to understand the processes involved in the changes between these exchange patterns. This study is based on previous publications and museum collections in an effort to demonstrate that this data can be informative when reanalyzed in light of modern archaeological theory. (19)

Ottesen, Ann (NYU), PREHISTORIC POPULATION SIZE ON THE ISLAND OF RAROTONGA. This paper is an attempt to derive population estimates for the pre-European inhabitants of the island of Rarotonga, one of the Cook Islands. The European missionaries who first settled on Rarotonga took a census of the whole island.

This census is tested with respect to whether the population could have increased to the recorded size from the time of the effective initial colonization, and with respect to its relationship to the island's carrying capacity under prehistoric subsistence activities. Then, with the addition of certain cultural traits, this estimate is used as a basis for reconstructing a tentative history of population growth during Rarotonga's prehistory. (22)

Otto, Martha P. (Ohio Historical Society), TRADE SYSTEMS OF THE EARLY AND MIDDLE WOODLAND PERIOD IN THE OHIO VALLEY. The construction of earthen mounds over the graves of particular individuals became increasingly elaborate from Early Adena through the Hopewell period and included objects made from materials not native to the Ohio Valley. There will be an inquiry into the relative importance of various materials and the strength of the contact between the Ohio Valley and the source regions for raw materials. Ethnographic models are applied to determine possible mechanisms for trade and communication. The paper considers the development of part-time and possibly full-time craft specialists, and the distribution of the finished products. Data from various sites will be analyzed to determine if they could have been distribution centers for specific materials or finished products. The "decline" of Hopewell as it relates to trading patterns will be the final consideration. (19)

Overstreet, David (Wisconsin, Milwaukee), IMPRESSIONISTIC AND PROGRAMMED TYPOLOGY—A DEDUCTIVE AND INDUCTIVE COMPARISON. Projectile point caches recovered during the excavation of Mound 72 at the Cahokia site in southern Illinois suggest discrete types. Associated with several burials, these caches were clustered as though they had been sorted into distinct and easily recognizable groups. This context tends to support the generally conceived and much belabored notion of "types." Quantitative support for the impressionistically determined types, viz., the in situ interpretation, is provided through the use of both inductive (Monothetic Subdivisive Classification, [Whallon 1971]) and deductive (BMD 05M, Bio-Med Package) statistical analyses. (11)

Pahl, Gary A. (UCLA), HISTORICAL ANALYSIS OF THE HIEROGLYPHIC INSCRIPTIONS AT COPAN. The paper presents the results of a glyph-by-glyph analysis of the hieroglyphic texts at Copan conducted with the assistance of a computer program specially tailored for the J. E. S. Thompson classification system for the Maya hieroglyphs. While the object of this project is specifically the elicitation of historical data and themes from the Copan inscriptions, it is hoped that the significance of labeling the full complement of hieroglyphs from a major Maya site for computer correlation will be comprehended in terms of its potential value for: site-to-site historical analysis of texts; eventual pan-Maya historical analysis; linguistic analysis of glyph elements, grammar, and sentence structure on a comprehensive scale. (6)

Paulsen, Allison C. (SUNY, Purchase), LATE NASCA POTTERY AT HUACA DEL LORO, SOUTH COAST OF PERU. An analysis of decorated pottery excavated in 1952, and briefly discussed by W. Duncan Strong at the site of Huaca del Loro, south coast of Peru, shows that the site was occupied during Nasca 7, 8, and 9. Pottery of the Nasca 8 occupation can be subdivided into 3 successive sub-phases of chronological significance on both stylistic and stratigraphic grounds. This allows us to date the initial construction of a round structure at the site, and to trace the sequence of its later additions. It is proposed that this round structure and a similar and contemporary building at Tres Patos II, some distance away, were both involved with ceremonial activities that may prefigure the ceremonial complex found at Pacheco during Nasca 9. (16)

Paulsen, Allison C. (SUNY, Purchase), and Eugene J. McDougale (Columbia), A CERAMIC SEQUENCE FOR THE MACHALILLA AND ENGOROY OCCUPATIONS OF THE SANTA ELENA PENINSULA, SOUTH COASTAL ECUADOR. Analysis of Machalilla and Engoroy ceramics recently excavated on the Santa Elena Peninsula, Ecuador, plus 11 radiocarbon dates associated with this material, permit us to (1) date the end of the Machalilla occupation of south coastal Ecuador; (2) clarify stylistic and chronological relationships between Machalilla and the succeeding Engoroy complex; and (3) propose a detailed ceramic sequence of 6 successive phases covering the entire Engoroy occupation, a sequence that can also be placed in absolute time. The proposed sequence also enables us to distinguish and date local fluctuations in population and climatic conditions during the Machalilla-Engoroy period. Extrapolations from this sequence suggest chronological and cultural modifications of the coastal sequence as presently defined, as well as implications for previously postulated prehistoric connections between Ecuador and Mesoamerica in Machalilla-Engoroy times. (30)

Paynter, Robert, and Stanton Green (Massachusetts), SPATIAL CLUSTERING: TECHNIQUES OF DISCRIMINATION. Simulated spatial distributions are used to determine the power of different techniques in the discrimination of spatial clustering. The utility of these techniques for analysis of archaeological data is discussed in terms of theoretical and practical concerns. (25)

Penton, Daniel T. (Florida State Mus), THE EARLY SWIFT CREEK PHASE IN NORTH FLORIDA: INTERNAL EXPRESSIONS AND EXTERNAL CONNECTIONS. On the basis of published and previously undistributed data, the internal expressions and extra-areal connections of Swift Creek in North Florida are examined in terms of settlement patterns,

ritual behavior, and those cultural manifestations obtainable from midden and village investigations. The North Florida culture area during the Swift Creek period is delineated and a tentative chronology within that time frame is suggested. Extra-areal relationships are discussed for Hopewellian manifestations to the north and west and for the Crystal River site in central Florida. A consideration of intra-site similarities and differences gives some insight into the relationship between secular and religious activities and indicates the widespread ritual significance of animals for the Swift Creek peoples. (5)

Percy, George W. (Florida S), and David S. Brose (Case Western Reserve), WEEDEN ISLAND ECOLOGY, SUBSISTENCE AND VILLAGE LIFE: A COMPARISON OF COASTAL AND INLAND MANIFESTATIONS IN NORTHWESTERN AND CENTRAL GULF COAST FLORIDA AND ADJACENT SECTIONS OF ALABAMA AND GEORGIA. Basically, this paper considers aspects of Weeden Island culture other than ceremonialism in the Panhandle and Central Gulf Coast regions of Florida and adjacent portions of Alabama and Georgia. The paper consists of 4 parts: A review of the original definition of Weeden Island, including comments on the sense of the definition, the original data base, and problems originally recognized with the concept. Following this, a summary of archaeological work bearing on Weeden Island, since the original definition. Third, a brief description of important ecological zones and environmental differences in the area under consideration. And, lastly, a summary of current thinking about Weeden Island, emphasizing information obtained from village sites, as opposed to burial mounds. This last part is primarily a statement of research needs and suggested lines of research, since the authors contend that appallingly little firm information has been added to the original ideas about Weeden Island. (34)

Percy, George W. (see Brose, David S.) (34)

Perry, Mary Ann Tomasko (see DePuy, C. H.) (32)

Peterson, Drexel A. (Memphis S), THE ANTECEDENTS FOR THE WOODLAND PATTERN IN THE LOWER TENNESSEE VALLEY. Past syntheses of cultural development in the Tennessee Valley and the Southeast have set up 2 seemingly different cultural patterns—Archaic and Woodland. After a clarification of the developmental sequence for the Lower Tennessee Valley, arguments will be presented for the local development or elaboration of many of the elements of "Woodland culture" out of Late Archaic antecedents. Rather than look only at "diagnostic" Woodland pottery or Archaic tools, the evidence for subsistence continuities, settlement patterns, and burial and other religious activities will be examined. A summary of recent arguments for an indigenous domestication of Iva and sunflower as well as new data on continuities in shellfishing and hunting patterns are presented in relation to settlement patterning. (5)

Pettigrew, Richard A. (Oregon), PRELIMINARY CULTURAL SEQUENCE FROM THE LOWER COLUMBIA VALLEY. The Lower Columbia Valley has long been known to have been a major cultural focus in early historic and in prehistoric times. The population density and sociocultural complexity of the Chinookan peoples were among the highest in North America, and their geographic location placed them in control of communication between coastal peoples to the north and to the south, and between the Northwest Coast and the Columbia Plateau. Recent work on the Lower Columbia has made possible the construction of a preliminary cultural sequence spanning the last 3000 years, demonstrating the area's longstanding connections with both the Northwest Coast and the Plateau. (28)

Phillips, David A. (Arizona), HISTORIC AND PREHISTORIC WATER CONTROL STRATEGIES IN SOUTHWESTERN ECOTONES. The archaeological evidence for various types of water utilization systems in the central Arizona ecotone are tested against the ethnographic evidence from southwestern biological transition zones. Both the archaeological and ethnographic data are analyzed to explain how different water control systems were adapted to different sub-environments in order to maximize water utilization in this arid region. (37)

Pilles, Peter J., Jr. (Mus of Northern Arizona), POST SUNSET CRATER ERUPTION DEVELOPMENTS IN THE SINAGUA CULTURE: A REEVALUATION. Site density increases in the Flagstaff region after the eruption of Sunset Crater in about A.D. 1066 have traditionally been used to infer population increases, colonial movements, and resultant changes in the Sinagua culture. Recent work in the area and a reexamination of the original data suggests an alternate hypothesis better explains the post-eruptive site density increases. Although domestic functions can be attributed to most post-eruptive pit houses and pueblos, the majority of post-eruptive sites are small masonry structures, probably used as field houses. These functional identifications are supported by proportional differences in the occurrence of functionally related artifact assemblages between the 2 classes of sites, suggesting that the small sites are agriculturally related. It is concluded that post-eruptive site density increases result from a change in agricultural practices and not from mass migrations of people from different cultural areas or from radical population increases. (42)

Plog, Fred (SUNY, Binghamton), *ARCHAEOLOGY AND THEORIES OF THE INDIVIDUAL*. This paper describes alternative theories of individuals and individual behavior that have been employed in ethnographic research. It then seeks to evaluate the utility of alternative theories for archaeological modeling and archaeological research. (17)

Plog, Fred (SUNY, Binghamton), *THEORY AND METHOD IN NEW YORK HIGHWAY SALVAGE*. A number of theoretical and methodological issues relating to the administration of salvage programs have become important in the last several years. These include the importance of processual as opposed to chronological goals, sampling, statistical analysis, and the overall role of research design in salvage programs. This paper examines these issues and the ways in which they were resolved in the SUNY, Binghamton salvage program. (31)

Plog, Steve (Michigan), *THE STATISTICAL ANALYSIS OF SPATIAL VARIATION IN STYLISTIC ATTRIBUTES*. This paper will deal with statistical analysis of the distribution of stylistic attributes within and between sites. Previous methods of analysis, and the goodness of fit between these statistical models and theoretical models of style will be discussed. Some alternative statistical models will be described, and data from studies of the distribution of southwestern ceramic designs will be reanalyzed using these models. (10)

Pohl, Gary W. (see Opstad, David G.) (27)

Pollard, Gordon C. (SUNY, Plattsburgh), *RESEARCH DEVELOPMENT IN JUJUY PROVINCE, N.W. ARGENTINA*. A recently formed anthropological research agency in Jujuy marks a new approach to the coordination and planning of archaeological investigations in Argentina. The nature of past and present research in Jujuy Province is reviewed from the vantage point of the agency, and recent findings east of San Salvador de Jujuy are briefly summarized. (30)

Pollard, Helen Perlstein (SUNY, New York), *EARLY URBANISM IN THE LATE POSTCLASSIC: THE CASE OF TZINTZUNTZAN*. The position is taken that human settlements constitute a continuum characterized by increasing complexity, and along which particular types of settlements may be isolated. The urban settlement, as one type, can then be analyzed to isolate successive states of growth that exhibit distinctive expressions of a given set of attributes. Using this approach, a model is constructed of Tzintzuntzan, capital of the Tarascan State in Michoacan, Mexico, at the time of the Spanish Conquest. This model is then used as the basis for hypothesizing a phase in the evolution of urban settlements in Mesoamerica. (6)

Potter, D. F. (see Ball, J. W.) (6)

Pouls, Basil G. (see Lyons, Thomas R.) (8)

Precourt, Prudence (Wisconsin, Milwaukee), *THE TYPOLOGICAL CLASSIFICATION AND INTERPRETATION OF PROJECTILE POINTS FROM MOUND 72*. The initial objective of this paper is the establishment of a traditional typological classification of the projectile points recovered from 2 separate caches from Mound 72. The basis for such divisions consists primarily of the criteria of form, material and color, and manufacturing technique. Some consideration is also given to the origin and selection of raw materials. A correlation and comparison of these projectiles with other sites is attempted in order to establish some chronologic relationships with other areas. More importantly however, the emphasis of this paper remains on internal comparisons and correlations. The primary focus rests upon the nature of the similarities or differences among the 3 caches as possible correlates of temporal and/or sociocultural differences. (11)

Price, T. Douglas (Michigan), *METHODS OF SPATIAL ANALYSIS OF OCCUPATION FLOORS: A COMPARISON USING MESOLITHIC OPEN-AIR SITES IN THE NETHERLANDS*. A variety of quantitative methods are available for the analysis of the spatial archaeological materials on occupation floors. Spatial analysis is intended to define "tool kits," groups of spatially associated artifacts, reflecting areas of specific activities. Measures of the degree of clustering of a single artifact type (Morisita's Index, Dimensional Analysis of Variance, Nearest Neighbor Index) and measures of the degree of clustering between 2 or more artifact types (Index of Segregation, correlation, cluster overlap) are discussed and compared. Methods for the definition of artifact clusters on ground plans are suggested and demonstrated using a series of ground plans from Mesolithic sites in the Netherlands. Finally, the definition and utility of the concepts of tool kits and activity areas are considered. (25)

Proulx, Donald A. (Massachusetts, Amherst), *THE EARLY INTERMEDIATE PERIOD ON THE SOUTHERN NORTH COAST OF PERU*. A recent survey of the Nepena Valley on the north coast of Peru has provided valuable information on the interrelationships of the Gallinazo, Recuay and Moche traditions in this region. The Gallinazo style, which is known from the Chicama, Viru, and Santa Valleys, has now been discovered in Nepena, making that valley the southernmost limit of the style. Recuay, originating in the highlands, spread to Santa and Nepena, but not to the Casma Valley. During the latter part of the Early Intermediate period, the Moche tradition was introduced into the Santa and Nepena Valleys

from the north, with Nepena again forming the southern boundary of this style. The nature and interrelationships of these traditions on the southern north coast is examined in this paper. (15)

Puleston, Dennis E. (Minnesota), *EARLY MAN IN THE MAYA LOWLANDS?* Evidence for a pre-ceramic occupation of the tropical forest lowlands of Middle America has been all but non-existent. In the summer of 1973 an open pre-ceramic site covering an area of approximately 1 square kilometer was discovered in northern Belize. Stone tools found at the site include a wide range of crude scraper forms. Projectile points, blades, and ground stone tools are absent from the assemblage. A preliminary excavation has produced what appear to be a floor and hearths. (27)

Purdy, Barbara A. (Florida), *A PROCESS OF MANUFACTURE FOR FLORIDA ARCHAIC PROJECTILE POINTS*. From a lithic workshop site in Marion County, Florida (Mr 122), hundreds of Florida Archaic projectile points in all stages of manufacture have been recovered. The existence of such a large number of specimens from a well-documented time period and a limited geographic area has made it possible to determine manufacturing processes. Beginning with a nodule of Florida chert, from which a suitable flake has been detached, all steps of production are discussed including the stage at which thermal alteration took place. (26)

Purrrington, Burton L. (Appalachian S), *THE JONES MOUND: LOCAL MIDDLE WOODLAND TRADITIONS IN WESTERN KENTUCKY*. The Jones Mound, like other known Middle Woodland burial mounds in western Kentucky, is small; few grave goods are included with the burials, and Hopewellian influence is limited. The site appears to represent a localized, relatively unspectacular Middle Woodland period cultural tradition in an area characterized by rolling topography and highly productive oak-hickory forests. This local tradition shows strong affinities with the Middle Eastern (Crab Orchard) and Gulf (Baytown) traditions as well as influence by the Northern tradition (Adena and Illinois Hopewell). (29)

Quinlivan, Sandra (see DePuy, C. H.) (32)

Rands, Robert L. (Southern Illinois), and Ronald L. Bishop (Southern Illinois/Brookhaven National Lab), *PETROGRAPHIC INVESTIGATIONS OF WESTERN MAYA FINE PAST POTTERY: METHODOLOGICAL PROCEDURES AND CORRELATIONS WITH BROOKHAVEN ANALYTICAL DATA*. Methods of petrographic study of the fine paste ceramics from the Western Maya Lowlands are presented. These include selection of sherds for analytical study and the respective roles of the binocular and petrographic microscopes in the project. Some specific inclusions in the untempered pastes are illustrated. As the sherds have also been analyzed by Brookhaven for chemical composition, a unique opportunity is attained to view correlations from the 2, usually separate, analytical procedures. (32)

Ranere, Anthony J. (Temple), *NEW DATA ON PRECERAMIC CULTURAL PATTERNS IN LOWER CENTRAL AMERICA*. Recent excavation at a rockshelter in the Pacific coastal plains of central Panama provides an opportunity to amend the picture of the region's preceramic occupation, previously known only from the excavation of the Cerro Mangote shell midden (McGimsey 1956, *Am. Ant.*, v. 22, n. 2). In contrast to the shell midden, the manufacture and use of chipped stone tools was a major activity at the Aguadulce Shelter. Analysis of this stone industry places the preceramic occupation of central Panama within a tradition extending from northern South America to western Panama and beyond. (27)

Rathje, William L. (Arizona), *THE GARBAGE PROJECT REPORT 1973: REFUSE AND RELEVANCE*. Archaeologists have developed methods to obtain information from the material remains of extinct urban centers. These methods can be applied to fresh garbage to obtain a new perspective on the relationships among resource management, urban demography, and social stratification in modern communities. The Garbage Project is important because of the wide variety of human problems that can be studied through the analysis of quantifiable refuse. Cooperative research with Tucson's Department of Sanitation has led to results of importance to anthropologists, sociologists, health organizations, consumer groups, recycling specialists, and laymen curious about their garbage and concerned about resources. (23)

Redman, Charles L. (SUNY, Binghamton), *THE "ANALYTICAL INDIVIDUAL" AND PREHISTORIC STYLE VARIABILITY*. Conceptual foundations and techniques used to analyze painted ceramics from prehistoric pueblos in west-central New Mexico are discussed. A system of analysis has been devised to record a diverse set of attributes in the 4 major categories of artifact variation: technological-functional, design configuration, design elements, and metrical. The observed variation and covariation in attributes is then associated with cultural variables derived from other data. Because of the ultimate uncertainty of whether or not a specific individual is responsible for a series of artifacts, it is proposed that a more useful approach is to use a continuum of hypothetical hierarchical groups of varying size based on the relative intensity of interaction between members of the group. This hierarchical set of groups and associated measures of interaction serve as the basic analytical units for testing hypotheses. (17)

Reed, Nelson A. (Washington, St. Louis), LESSONS FROM THE REPLICATIONS OF FIVE PREHISTORIC HOUSE TYPES. Speculations on the form of prehistoric houses have often appeared in the literature. It is suggested that the best investigative technique of these forms is full-scale replication, using materials and tools known to have been available to the original builders. Assumptions must be tested in a program of experimentation in order to avoid serious errors. Meaningful insight of an unexpected nature is often gained in the process. The results of 5 such experiments are offered. (23)

Reher, Charles A. (New Mexico), RESEARCH ON HUMAN AND BISON POPULATIONS IN THE PREHISTORIC PLAINS ECOSYSTEM. Understanding the interrelationships of human and Bison populations and climate on the prehistoric Great Plains is prerequisite to explaining the behavior of aboriginal social units as evidenced in the archaeological record. A series of research projects have derived techniques for the recovery of parameters of Bison sp. population dynamics (Reher 1970, 1971, 1973, n.d.). Further research is designed to recover parameters of human group size and composition. Multivariate statistical techniques can elicit covariant patterning within kill site bone middens, and it is argued that these patterns are a direct reflection of the principles of labor organization and social integration of the site users. Time series analysis of varved sediments in the stratigraphy of the Vore Buffalo Jump, northeastern Wyoming, offers a unique opportunity for correlation of such parameters with a record of climatic fluctuation. (42)

Reid, J. Jefferson (Arizona), and Michael B. Schiffer (Arkansas Archeological Survey), TOWARD A BEHAVIORAL ARCHAEOLOGY: II. Archaeological research is now undergoing an explosion of diversity in data bases, aims, methods, and approaches. An attempt is made to reintegrate these critical advances through consideration of some unresolved methodological issues that contribute to a synthetic framework congenial to all archaeologists. These issues include: (1) the need for unambiguous context languages; (2) comparability and equivalence among units of analysis and units of observation; (3) intrasite sampling; and (4) multidisciplinary information flow. Explicit examples from our own fieldwork and the literature illustrate that seemingly obscure principles are actually quite simple and essential while the intuitively obvious principles, though appreciated by many, have nonetheless been neglected in application. (21)

Reyman, Jonathan L. (Illinois S), THE EMICS AND ETICS OF KIVA NICHE PLACEMENT. It is argued that the placement of architectural features, in this case kiva niches, follows emic concepts related to directional preference. A test case is presented and discussed. (13)

Reynolds, Robert G. (Michigan), AUTOMATA THEORY AND ITS APPLICATIONS IN THE ANALYSIS OF ADAPTIVE SPATIAL SYSTEMS. The basic characteristics of cellular automata are detailed and significant applications in related disciplines described. The utility of this concept for the analysis and simulation of adaptive spatial systems is then described in particular. Its usefulness in the analysis of settlement patterns is examined. (10)

Rhodes, Wendell D. (SUNY, Geneseo), MACAULEY COMPLEX-SITE #6, LIVINGSTON COUNTY, NEW YORK: A MULTICOMPONENT STRATIFIED ARCHAIC-EARLY WOODLAND SITE (4390±100 B.P. - 2705±95 B.P.). Site #6, Macauley Complex, manifests a multicomponent stratified cultural sequence (Lamoka, Brewerton, Susquehanna, and Meadowood) with artifacts in association with features (hearths, fire pits, storage pits) dated by radiocarbon analysis. The site continues to support not only earlier reported sequences in the Macauley Complex, but also supports recent hypotheses regarding the postglacial development of the Genesee Valley. (29)

Richardson, James B. (Pittsburgh), THE HOLOCENE BEACH RIDGES OF THE TALARA COAST AND THE CERAMIC SEQUENCE. A series of 10 post-Pleistocene beach ridges between the Chira River and Punta Parinas have been mapped and surveyed. Both preceramic and ceramic period assemblages have been isolated dating to between 2500 B.C. and A.D. 1500, providing a horizontal chronology of essentially utilitarian ware for the Talara-Chira region. The utilization of these ridges by successive populations to secure littoral resources will be discussed and correlated with data from inland sites. (12)

Rick, John W. (Michigan), DIFFERENTIAL EFFECTS OF EROSION ON THE PRESENCE OF CULTURAL REMAINS AT A PRECERAMIC PERUVIAN SITE. Erosion is often an important factor affecting the distribution of cultural materials of differing densities, weights, and shapes within an archaeological site. A large, provenienced surface collection from a preceramic site in highland Peru is examined for evidence of erosion as a possible explanation for observed heterogeneity in artifact distribution. Statistical methods are used to define the present spatial extent of the movement of surface material at this site. It appears that, for this particular area of Peru, critical erosion angles will serve to limit the site areas in which analysis of horizontal distributions can be expected to produce culturally significant information. (25)

Rippeteau, Bruce (SUNY, Oneonta), THE INTELLIGENT AND MAXIMAL USE OF RADIOCARBON DATES: EXPLICIT TECHNIQUES FOR AVERAGING, TESTING CONTEMPORANEITY, AND BUILDING RADIOMETRIC CHRONOLOGIES. The third generation of calendrical corrections for radiocarbon dates are available as is an

ever-increasing number of dates. Approaches to Macro chronologies of absolute time for the interpretation of culture histories and to Micro amounts of time such as dissecting the duration of a single site are now possible and called for. Drawing upon work by Austin Long of the University of Arizona Radiocarbon Laboratory and myself, and upon previous authors, I present explicit and simple techniques with numerical examples for the averaging or differentiating of radiocarbon and paleomagnetic dates. Proposed statistics and conventions for radiometric chronologies are also offered for comment. (26)

Robbins, Louise (see Heilman, James M.) (25)

Robertson, Merle Greene (Robert Lewis Stevenson School), SCULPTURAL STUCCO TECHNIQUES USED AT PALENQUE, CHIAPAS, MEXICO. The methods used by the Palenque sculptors in their stucco work were different from those used at other sites, and varied within the site of Palenque itself, even from pier to pier in the same building. By detailed micro-photography, it is shown that the remaining evidence indicates just how these ancient sculptors worked, how they built up the stucco layers, the types of armatures employed, and how they indicated designs on lower layers of plaster. (6)

Robertson, Robin (Harvard), THE DETECTION OF FOOD PREPARATION PRACTICES FROM FAUNAL REMAINS. Faunal remains have long been regarded as a source of information on the cultural practices of prehistoric peoples. One aspect of such information is the determination of the food preparation techniques practiced at a given site. If this problem has been considered at all, traditionally such materials as vessels, ceramic or otherwise, heat-cracked rocks, artistic representations, historical records, or the imagination of the archaeologist have been employed. At the present, no means of determining such practices from the bones themselves exists. With this goal in mind, a series of experiments were designed to derive the desired information from the bones. This paper will first examine the technique utilized and the resulting conclusions. Secondly the technique will be applied to a collection of bones recovered from the site of Dun Ailinne, C. Kildare, Ireland. Utilizing the stepwise discriminant and hierarchical grouping analytical procedures the possibilities of change over time and/or differential preparation of meat according to the size of the animal or type of bone will be investigated. (20)

Robinson, Gail (Washington), SKAGIT DELTA AREA PREHISTORY, WASHINGTON. This report concerns the application of recently developed research methods to the study of archaeological remains from the northern Puget Sound area. The research aims to explicate the area's chronology in part through the study of deltaic geomorphology and the resultant changes in associated microenvironments. Aerial reconnaissance techniques are utilized for both deltaic studies and the location of sites. The study aims to relate local occupations in their seasonal contexts through the study of artifact function, the identification and quantification of faunal remains, and the study of microenvironments. Preliminary results suggest that it is possible to increase our understanding of the interactions of seasonal activities and environmental and chronological change in an area which has been plagued by the proliferation of single site interpretations. (28)

Robinson, Gail (see Wilke, Steve) (29)

Rock, James T. (Arizona Archeological Center), ANTELOPE HOUSE METHODOLOGY. The methodological framework that is employed in the Antelope House archaeological project operationalizes and tests the logico-deductive method. It is designed so that all archaeological contextual data recovered from the site are examined through the use of transformation models. The testing of these models allows the examined information to be transformed into systemic, behavioral, context interpretations. This behavioral archaeological approach employs systems concepts to demonstrate the functional interrelationships of environmental, economic, technological, and social variables as they existed at the site through time. (1, 2)

Rodgers, C. Lanier, Jr. (Thunderbird Archeological Park and Museum), THE AMATEUR, LOCAL RESIDENT, AND LANDOWNER: AN INDISPENSABLE PART OF A SUCCESSFUL RESEARCH PROGRAM. A citizen of the Valley tells how the local collector, the landowner, and other local residents are a necessary and integral part of archaeological research on private lands. (24)

Rose, Jerome (Alabama, Birmingham), and Janice Cohen (Massachusetts, Amherst), SKELETAL BIOLOGY, MOUND 72. Mound 72, a ceremonial burial mound at Cahokia, offers a unique opportunity to study the skeletal biology of a culturally selected segment of a population. Previous research has indicated that individuals represented in this mound are of a high social status, intermediate status, and sacrifices. These groups differ in skeletal and dental pathology, physical characteristics, and genetic traits from the general populations. These parameters will be examined in an attempt to elucidate these cultural factors that influence selection for the variables mentioned. (11)

Ross, Richard E. (Oregon S), FIELD ARCHAEOLOGY AND THE GRADE SCHOOL EXPERIMENT. Most archaeologists feel the best way for students to learn the techniques of field archaeology is to actually engage in the excavation process. This philosophy has long been accepted pertaining to the training of college students. Recently a local Oregon school

district in consultation with anthropologists from Oregon State University decided to extend this philosophy to teaching children in the lower grades. This paper examines: the original ideas and the method of implementing the course; the teaching personnel utilized; the makeup of the student population; the kind of site used for the experiment; the problems encountered in the actual process of excavation and the more subtle problems of training the students in things other than field techniques; recommendations for future programs of the same nature. (7)

Rouse, Irving (Yale), CULTURAL DEVELOPMENT ON ANTIGUA, WEST INDIES. Excavations last summer at the site of Indian Creek on Antigua have revealed a sequence of 3 ceramic complexes, Indian Creek, Mill Reef, and Marmora Bay. The first 2 are Saladoid, and appear to be ancestral to the Ostionoid, Meillacoid, and Chicoid series of complexes of the Greater Antilles. The third is a local development, related to the Elenoid complexes in the other Leeward Islands, the Virgin Islands, and Puerto Rico. The 3 indicate a continuous, uninterrupted occupation of Antigua from ca. A.D. 1 to A.D. 1200, contrary to the theories of migration of post-Saladoid peoples through the island during the latter part of this period. Further excavation was undertaken in January 1974 at the site of Freeman's Bay in an effort to obtain traces of a subsequent Carib occupation of the island. A separate Freeman's Bay complex was encountered, but it seems to have developed out of the earlier complexes. None of the remains so far found can be attributed to the Carib. (41)

Sabloff, Jeremy A. (Harvard), INTRODUCTORY REMARKS ON THE INTER-DISCIPLINARY STUDY OF MESOAMERICAN FINE PASTE WARE: THE PROBLEM, THE RATIONALE BEHIND THE PROGRAM, THE ARCHAEOLOGICAL IMPLICATIONS. This paper offers a brief overview of the archaeological problem, the rationale for bringing a variety of scientific analytical tools to bear on the problem, and the archaeological implications of the data obtained from this research. (32)

Salwen, Bert (NYU), and John Vetter (Adelphi), TECHNIQUES FOR DELINEATION OF ACTIVITY AREAS IN A SHELL MIDDEN SITE. Faunal material and artifact classes from Shantok Cove, a multicomponent site on the Thames River, New London County, Connecticut, are analyzed. The investigation centers on the isolation of discrete activity areas within the Woodland component. These areas are recognized as clusters of artifacts and non-molluscan faunal remains within the obscuring matrix of shellfish-processing debris. Such clusters aid in understanding the dynamics of midden expansion over the period of the occupation. (40)

Sawyer, Alan R. (Washington, D.C.), STONE FORGERIES IN CHAVIN STYLE. In recent years a large number of carved soapstone cylinder vessels, bowls, and other artifacts in the Chavin style have appeared on the art market. Careful examination reveals that many of these are forgeries. Several spurious examples are shown and compared with legitimate antiquities. Criteria are suggested for the establishment of authenticity and warning is given of Moche style forgeries now being manufactured by the same workshop. (30)

Sayre, Edward V., and Garman Harbottle (Brookhaven Natl Lab), METHODS OF DATA HANDLING FOR THE BROOKHAVEN PROGRAM OF NEUTRON ACTIVATION ANALYSIS OF MESOAMERICAN FINE PASTE POTTERY. Both element-by-element and multivariate statistical methods are being evaluated for comparing and grouping specimens of Mesoamerican pottery for which extensive multicomponent analytical data have been accumulated. The grouping methods include visual comparison of overall data plots and clustering procedures based upon various multidimensional inter-specimen distances. Refinement of tentative specimen groups and assignment of individual specimens to establish groups by means of calculation of Mahalanobis distances relative to the group centers and by consideration of complete sets of factor group eigenvectors also are being evaluated. (32)

Sayre, Edward V. (see Harbottle, Garman) (32) (41)

Schiffer, Michael B. (Arkansas Archeological Survey), and J. Jefferson Reid (Arizona), TOWARD A BEHAVIORAL ARCHAEOLOGY: I. "Paleoethnology," "ethnoarchaeology," "action," "living," "experimental," "emergency," "public," "settlement," "systems," "processual," and "ecological archaeology," and many other seemingly disparate programs compete for the attention of modern researchers. Can all of these divergent trends be viewed in a framework broad enough to encompass their diversity while maintaining their integrity? This paper attempts to define the stable continuities of a behavioral archaeology, encompassing the divergent trends of current research. This integration is achieved through a consideration of the flow of general and specific types of information among the 4 interrelated strategies of a behavioral archaeology. The strategy concerned with answering specific questions about the past requires additional efforts at reintegration. We propose a framework, based on the distinction between the archaeological and systemic contexts and the formation processes of the archaeological record, to achieve this reintegration. (21)

Schiffer, Michael B. (Arkansas Archeological Survey), CULTURAL FORMATION PROCESSES OF "OCCUPATION FLOORS." Recent attempts at behavioral inference, especially on Paleolithic materials, utilize the concept of "occupation" or "living floor." It is argued here that this concept and the analytic techniques often coupled to it must be

replaced by others more sensitive to the complex behavioral determinants of spatial patterns in archaeological sites. Attention is focused on the source of behavioral variability most frequently overlooked in activity reconstructions, the cultural formation processes of the archaeological record. The quantitative, spatial, and formal transformations created between the systemic and archaeological contexts of materials by cultural formation processes must be explicitly modeled in the course of any serious analysis. By modeling these processes, the spatial patterning of artifacts is more rigorously explained, and the credibility of behavioral reconstructions is significantly enhanced. These arguments and concepts are illustrated with selected materials from the New World. (25)

Segovia, Antonia V. (Maryland), GEOLOGY AND ARCHAEOLOGY: GEOMORPHOLOGICAL INVESTIGATIONS OF PREHISTORIC SITES, METHODS, TECHNIQUES AND RESULTS. Geological investigations of a portion of the South Fork of the Shenandoah in the area of the Thunderbird archaeological site have dealt with geomorphological processes and methods of research not normally pursued by geologists. Detailed analyses of soil formation processes, Jasper formation, floodplain development, and the like have been of considerable benefit to the disciplines of archaeology, geology, and pedology. Knowledge of the Pleistocene history of the South Fork has also been gained. (24)

Sessions, Steven C. (see Hanson, John A.) (37)

Sheffer, Charles (Temple), COMPUTER SIMULATION AS A TOOL FOR SPATIAL ANALYSIS IN ARCHAEOLOGY: A SIMULATION OF FOOD PROCUREMENT IN SEMI-ARID PLAIN. The theory and techniques of computer simulation in general and spatial simulation in particular are discussed in terms of the development of an interactive computer simulation of food procurement in a semi-arid plain. (10)

Silverman, Helaine I. (Columbia), A PRELIMINARY RECONSTRUCTION OF ASPECTS OF NASCA CULTURE DURING EPOCH 2 OF THE EARLY INTERMEDIATE PERIOD OF CAHUACHI. It is widely accepted that, during Epoch 3 of the Early Intermediate period, the Nasca Valley was the center of a militaristic, expansionist culture, possibly a state, whose capital was at Cahuachi. A detailed 9-phase ceramic chronology has helped archaeologists trace and date the spread of Nasca Valley motifs and ideas over the south coast of Peru at this time. But, until now, the question of actual configuration and factors operative in the rise of Nasca culture has been ignored. Recent analysis of the only existing collection of Nasca 2 ceramics with known provenience has allowed further refinement of the chronology for Epoch 2 of the Early Intermediate period and provides new information about possible events leading to the short-lived florescence at Cahuachi. A tripartite subdivision of Nasca 2 is proposed and a concomitant increase in religious concern is demonstrated. (16)

Sloane, Florence P. (SUNY, Albany), ARCHAEOLOGICAL FRONTIERS: A HIGHLAND MAYA EXAMPLE. Frontiers are seen as areas of change. The nature of change along frontiers is considered as the result of ethnic interactions. A possible model for dealing with such change is discussed, and applied to the Quiche-Pokoman frontier of highland Guatemala. (41)

Smith, Bruce D. (Loyola), MIDDLE MISSISSIPPI EXPLOITATION OF ANIMAL POPULATIONS: A PREDICTIVE MODEL. A model consisting of a sequence of 4 interrelated hypotheses is presented as a framework within which exploitation of animal populations by Middle Mississippi groups can be considered. Faunal data recovered from a series of 7 Middle Mississippi sites is presented to facilitate the development of the model. The model proposes that Middle Mississippi exploitation of animal populations was selective, was seasonally oriented, and concentrated on those sections of the biotic community that would provide a maximum meat yield with a minimum of effort. (36)

Smith, C. Earle (Alabama), DIRECT EVIDENCE FOR WOODLAND DIET AND ENVIRONMENT. With the development of techniques for recovery of carbonized plant remains has come increasing evidence for the environment occupied by Woodland people and the diet that they consumed. Earlier conjectures that agriculture played only a small role in Woodland cultures appears to be confirmed by the large proportion of gathered foods in relation to cultivated foods among the plant remains. These remains confirm that the eastern North American mixed hardwood forest dominated large areas of the southeast and also dominated the nutritional intake of the people. (5)

Smith, Robert H. (Wooster), TOWARD A CODE OF ARCHAEOLOGICAL ETHICS. In archaeology, which deals with the irreplaceable remains of man's past, there is need for careful attention to matters of ethics, and more specifically to the question of a written code of conduct for persons and institutions engaged in archaeology. In this presentation some of the salient features of a "Code of Ethics for Field Archaeology" are discussed, including ethical canons relevant to the field archaeologist, the sponsor of an excavation, the chief excavator and the excavation staff. (7)

Snarskis, Michael J. (Columbia), A NEW CERAMIC SEQUENCE FROM THE LOWLANDS OF COSTA RICA. The first systematic stratigraphic excavations in the eastern lowlands of Costa Rica have revealed a definite cultural stratigraphy extending back at least 1500 years

before the Spanish Conquest. The earliest ceramic complex yet encountered has stylistic affinities with the Zoned Bichrome complex (300 B.C.-A.D. 300) of northwest Costa Rica, and to the Aguas Buenas and Scarified Ware complexes of the Chiriqui region to the south. In addition, a small example of the famous blue-green jades from eastern Costa Rica was found for the first time in a controlled stratigraphic context. (41)

Sneed, Paul G. (British Columbia), **ARCHAEOLOGICAL SYSTEMATICS AND BASKETMAKER CULTURAL ECOLOGY: SOME CEDAR MESA PROJECT EXPERIMENTS.** This report describes some methods employed and results obtained in an ongoing study of Basketmaker subsistence-settlement systems. Observation and collection of cultural and environmental data were done using probability sampling techniques in a survey of the Cedar Mesa region of southeastern Utah. Emphasis is on a discussion of methods of classification and the results of computer-assisted R and Q mode multivariate analyses of both intrasite and intersite artifact and ecofact distributions. Finally, an attempt is made to model cultural ecological systems and adaptive change (if any) on Cedar Mesa during the BM II and BM III periods. (42)

Spence, Michael W. (Western Ontario), and Phil C. Weigand (SUNY, Stony Brook), **OBSIDIAN PRODUCTION AND TRADE IN WEST MEXICO.** Surveys and excavations over the past decade in West Mexico, particularly in the Teuchitlan-Ahualulco-Etzatlan valleys of Jalisco, have led to the identification of many prehispanic obsidian quarries and workshop areas. It is now possible to tentatively define the changing patterns of Classic and Post-Classic period obsidian distribution and utilization for that area. Long-distance trade for obsidian are also discussed. (41)

Speth, John D. (Hunter, CUNY), **MODELS FOR THE SPATIAL ANALYSIS OF PALEOLITHIC "LIVING FLOORS."** The spatial analysis of Paleolithic "living floors" is rapidly becoming a major research concern in archaeology. In the past few years, considerable attention has been given to computerized mathematical techniques to extract distributional information from spatial data. This paper examines briefly some of the models, assumptions, and expectations that underlie the selection of appropriate analytical techniques and which influence the significance and utility of the results. (25)

Stanford, Dennis (Smithsonian), **THE JONES-MILLER SITE: A PRELIMINARY REPORT.** During the summer of 1973, the Smithsonian Institution Paleo-Indian Research Program excavated a Hell Gap Bison kill in northeastern Colorado. The remains of over 200 animals were found in association with chert and bone tools. The various faunal elements were clustered into non-random piles that may indicate an "assembly line" butchering technique. The results of this excavation and the ongoing analysis will be presented in this paper. (28)

Stark, Barbara L. (see Bruder, J. Simon) (8)

Sterud, Eugene (SUNY, Binghamton), **THEORY AND METHOD IN SALVAGE ARCHAEOLOGY.** This paper includes a discussion of salvage attitudes both in the U.S. and in other countries, the relationships between research instigated projects and the necessary rescue of endangered sites and catchment environments, and the various ways that such conflicts of interest are being resolved. (31)

Stocker, Terrance, and Robert Cobean (Illinois, Urbana-Champaign), and Sheri Swibel (Harvard), **OBSIDIAN PROCUREMENT PATTERNS IN MESOAMERICA.** Recent investigations in Mesoamerica that correlate the chemical composition of obsidian from archaeological sites with the composition of Pre-Hispanic quarries have resulted in a plethora of hypotheses concerning obsidian trade networks and procurement methods. Preliminary results are presented concerning excavations that were conducted in the summer of 1973 at the Pico de Orizaba, Veracruz quarries as well as data gathered from quarry surveys in Hidalgo, Queretaro, and Michoacan (1971-1973) in an effort to test the existing theories. (41)

Stoutamire, James W. (Missouri), **TULA, HIDALGO—AN URBAN SURVEY.** The Tula Urban Survey Project, a part of the University of Missouri-Columbia Tula Project, was conducted during the 1972 summer field season. Initial laboratory analysis of the material collected from both random and cross-section surface surveys has been completed. The results indicate the existence of a Toltec urban settlement covering approximately 13 square kilometers during the Mazapan ceramic phase. Somewhat smaller settlements were present within the Mazapan urban zone limits during the preceding Coyotlatelco phase and the succeeding Aztec phases. The presence of Huastec and Gulf Coast ceramics indicates that the Toltec state maintained contacts with these areas. Craft specialization is indicated by the presence of both obsidian and figurine workshops within the urban zone. (27)

Strauss, L. G. (see Clark, G. A.) (8)

Struever, Stuart (Northwestern), **HISTORY OF THE KOSTER RESEARCH.** Following 9 years of focus on the Woodland period (500 B.C. to A.D. 900) in the lower Illinois and adjacent Mississippi Valley region, the Northwestern University archaeological program elected to begin an intensive study of the antecedent Archaic cultures in the same area. In 1969, the Koster site was selected to begin this study. Koster is located along the eastern

bluffline of the Illinois Valley trench, 50 miles north of St. Louis. Five seasons of excavation yield evidence of 15, and perhaps 16, superimposed cultural strata, each separated from those over- and underlying it by inter-horizons of sterile slopewash soils. The numerous occupations, the long time span represented, a uniformly high level of bone and plant remains preservation, and the almost complete separation of cultural strata by sterile beds, together make Koster an unusual opportunity to obtain a cross-section of information on Archaic adaptations in the central Mississippi River drainage. The Koster data greatly amplifies the information on Archaic subsistence-settlement systems available from this area. Koster provides an opportunity to refine and extend the existing cultural chronology for the Archaic of this area. Finally, Koster is seen as a proving ground for new approaches to interdisciplinary research on complex habitation sites. The concept of the "archaeological research community" as an operating social and academic unit has emerged from this attempt to develop viable interdisciplinary research at Koster. (38)

Sublette, Audrey (Florida S), **PHYSICAL ANTHROPOLOGY AND ARCHAEOLOGY OF A MULTICOMPONENT SITE IN NEW YORK STATE.** (33)

Swedlund, Alan (see Armelagos, G.) (33)

Swibel, Sheri (see Stocker, Terrance) (41)

Tainter, Joseph A. (Northwestern), **THE SOCIAL DIMENSIONS OF MORTUARY PRACTICES: THEORY AND METHODS OF ANALYSIS.** Cross-cultural studies of ethnographically recorded mortuary systems are utilized in this paper to derive a general theory of mortuary practices. The theory indicates that variations in ranked social positions will be reflected archaeologically in the amount of energy expended in mortuary treatment. This generalization is employed to test the relative utility of factor analysis, average and complete linkage cluster analyses, and monothetic division using sum chi-square and the information statistic, for the classification of mortuary data. The results indicate that classification with the information statistic is most suitable for analysis of the social dimensions of mortuary practices. (13)

Tartaglia, Louis J. (UCLA), **HEADLESS BURIALS: A SPECIALIZED MORTUARY PRACTICE AT GUATACONDO, CHILE.** An investigation was undertaken to determine the mortuary custom practiced at Guatacondo, Chile, which has been radiocarbon dated at the beginning of the Christian era. Subsequent examination of this burial complex revealed a distinct cultural anomaly present, headless burials. The archaeological evidence seems to suggest that a ceremonial-religious activity, in contrast to trophy headhunting, is associated with this specialized burial custom. (30)

Taylor, Richard L., James I. Ebert, and Robert K. Hitchcock (New Mexico), **THEORETICAL LINKING ARGUMENTS AND THEIR ROLE IN THE CONSTRUCTION OF ARCHAEOLOGICAL RESEARCH DESIGNS.** Theoretical linking arguments are those arguments employed by the archaeologist to attribute meaning to the archaeological record. Archaeological research designs are the means of operationalizing these arguments and therefore provide a useful context in which to examine their role in the development of archaeological and anthropological theory. Research designs of the "new" archaeology will be examined as to the nature of their theoretical linking arguments and contrasted with those of the old archaeology. (21)

Taylor, Richard L. (see Vierra, Robert K.) (25)

Thatcher, John P. (Wright S), **A VIEW OF THE NORTH HIGHLANDS AS SEEN FROM HUAMACHUCO.** The geographical location of the Huamachuco region, midway between the Cajamarca Basin to the north and the Callejon de Huaylas to the south, makes it a potentially important area for the study of culture process in the North Highlands. Recent archaeological data indicate that there may have been a close relationship between Huamachuco and the Cajamarca Basin. Also, settlement pattern data indicate a period of nucleation in Huamachuco during the latter half of the Early Intermediate period. This paper summarizes the evidence for these statements and proposes a number of questions that are raised thereby. (15)

Thomas, Prentiss M., Jr. (Tennessee), **CLASSIC MAYA TERRACING AND ARTIFICIAL RIDGES AT BECAN, CAMPECHE.** An elaborate system of artificial ridges located in the Rio Bec region of Yucatan was constructed during the Late Classic period. Serving to regulate water drainage and erosion, the ridge network is taken as evidence for the practice of intensive agriculture. (6)

Thomas, Ronald A. (Section of Archaeology, State of Delaware), **EFFECTS OF TRADE ON ABORIGINAL CULTURAL MANIFESTATIONS OF THE DELMARVA PENINSULA.** The existence of an extensive trade and communications network functioning in much of the eastern United States during the last 3000 years is well documented archaeologically. The recovery of exotic artifacts throughout the Delmarva Peninsula has made it obvious that the network reached the Middle Atlantic seaboard. While the extent and duration of this network is relatively well known, the mechanisms by which it operated have attracted little investigation. Coeval with the appearance of this exchange system in the Delmarva Peninsula

is the advent of a highly developed socioreligious complex. This complex is recognized by patterned and differential treatment of corpses during mortuary rites and by the utilization of the exotic artifacts acquired through the trade network as emblems of office and as means of denoting particular status levels. It is contended that this socioreligious complex could not, and did not, exist in aboriginal cultures of the Delmarva Peninsula prior to the appearance of the exchange network. Although a cause and effect relationship between trade possibilities and developed status systems is not suggested, it should be pointed out that little change occurred during the initial period being considered in any but the 2 aforementioned areas. The subsistence-settlement system, for instance, remained relatively stable during the first 2000 years of the existence of the trade and communications network. (19)

Thompson, Jeannette Jackson (Missouri), ACTIVATION ANALYSIS AT THE U.M.C. LABORATORY FOR NUCLEAR ARCHAEOLOGY: I. CERAMICS AND METALS. Neutron activation has proved to be a powerful tool in determining the provenience of artifacts. Work is in progress at this laboratory on the analysis of ceramics from North America, Europe, and Africa, and metal objects from Europe and Africa. Problems involved in these analyses include: preparation of a chemical standard for short-lived radioisotopes, reduction of sample contamination, uniformity of sample preparation, irradiation and counting parameters, reliability of isotopic determinations, and interpretation of data. Results allow the differentiation of prehistoric raw material sources through time and space. (39)

Tobler, Waldo (Michigan), MODELS OF SPATIAL AUTOCORRELATION: THEIR DEVELOPMENT AND APPLICATION. This paper focuses upon the historical development of models of spatial autocorrelation and their present utility as tools in spatial analysis. Problems inherent in the development of computer programs for calculating spatial autocorrelation are also discussed. (10)

Topic, Theresa L. (Harvard), CONTINUITY AND GROWTH AT MOCHE. A series of deep strata cuts at the site of Moche in the Moche Valley have shown that the site was occupied continuously from Late Gallinazo through Moche IV. Although the stratigraphy is complicated by depositional problems, the growth of the site can be traced in terms of area covered, density of occupation, and increasing architectural complexity and variety. Growth in these spheres correlates with increasing power and influence of the site relative to other settlements in the Moche Valley and in adjoining valleys. The evidence indicates that the growth of the site and its influence was a gradual, cumulative process. Since it is during this time period that the antecedents to Late Intermediate period urbanism appear, the nature of gradual independent culture change must be examined. For a variety of reasons it is especially difficult to isolate the factors responsible for this kind of change, but the long occupation and deep stratigraphy at Moche make it possible to recognize the process, if not to explain it satisfactorily. (15)

Trubowitz, Neal (SUNY, Buffalo), RESEARCH ORIENTATIONS IN SALVAGE ARCHAEOLOGY. Because of the finite nature of archaeological resources, salvage operations that deal with the current destruction of the archaeological record must operate with research orientations. Otherwise, archaeologists will find in the future that their research projects are impractical due to biased samples or lack of sufficient data. An example of a highway salvage program that incorporates research goals and methodology is discussed. (31)

Ubelaker, Douglas H. (Smithsonian), ANTHROPOLOGICAL INTERPRETATIONS FROM DEMOGRAPHIC RECONSTRUCTION: A CASE STUDY FROM THE TIDEWATER POTOMAC. Demographic data reconstructed from skeletal samples can be used to examine problems in archaeology and ethnohistory. In this study, demographic profiles were reconstructed from protohistoric ossuary samples in the mid-Atlantic area of the United States. The resulting mortality curves, survivorship curves, life tables, and crude mortality rates were then used together with archaeological information to estimate the number of years represented by the ossuary, the size of the formerly living population, and the nature of the social-political unit contributing to the ossuaries. These estimates were then compared with others derived from different types of data. (33)

Vanderleest, Barbara (Wisconsin, Milwaukee), AN ANALYSIS OF MOUND 72 POTTERY. Mound 72 of the Cahokia site in East St. Louis, Illinois has attracted attention for its elaborate burials and cache pits. This paper presents the results of an analysis of the ceramic remains from Mound 72. The pottery, coded into the University of Wisconsin-Milwaukee Ceramic Code, was examined statistically both as a single component and for internal variation. A comparison of ceramics found in the Mound 72 midden areas with those found associated with the elaborate burial caches lends itself to sociocultural interpretation. Trade connections, possibly with the Caddoan area, are also in evidence. (11)

Veltre, Douglas W. (Connecticut), THE USE OF HISTORIC AND ETHNOGRAPHIC DATA IN ARCHAEOLOGICAL INTERPRETATION. The use of historic and ethnographic materials in the archaeological investigation of sites of the historic period has a significant potential for both archaeological method and theory. Such materials have too long been employed simply to provide more detail to reconstructions of culture history. Instead, it is suggested that historic and ethnographic data can be instrumental adjuncts to a processual

archaeological investigation, both by providing expanded data base upon which hypotheses may be formulated and also by providing data against which archaeological hypotheses, tested archaeologically, can further be examined, thereby providing the discipline with a means for critically testing some of its notions concerning the nature of archaeological proof. (21)

Vetter, John (see Salwer, Bert) (40)

Vierra, Robert K., and Richard L. Taylor (New Mexico), A SPATIAL ANALYSIS METHOD FOR ISOLATING AND RECOGNIZING OVERLAPPING SPATIAL DISTRIBUTIONS. The purpose of this paper is to present a spatial analysis method for isolating and recognizing overlapping activity areas in the archaeological record. A factor analysis model is employed in which the cases represent subdivided spatial units of an occupational level and the variables are the artifacts found within each spatial unit. A rank-ordering of factor scores reveals the spatial dimensions of each activity area. A strategy for choosing a beginning reference point, as well as for determining the size of the spatial unit, is suggested. (25)

Von Endt, D. W. (Smithsonian), P. E. Hare (Carnegie Inst of Washington), and D. J. Ortner (Smithsonian), ENVIRONMENTAL FACTORS WHICH AFFECT PROTEIN DECOMPOSITION IN ARCHAEOLOGICAL SPECIMENS. Our report will focus on the relationship between environmental conditions and bone decay. First we shall review some factors that affect the rate of bone decomposition such as temperature, water movement, and soil pH. We will then discuss the results of our research on bone size as it affects bone degradation. In simulation studies we found that protein is lost more quickly from small particles than from large particles of cow bone. This finding is important in interpreting the results of attempts to date archaeological bone specimens and is a significant factor to consider in the interpretation of faunal remains at archaeological sites. (20)

Wagner, Catherine A. (Illinois, Urbana), THE NAZCA CREATURES: SOME PROBLEMS OF ICONOGRAPHY. This paper focuses on the evolution in form and meaning of the Masked Mythical Being motif in Nazca iconography. In order to interpret this evolution several other motifs are also considered, including the Killer Whale, Warrior and Cosmic Deity, which lead to a re-examination of Roark's distinction between mythical and military themes. On the basis of this discussion the paper explores the extent to which an artistic tradition can be treated as a reflection of the culture within which it was produced, with an emphasis on art as a semi-independent tradition within a culture rather than as a reflection of a cultural whole. (16)

Wagner, Erika (Instituto Venezolano de Investigaciones Cientificas), NEW ARCHAEOLOGICAL EVIDENCE FROM THE LAKE MARACAIBO BASIN. Excavations along the eastern shore of Lake Maracaibo have revealed cultural and ecological features that have enabled us to establish a new cultural pattern for the Lake Maracaibo Basin: the North Andean Lowland Pattern. The main characteristics of this pattern are presented and relationships with other cultural patterns in northern South America are established. (30)

Walker, Joan M. (Catholic), MOUNDS, MOUNDS, MOUNDS. Burial mounds in the Shenandoah Valley are poorly reported but widely distributed. The results of research into the Smithsonian Archives, land records, amateur collections, and mound location are reported with a summary of their chronological placement and content. (24)

Walker, John W. (Southeast Archeological Center, Natl Park Service), DISTRIBUTION AND SIGNIFICANCE OF WEEDEN ISLAND SITES IN GEORGIA AND ALABAMA. As the result of the discovery of a large Weeden Island site on the Atlantic drainage in central Georgia, a study of the distribution of Weeden Island ceramics was undertaken. This study indicates that significant quantities of Weeden Island ceramics occur on sites located within an area of the coastal plain extending from the southern half of the Georgia coast northward to the fall line and westward to the Alabama-Mississippi border. (34)

Walter, Nancy Peterson (CSU), GETTING A MUMMY X-RAYED. An analysis of x-ray and neutron radiography of a Peruvian child mummy bundle belonging to the Los Angeles Natural History Museum, looking for pathological problems, artifacts, and examination of histological material. (26)

Walthall, John A. (Alabama), HOPEWELLIAN TRADE AND INTERACTION IN THE MID-SOUTH. The Middle Woodland tradition in the highland Mid-South is differentiated from earlier regional expressions by the emergence of a new cultural pattern. This development was, in part, stimulated by the participation of certain ethnic groups in a series of local and extra-areal transaction systems, previously defined as the "Hopewellian Sphere of Interaction." The contemporary communities in the Mid-South that participated in this exchange network are delineated and the effects of this phenomenon on their cultural systems are discussed. Hypotheses concerning the routes that served as avenues for the flow of goods between these groups are offered, as well as the role played by highland raw materials and commodities in the initiation of this cultural interaction. (5)

Watson, Patty Jo (Washington, St. Louis), THEORY IN ARCHAEOLOGY: THE NEW CRITICISM. During the past 2 years, several articles and reviews have appeared expressing

criticism of what is still referred to as "new archaeology." Some of the critiques are highly relevant to crucial points of archaeological theory, while others obviously reflect merely a backlash or reverse-bandwagon effect. Therefore, in the interests of clarifying the major issues, it is worthwhile to review these critiques and to extract what is substantive disagreement from what is merely superficial polemical rhetoric. In this paper such a review is offered, together with a discussion of the main points at issue. (21)

Weed, Carol S. (Prescott C), ". . . FOR THE SUPPLY AND PROFIT OF OUR HOPE . . ."; A MODEL OF CENTRALIZED REDISTRIBUTION. A number of sites located within the boundaries of the central Arizona ecotone are situated on isolated, though prominent, topographic features. Initially identified as "fortifications," the sites may represent centralized localities for the storage and redistribution of foods, specifically, and other specialized, though non-luxury items. Hilltop sites are described and plotted in relation to adjacent lowland habitation sites. A model based on Lestocquay, Powers, and Polanyi is presented as one alternative to the notion of fortification. (37)

Weigand, Phil C. (SUNY, Stony Brook), and Joseph Mountjoy (North Carolina, Greensboro), THE TEUCHITLAN AND PROVIDENCIA SITES: POSSIBLE CLASSIC PERIOD URBAN COMPLEXES IN JALISCO, MEXICO. Surveys in the Teuchitlan-Ahualulco-Etzatlan valleys of Jalisco have led to the definition of several highly complex sites, predominantly of the Classic period. Two sites in particular, Teuchitlan and Providencia, display many urban characteristics: large occupation zones, multiple and complex ceremonial precincts (with circular stepped pyramids and ball courts as basic features), irrigation ditches and terraces, specialized workshop zones, etc. The configuration of these sites will be discussed. (41)

Weigand, Phil C. (see Harbottle, Garmon) (41)

Weiss, Kenneth M. (Texas, Houston), THE USE OF LIFE TABLES FOR DEMOGRAPHIC INFERENCE FROM SKELETAL POPULATIONS. In this study, population remains are simulated first by deterministic population projection procedures using a known model life table. The effect of various growth rates, and of initial deviations from stability, are tested for their degree of distortion of demographic inferences made from the remains. Secondly, a series of sporadic demographic disturbances are tested for their effect on the simulated remains. It is found that even for severe disturbances, only a fairly short recovery period of continued deposition must follow before the life table can again be inferred with fair accuracy. The different effects of mortality and fertility "events" are examined, as well as the speed of recovery from density-dependent populations. In general, it can be concluded that under some mild restrictions, and for populations of long deposition history, model life tables can safely be used to determine reasonably approximate life tables. The importance of using settlement-pattern analysis to determine population growth and other demographic information is highlighted by this investigation as well. (33)

Wenke, Robert (Michigan), APPLICATION OF LOCATIONAL MODELS TO THE EVOLUTION OF IMPERIAL SYSTEMS IN SOUTHWESTERN IRAN. The question of why geographically and temporally distinct cultural systems should go through apparently similar patterns of socioeconomic expansion has long been of interest to researchers. This paper attempts to test empirically some of these workers' and the author's own ideas about such parallels, using a predictive model based on mathematical models developed in locational geography. The Susiana Plain in southwestern Iran was selected as the ideal area for these testing procedures because it was the agricultural heartland and frequently the imperial capital to 2 important ancient empires, the Parthian (250 B.C.-A.D. 250) and the Sassanian (A.D. 250-A.D. 650). (4)

Whallon, Robert, Jr. (Michigan), TOOL KITS OR ACTIVITY AREAS? The most common approach to the analysis of patterns of artifact distribution on an occupation floor has been to define clusters for each individual type in turn, to define "tool kits" from patterns of mutual spatial covariation among artifact types, and finally to use the spatial clustering of these tool kits to find "activity areas" on the occupation floor. This approach has been successful in some cases but not in many others. In this paper we explore the possibility that our conception of a "tool kit" is not particularly realistic and that the above approach might be reversed, searching first for "activity areas" and only consequently attempting to define "tool kits." (25)

White, Marian (SUNY, Buffalo), GOALS OF THE HIGHWAY SALVAGE SURVEY: THE NORTHEAST, AN EXAMPLE. This paper will discuss the priorities that should exist on a highway salvage survey in contrast to other kinds of survey. Problems of Corridor and Right-of-way reconnaissance will be considered as well as different goals that exist at each of these stages of overall survey. (31)

Wildesen, Leslie E., and Carol A. Mortland (UCR), THE FALLACY OF "THE DESERT" AS A PREHISTORIC CULTURE AREA. A synthesis of previous and recent cultural and environmental data from the Mojave Desert suggests that models developed for one portion of the desert do not adequately predict data from any other portion of the desert. The

intra-regional variations are a function of local variations in climate, land use patterns, and unique cultural history, and are of sufficient magnitude to make general discussions of "desert" cultures inapplicable to the Mojave Desert geomorphic region. (35)

Wilke, Steve, and Gail Robinson (Washington), ENVIRONMENTAL AND CULTURAL CHANGE IN THE UPPER CHESAPEAKE BAY AREA. This report relates the structure and certain results of ongoing research of environmental and cultural changes in the upper Chesapeake Bay area. Artifactual and environmental data are used to explicate the processes of adaptation and stress reaction of coastal-oriented economies to ongoing processes of coastline evolution. Different processual models are presented followed by a consideration of the strategy and tactics of the research design established to investigate them. Some preliminary results are briefly discussed. (29)

Winter, Joseph C. (Utah), THE SPREAD OF AGRICULTURE IN THE SOUTHWEST AND GREAT BASIN. Most research relating to the spread of agriculture in the Southwest has emphasized the diffusion of new crops and morphological changes in the local maize series as the major factors in the adoption of a farming economy. While the present study accepts the importance of species and varietal alterations, it concentrates upon modifications of the regional systems of exploitation in explaining agricultural adoption, and in particular examines the local wild plant collecting complexes and their environmental relations. Data based upon corolla, pollen, and macrofloral sequences from 2 Utah caves are presented which correlate the local adoption of farming with the development of grass collecting complexes, perhaps in a context of broadened grasslands and expanding farmlands. Additional factors that are considered include maize evolution, population dynamics, and preadaptations to prior subsistence techniques. (36)

Witter, Dan C. (New Mexico), NUNAMUIT SUBSISTENCE AND CATEGORIES OF FAUNAL ANALYSIS. Faunal remains offer a means of understanding subsistence strategy and related cultural processes. The analysis of animal bones requires categorization of the different types of information provided by the bones in terms of human behavioral and cultural patterning. With the caribou-hunting Nunamuit Eskimos as a source for example and illustration, the meaning of analytical categories such as (1) species diversity and minimum numbers of individuals, (2) distributions of anatomical assemblages, (3) bone breakage and fragmentation, (4) horizontal distribution and bone features, (5) surface marks, and (6) life history and population structure will be discussed. (20)

Wobst, H. Martin (Massachusetts, Amherst), CENTRIPETAL TENDENCIES IN EGALITARIAN SOCIETIES: THE IMPLICATIONS OF COMPUTER SIMULATION. The locational patterns and demographic structures of band society are compared to those of tribal agriculturalists by means of long-term Monte Carlo simulation. Strong centripetal tendencies are generated by the stochastic variables that underlie the demographic structure of egalitarian society. These tendencies have to be counteracted by social and economic processes in order to prevent biodegradation and to decrease intracultural variance. The importance of this variance to long-term regional adaptation is stressed, the implications of the simulation for the explication of prehistoric cultural change and stability are discussed, and the potential of the advocated change in emphasis is illustrated with some examples. (4)

Wylie, Henry G. (U.S. Forest Service, Ogden, Utah), ARCHAEOLOGICAL IMPACT OF PINYON-JUNIPER CHAINING: A TEST. Clearing of pinyon-juniper forest and sage brushlands with caterpillar-tractors and heavy drag-chain is a common method of improving grassland grazing habitat throughout the western United States. A controlled chaining experiment on a surface lithic site in eastern Utah indicates that the soil disturbance produced by associated uprooting, dragging, and trampling activities can have serious effects on surface and subsurface archaeological remains. These impacts can be quantified and discussed in terms of artifact displacement, breakage, and churning. Some suggestions for mitigating these impacts are considered. (42)

Yarnell, Richard (see Chapman, Jefferson) (36)

Yellen, John E. (Smithsonian), CULTURAL AND NATURAL PROCESSES IN FAUNAL ASSEMBLAGE FORMATION: A !KUNG BUSHMAN EXAMPLE. Butchering, like all cultural processes, is governed by implicit and explicit rules. These rules are, in part, related to such factors as the size and the anatomical part of the species involved, and to the kinds of butchering tools employed; for such reasons marked cross-cultural similarities may be noted. But other aspects of this process may best be conceived as "stylistic" in nature, and this raises the possibility of comparing excavated faunal assemblages as one may deal with sherds or lithic materials. The non-random preservation of faunal remains in an archaeological context provides a major stumbling block to this approach since cultural patterns may be distorted or totally obscured. Also, natural patterns may easily be confused with cultural ones. Bone refuse, collected from !Kung Bushmen in carefully controlled situations provides a basis for studying cultural patterns. Similar remains recovered from campsites that had been abandoned for varying periods of time then allow one to examine the non-random natural forces that are also at work. (20)

Yesner, David, and Alan Bieber, Jr. (Connecticut), APPLICATION OF MULTIVARIATE ANALYSIS TO REGIONAL FAUNAL ASSEMBLAGES. A frequently encountered



problem in archaeological research is the analysis of inter- and intrasite variability in faunal assemblages from an ecologically defined region. Little effort has been devoted to the exploration and comparison of various multivariate techniques for such analysis. These techniques may provide, among other things, a key to the deployment of human populations within a region over time by comparison with a matrix of possibilities derived from both ecosystemic and ethnographic data. The southwest Umnak region of the Aleutian Islands provides an excellent body of test data for such multivariate techniques as various kinds of distance measures, cluster analysis, and Q-mode, and R-mode factor analysis. Results of these analyses are compared and contrasted, and suggestions are made concerning possible wider applications of the techniques. (40)

Zucchi, Alberta (Instituto Venezolano de Investigaciones Cientificas), ARCHAEOLOGICAL RESEARCH IN THE NORTHWESTERN VENEZUELAN LLANOS. A new large settlement site was discovered and excavated in the northwestern Venezuelan Llanos (State of Portuguesa). The paper presents the preliminary results of this research which seem to indicate that the site functioned as a confluence center for Western Venezuela, and also as a significant trade center with Central America. (30)

- 1) CPT won't do it?
- 2) Simulation (fortuitous fits?)

3rd use: Hypothesis (exchange) relationships  
betw & among settlements  
intent: predictions  
+ how to test in field

Attentions to

initial assumptions  
explicit definitions

CP: locus of activity  
agglomeration  
production distribution services

CP function: different from those in lower-order centers

CP hierarchy: discontinuous distribution

Structural h's develop

as result of assumptions 1, 2, or 3 above.

Why CP's? centralization sensitive to factors that cause social ranking, stratification.

Garner 1967 (in Modeling)

- tendency for agglomeration
- proximity to resources
- locations are accessible
- some more than others

[DACEY] to get population into a rank-size



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<The multiplier>  
<+ the spatial relationships>  
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the rank-size "rule"  
an empirical regularity,  
not an explanation.  
the GROWTH model?  
Johnson: doesn't answer WHY.

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rank-size represents a equilibrium, deviation from n-s a disequilibrium

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n-s model does not deal with spatial arrangement

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one can generalize about how as well as about why, however!