THE OHIO ARCHAEOLOGICAL COUNCIL

NEWSLETTER

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Editor's Comments

My sincerest thanks go to out-going President Al Tonetti for his superb leadership, management, and organization of the *O.A.C. Newsletter*, without whose vision and dedication the *Newsletter* would have surely expired. His influence and guidance will be missed.

In the President's Column this issue Al reports on the results of the vote concerning the "Irwin-Ruffini Committee" document. As was reported in our last issue, this document laid the foundation by which the discovery and disposition of archaeological burial remains and associated artifacts could be systematically incorporated into state legislation, satisfying both scientific and Native American concerns. The majority of O.A.C. Active Members did not vote for this document, but it is unclear what the vote means.

It appears no ground-swell of support has come from the membership for this particular proposal and no new alternatives have yet been presented to take its place. As has been reported, the Archaeological Society of Ohio also objects to this proposal. An opening appears to have been made for the presentation of new ideas and a broader discussion.

News from the Ohio Historic Preservation Office includes several items. Under State Legislation, House Bill 411 has been reintroduced. This Bill encourages state-wide preservation of historic places, including archaeological sites. A Fact Sheet about the Bill is enclosed with this issue.

Grant proposals are again being accepted for the Intermodal Surface Transportation Efficiency Act (ISTEA), which includes archaeological research projects. Grants are provided to projects proposing scenic or environmental improvements to transportation facilities and are executed in conjunction with the Ohio Department of Transportation.

A note on the Serpent Mound menace; the Ohio Historic Preservation Office has received notice of a request from the Cedar Lake Resort developers to the Army Corps of Engineers to dam Ohio Brush Creek. The developer has been advised to consult with the Ohio Historic Preservation Office on the dam's adverse impact on Ohio Brush Creek's archaeological legacy, including Serpent Mound and it's environs. Stay tuned for further updates.

The new File Room policies and procedures have been instituted as of October 1, 1993, and the first orientation has been successfully completed. A detailed User's Guide is available from the Ohio Historic Preservation Office. Awards have been presented by the Ohio Historic Preservation Office to several organizations and companies for outstanding contributions to archaeology-related historic preservation, and a new CRM publication is available from the National Park Service containing articles related to Native American and archaeological issues.

Two grants have been awarded by the Grants Committee, the 1993 Patricia Essenpreis Research Grant for radiocarbon dates at Fort Ancient, and another to purchase infrared aerial photos of the "Great Hopewell Road."

Don't miss the news about the Radiocarbon Data Base File! The O.A.C. Board of Directors would like to maintain this work already started by a peer group from West Virginia, Kentucky, and Ohio (over 580 dates have already been collected for Ohio) and additional dates are requested. An information form is included with this issue!

Many training opportunities are coming up in archaeology and related technical areas ranging from curation management, geoscience/GIS, aerial reconnaissance (by radio controlled model aircraft), through historic preservation. A detailed list appears in this edition.

We also include two articles of interest, the first by Martha Potter Otto wrapping up the outstanding success of the Ohio Historical Society's sponsorship of "Archaeology Days" this summer, and the other by Richard Yerkes summarizing his results of two seasons of field work at the Flint Ridge State Memorial, a fascinating report on the Vanport flint deposits.

Len Piotrowski

IN THIS ISSUE

PRESIDENT'S COLUMN

It has been a privilege to serve as President of the Ohio Archaeological Council for the last four years. It has also been a lot of work. I wish to thank all the members, the Board of Directors I have served with, and particularly the members of the OAC's Education Committee and its Chair, Bob Genheimer. (Bob will become President following his two-year term as President-elect.) I believe the OAC is moving in the right direction by focusing attention on public education activities.

I particularly want to thank the Ohio Historic Preservation Office, especially my Department Head, Barbara Powers, and Deputy State Historic Preservation Officer Franco Ruffini and State Historic Preservation Officer W. Ray Luce, for giving me the opportunity to assume this responsibility. The in-kind services provided me by the Ohio Historic Preservation Office enabled me to carry out my responsibilities in a timely and efficient manner. On behalf of the Ohio Archaeological Council I take this opportunity to publicly thank the Ohio Historic Preservation Office, and the Ohio Historical Society, for allowing me and other staff members to take the time necessary to engage in professional activities. Working together works best.

The Board of Directors met twice since our last membership meeting. Two grants were approved (see Grants Committee article) and extended discussions took place concerning the so-called "Irwin-Ruffini Committee" document. The Committee requested that the OAC support the document and at their June 11 meeting the Board of Directors approved a motion recommending that the OAC membership approve this document as the basis for state legislation creating a process governing activities pertaining to the discovery and disposition of interred human remains and associated burial objects on all lands, except federal, in Ohio.

A mail ballot was prepared and in July the results were tallied. According to our Code of Regulations (Article IX, Section 5), such actions must be approved by a majority of Active members, not by a majority Active members voting. At the time the mail ballot was held there were 78 Active members. A simple majority of Active members was 40. The ballot was designed so that only Active members approving of the document needed to return the ballot. Only 29 ballots were returned; 27 approved, 1 was invalidated because the envelope was not signed, and 1 was returned "disapproved." Therefore, the Active members of the OAC have not approved the Board of Director's motion recommending that the OAC support this document as the basis for state legislation.

At its las meeting, October 14, the Board of Directors decided to not take any further action regarding this matter until the new Board is seated. The "Irwin-Ruffini Committee" will soon meet to discuss the results of the OAC's vote, the objections of the Archaeological Society of Ohio, the results of the Ohio Council for Burial Rights deliberations of the document, and other recommendations.

As most of you know, this is a matter that I and many others, including OAC members Franco Ruffini, Wes Cowan, and N'omi Greber having devoted much time to over the last few years. I am taking this opportunity to thank Franco, Wes, and N'omi for their hard work on this difficult issue. I also appreciate the hard work of the OAC's Native American Concerns Committee on this and other related matters. Their input and support has been crucial to reaching the agreements reflected in the document. I also want to particularly thank Ken Irwin, Dan Jimerson, Lance Kramer, and Jim Addington of the Ohio Center for Native American Affairs and Hawk Pope, Barbara Crandall, and Richard Paugh of the Native American Alliance of Ohio for their participation in these discussions. I have no doubt that all of us have grown to respect and better understand each others positions on various issues surrounding this matter. Where we go now is unclear. But I am sure that if we go together we go in the best interests of archaeology and Native America.

Parting thought and final plea: PLEASE contribute something to the *OAC Newsletter*. Being an OAC member means that each and every one of us are responsible for this and all other actions of the organization. Get involved!

Al Tonetti

OHIO HISTORIC PRESERVATION OFFICE

STATE LEGISLATION

The Ohio Historic Preservation Act has been reintroduced into the Ohio General Assembly by State Representative Michael Stinziano (D-Columbus) as House Bill 411. It has been assigned to the State Government Committee chaired by Representative William Healy (D-Canton). Hearings on the bill are not expected until after the first of the year.

The Act is legislation that would foster the preservation of historic places throughout the state by enabling counties and townships to pass laws protecting historic places within their jurisdictions, a critically important

measure for archaeological site protection, particularly on private property. The Act also sets up a system for identifying State-owned historic places having historic significance and reviewing actions affecting them and other historic places to be affected by any state project, and creates, but does not fund, an Ohio Historic Preservation Grant Program.

A *Fact Sheet* about House Bill 411, the Ohio Historic Preservation Act, is enclosed with this issue of the *OAC Newsletter*. For further information contact Franco Ruffini, Deputy State Historic Preservation Officer, the Ohio Historic Preservation Office, 1982 Velma Avenue, Columbus, OH 43211-2497, telephone (614) 297-2470, telefacsimile (614) 297-2546.

ISTEA Grants

The next round of ISTEA (Intermodal Surface Transportation Efficiency Act) grant applications has been announced by the Ohio Department of Transportation. Application deadline is February 1, 1994. ISTEA grants provide funding for scenic and environmental enhancements to existing or planned transportation facilities. Eligible activities under the ISTEA grant program include historic preservation, archaeological research, pedestrian and bicycle facilities, scenic enhancements, control of outdoor advertising, and mitigation of water pollution due to highway runoff.

To be eligible for an ISTEA grant the proposed project must be directly associated with active transportation facilities such as highways, bridges, public transit facilities, or railroad stations. While any community, group, or individual may sponsor a project, eligible applicants are limited to state agencies, metropolitan park districts, counties, townships, and municipal corporations. Applicants propose projects for ODOT to undertake and the applicants support projects by providing design services and the required matching share, 20% of project costs.

Projects under the historic preservation and archaeological research categories can range from surveys of transportation-related historic properties, educational programs, the preservation of National Register-listed or eligible bridges, structures, buildings, and sites, etc. A historic, architectural, and related archaeological resources survey of the National Road in Ohio was granted in the first round of ISTEA grants by ODOT.

For further information and to receive grant criteria and application forms contact the Ohio Department of Transportation, Bureau of Planning, Attention: Enhancement Coordinator, 25 South Front St., Room 716, Columbus, OH 43215, telephone (614) 466-8981.

Serpent Mound Update

The Ohio Historic Preservation Office has received and will be commenting on a research design for archaeological investigations at the proposed Cedar Lake Resort. The research design was submitted by the developer, who has requested a permit from the U.S. Army Corps of Engineers, Huntington District, to place fill materials within waters of the United States (to dam Ohio Brush Creek).

The Corps is requiring the developer to consult with the Ohio Historic Preservation Office concerning the proposed development's impact to Serpent Mound and other archaeological sites. For further information contact Dr. David Snyder, Archaeology Reviews Manager.

File Room Policies and Procedures

Effective October 1, 1993, the Ohio Historic Preservation Office instituted new policies and procedures governing access and use of research records housed in the File Room. An orientation for consultants and other users of the research records was held on September 15.

The new policies and procedures are detailed in a *User's Guide to Research Records of the Ohio Historic Preservation Office*. Copies of a *User's Guide* have been sent to most consultants listed on the Ohio Historic Preservation Office's *Consultant's List*. Single copies of the *User's Guide* are available by contacting Al Tonetti, Archaeology Manager.

Awards

The Ohio Historic Preservation Office recently recognized the following organizations and companies for outstanding archaeology-related historic preservation work: Preservation Merit award to the Licking County Archaeology and Landmarks Society for its archaeological preservation programs and publications; and Preservation Merit awards to the Belville Mining Company, the Holmes Limestone Company, and the R & F Coal Company for their contributions to the preservation of Ohio's historical and archaeological resources through their exemplary compliance with the National Historic Preservation Act.

The Licking County Archaeology and Landmarks Society was recognized for their organizational achieve-

ment. Founded ten years ago, LCALS is a non-profit educational and scientific membership organization. An all volunteer organization, its purpose is to educate and inform citizens about the prehistoric inhabitants of Licking County and to protect archaeological and historically significant sites and landmarks from destruction.

Members of the LCALS have been instrumental in preserving the Alligator Mound and other mounds and prehistoric habitation sites. While doing so they have encouraged and fostered interdisciplinary research programs. In addition, the LCALS has increased public awareness of the importance of preserving archaeological sites through newsletters, publications, interpretations, original research, educational programs, special events, and the media. Collectively, these programs and activities have greatly increased public understanding and awareness of the importance of preserving archaeological sites at the local and regional levels. The award was accepted on behalf of the LCALS by Dr. Paul Pacheco.

The Belville Mining Company of Ironton, Ohio was recognized for underwriting several archaeological investigations during the past seven years in compliance with provisions of the National Historic Preservation Act. The investigations have resulted in a wealth of important new information on archaeology in Lawrence County. Information which the archaeological sites identified through Belville-supported investigations contain has been preserved both by avoiding impacts to significant sites and through excavation. Pioneer Furnace is exemplary of the former. A permanent educational exhibit at the Briggs Lawrence County Public Library in Ironton features historic artifacts excavated under the auspices of the Belville Mining Company. The award was accepted by Thomas Belville who, with his brother Robert, own and operate the Belville Mining Company.

The Holmes Limestone Company of Berlin, Ohio was also recognized for exemplary compliance with the National Historic Preservation Act. Holmes Limestone Company has sponsored archaeological investigations in Coshocton, Holmes, Stark, and Tuscarawas Counties. Excavations at the Meeks site resulted in the discovery of remains of an Archaic Period camp and are providing archaeologists with new information on cultural developments during this period.

Holmes Limestone Company's current mining activities include coal, limestone, and clay production. Over the past 20 years the company has mined and reclaimed over 2,000 acres of land and has received awards of excellence in reclamation from the Ohio Mining and Reclamation Association. The award was accepted by Ralph King.

The R. & F. Coal Company of Cadiz, Ohio was also recognized for exemplary compliance with the National Historic Preservation Act. Principally operating in Belmont, Coshocton, Guernsey, Harrison, Jefferson, and Tuscarawas Counties, the R. & F. Coal Company has avoided a number of archaeological sites eligible for listing on the National Register of Historic Places, including a prehistoric stone quarry and several historic cemeteries and farmsteads. R. & F. Coal Company's avoidance of the Abel Howell House preserves one of the oldest Euroamerican settlements in Belmont County.

R. & F. Coal Company is one of Ohio's largest surface mining operations, employing about 270 full-time employees in seven counties. The Ziegler Coal Holding Company currently holds ownership as a wholly-owned subsidiary of Shell Mining Company. The award was accepted by Carol Rhodes.

The Ohio Historic Preservation Office has made awards for outstanding historic preservation activities since 1983. Award winners are chosen by a committee of professionals from the staff of OHPO and representatives of the governor-appointed Ohio Historic Site Preservation Advisory Board.

For 1994 nomination forms or more information write to "Preservation Awards," Ohio Historic Preservation Office, 1982 Velma Avenue, Columbus, OH 43211-2497, or call (614) 297-2470.

National Park Service Publications

Volume 16 of *CRM* is a special issue on "Traditional Cultural Properties." Most of the articles were originally prepared for two symposia dealing with traditional cultural properties held at the 58th Annual Meeting of the Society for American Archaeology in St. Louis on April 15, 1993. All of the papers from the symposium "Take Me to Your Leader: Archeologists and Consultation with Native American and Other Traditional Communities," are included. Other papers from the symposium "Vanishing Spaces: Native American Sacred Places" and articles specifically written for this special edition of *CRM* are also included.

CRM is a publication of the U.S. Department of the Interior, National Park Service, Cultural Resources Division. It includes cultural resource management information for parks, Federal agencies, Indian tribes, States, local governments, and the private sector to promote and maintain high standards for preserving and managing cultural resources. For more information contact the Editor, *CRM* (400), U.S. Department of the Interior, National Park Service, Cultural Resources, P.O.

Box 37127, Washington, DC 20013-7127, or telephone (202) 343-3395.

GRANTS COMMITTEE MAKES AWARDS

The OAC Grants Committee and the Board of Trustees have awarded the 1993 Patricia Essenpreis Research Grant to University of Illinois Ph. D. candidate and OAC member Robert Connolly. The grant will be used to radiocarbon date samples from Connolly's recent field work at Fort Ancient in Warren County, where Essenpreis began a research project a number of years ago.

The Patricia Essenpreis Research Grant may be awarded to any individual or group continuing research in areas where Pat devoted much of her professional interests including, but not limited to, the Hopewell and Fort Ancient. The grant is not restricted to OAC members, and students are encouraged to apply. The maximum amount of the grant is $1000.

The OAC Grants Committee and the Board of Trustees also awarded Dr. Bradley T. Lepper of Newark Earthworks State Memorials a grant for $619 to purchase infrared aerial photographs of the proposed course of the Great Hopewell Road from northern Fairfield to Ross Counties, Ohio. These images will be studied to identify possible extant visible remnants of this Middle Woodland feature.

All grant recipients are required to share their research results with the OAC membership by delivering a presentation to the membership at one of our semi-annual meetings and/or by publishing the results in an article in the *OAC Newsletter*. Grant applications and further information can be obtained by contacting the OAC Grants Committee Chair, Ohio Archaeological Council, P.O. Box 02012, Columbus, OH 43202.

RADIOCARBON DATA BASE FILE

The Ohio Archaeological Council, in cooperation with our peer group in West Virginia, the Council for West Virginia Archaeology, is gathering radiocarbon dates for the tri-state area of Ohio, West Virginia, and Kentucky. OAC member Bob Maslowski (U.S. Army Corps of Engineers, Huntington District) is in charge of collecting the data for West Virginia, Chuck Niquette (Cultural Resource Analysts, Inc.) for Kentucky, and OAC member Shaune Skinner (Archaeological Services Consultants, Inc.) for Ohio. When completed the data base file will be published.

Thus far a file with over 580 dates for Ohio has been gathered thanks to Archaeological Services Consultants, Inc. intern Marin McFarland, who spent the summer searching published literature for dates. At its last Board meeting (October 14, 1993), the Ohio Archaeological Council Board of Directors discussed this project and how it would be maintained and updated. The Board felt that this project could be an activity for the Archivist as a continuing project of the OAC's.

Enclosed with this issue of the *OAC Newsletter* is the format being used to collect the data. If you have radiocarbon dates that have not been published or were published in an obscure journal or contract archaeology report, the OAC asks that you complete this form and return it to the Archivist, Ohio Archaeological Council, P.O. Box 02012, Columbus, OH 43202. If you do not have a version of Calib 3 do not worry, as we can add this information later. The OAC plans to make this data available to its members and researchers interested in Ohio archaeology, but first we need to gather as much of the data as possible to make the record as complete as possible. Please help us!

TRAINING OPPORTUNITIES

ARCHEOLOGICAL CURATION AND COLLECTIONS MANAGEMENT

February 28 - March 4, 1994, at The George Washington University, Washington, D.C. This is an important course that addresses management alternatives as well as Federal regulations on curation. Assistance for this course is provided by The George Washington University and the City of Alexandria, Virginia's *Alexandria Archaeology* program.

Lack of familiarity with the principles and methods of curation and collections management frequently causes managers to fail to provide adequate protection for archeological collections. This can result in unnecessary costs, resource destruction, lack of accountability, and insensitive treatment of archeological materials.

This 40-hour course is designed for cultural resources and archeology program managers to learn about their managerial authorities and responsibilities, particularly with regard to 36 CFR Part 79, *Curation of Federally-Owned and Administered Archeological Collections*. Participants will be able to analyze problems and make decisions based upon appropriate project alternatives; define applicable curation principles; evaluate curation facilities; and make efficient use of available profession-

al services. The course emphasizes hands-on experience, with field visits to major museums and curatorial facilities and a practical exercise in which participants produce a workplan suitable for their own curation needs.

This course is open to Federal, State, Tribal, and local cultural resources or archeology program managers who are responsible for Federal or federally-administered archeological collections. For a registration form or for further information contact the Center for Career Education and Workshops, The George Washington University, 2020 K Street, NW, Suite B-100, Washington, DC 20052, telephone (202) 994-5299 or 1-800-947-4498.

Geomorphology in Archeological Analysis

April 5-9, 1994, Reno, Nevada. Cost $525.00. This course addresses principles of geomorphology, sedimentation, and stratigraphy as applied to archeological analysis. Included are discussions on identification of basic landform elements, depositional environments, and associated geological processes as they affect archeological materials and sites. Field trips included.

Participants are archeologists. For further information contact Leanne Stone, University of Nevada, Reno, Division of Continuing Education/048, Reno, NV 89557, telephone (702) 784-4046.

Geographic Information Systems in Archeology

April 18-19, 1994, Anaheim, California (in conjunction with the Society for American Archaeology's Annual Meeting). Cost $250.00. This is a comprehensive introduction to geographic information systems (GIS) and their use in archeological research and management. Basic principles of GIS will be compared to computer assisted drafting (CAD) and computer assisted mapping (CAM). Public domain and commercial data sources will be discussed. Examples of data products will be presented and evaluated. Also discussed will be the role of global positioning systems (GPS).

Participants include cultural resource managers in commercial, academia, and government service. For further information contact Leanne Stone, University of Nevada, Reno, Division of Continuing Education/048, Reno, NV 89557, or telephone (702) 784-4046.

From The Field to the Printed Page: A Writing and Critical-Thinking Workshop for Archeologists

April 19-20, 1994, Anaheim, California (in conjunction with the Society for American Archaeology's Annual Meeting). Cost $250.00. This course combines small-group workshop activities with lecture material, hands-on experience with the writing process and with strategies for managing task-related anxieties.

Participants include archeologists and cultural resource managers. For further information contact Leanne Stone, University of Nevada, Reno, Division of Continuing Education/048, Reno, NV 89557, or telephone (702) 784-4046.

Engineering and Environmental Geophysics

May, 1994, three days, Vicksburg, Mississippi. Cost $1500.00. This course addresses the physical concepts, field procedures, and interpretation techniques of geophysical methods to apply them to engineering, geotechnical, environmental, ground water, and archeological problems. Course is half lecture and half hands-on skills designed to achieve a reasonable level of competence in geophysical program planning and review, field procedures, data processing and interpretation, and review of proposals and reports.

Participants include geologists, geophysicists, civil engineers, environmental scientists and engineers, and archeologists. For further information contact Mr. John Buckley, U.S. Department of the Army, Corps of Engineers, Huntsville Division, CEHND-TD, P.O. Box 1600, Huntsville, Alabama 35807-4301, or telephone (205) 722-5805.

Low Altitude, Large-Scale Aerial Reconnaissance for Cultural Resource Managers

June, 1994, five days, location to be announced. No fee. Co-sponsored with Brigham Young University and the U.S. Department of the Army Fort Carson Command. This is an introductory course that explains the use of aerial photography for the identification, interpretation, and evaluation of cultural resources. This technique

uses remote controlled model aircraft and allows for large scale photographs (1:100 to 1:1000), the use of regular film and the resulting resolution to identify and evaluate cultural resources.

Participants include archeologists, architects, cultural resource managers and specialists. For further information contact Dr. Steven L. De Vore, U.S. Department of the Interior, National Park Service, Rocky Mountain Region, Interagency Archeological Services, P.O. Box 25287, Denver, CO, 80225, telephone (303) 969-2875.

Presenting the Past to the Public

June 6-10, 1994, Anasazi Heritage Center, Dolores, Colorado. Cost $575.00. This course is designed to teach cultural resource management personnel and managers effective means for presenting materials to print and electronic media, including how to develop effective and cost-effective static and travelling exhibits.

Participants include cultural resource management personnel and managers. For further information contact Leanne Stone, University of Nevada, Reno, Division of Continuing Education/048, Reno, NV 89557, telephone (702) 784-4046.

Introduction to Federal Projects and Historic Preservation Law

June 7 - 9, Columbus, Ohio. Cost $250.00. This course addresses the requirements of Sections 106 and 110 of the National Historic Preservation Act. Participants will learn the review and compliance process set forth in the (Federal) Advisory Council on Historic Preservation's regulations, 36 CFR Part 800, and the procedures to follow in order to comply with the law.

Participants include Federal, Tribal, State, and Local architects, archeologists, building/land managers, community planners, administrators of federal grant/loan/permit programs, construction project managers, historic preservation staff, and interested others. For further information contact Shauna Holmes, Advisory Council on Historic Preservation, 1100 Pennsylvania Avenue, NW, Room 803, Washington, DC 20004, or telephone (202) 606-8505.

Cultural Resources in Natural Areas

Washington, DC, two days, specific dates to be announced. Cost $250.00. This course addresses the identification, management, preservation and interpretation of cultural resources in natural areas. Includes examining laws and regulations, guidelines and agency management plans, with case studies on successful and unsuccessful ways of incorporating cultural resources into the management and preservation of natural areas.

Participants include resource managers, legislators, line officers, contractors, educators, federal land managers, and others involved in the preservation of wildlife refuges, nature preserves, forests, etc. For further information contact Kathleen Schamel, CEHP Inc., 1133 20th St. NW, Suite 200, Washington, DC 20036, telephone (202) 293-1774.

Emerging Issues in Historic Preservation

Location and dates to be announced, two days. Cost $250.00. This is an overview of major historic preservation laws and recent developments in historic preservation. Addressed will be the value of cultural resources and their role in community redevelopment, effective strategies for cooperative planning, restoration and redevelopment, the roles of natural and cultural resources management in promoting sustainable development, interrelationships between resources, and integrated planning.

Participants include federal cultural resource management professionals, state staff, contractors, land managers, educators, and interested others. For further information contact Kathleen Schamel, CEHP Inc., 1133 20th St. NW, Suite 200, Washington, DC 20036, telephone (202) 293-1774.

OHIO HISTORICAL SOCIETY SPONSORS ARCHAEOLOGY DAYS

During the summer of 1993, the Ohio Historical Society organized a series of "Archaeology Day" programs to highlight current archaeological research in Ohio, and the variety of ways by which we are learning about Ohio's cultural heritage. The programs also highlighted the contributions of avocational archaeologists and promoted the activities of several archaeological organizations. The series began at the Ohio Historical Center in Columbus on July 10 with a program organized by Martha Otto. On August 28, Jack Blosser hosted the

event at Fort Ancient, while Brad Lepper's program occurred on August 29. On Saturday and Sunday of Labor Day weekend, the final Archaeology Day(s) took place at Serpent Mound under Don Bier's supervision. Although all the events had the same basic themes, they were not identical; each had its own particular mix of participants and activities.

The US Forest Service, ODOT, Gray and Pape, Archaeological Data Services, and the Ohio Historical Society provided displays and demonstrations. The recent research at Serpent Mound, along with its computer programs, attracted considerable attention. There were demonstrations of flint chipping, basketry and twining, and pottery making using prehistoric techniques. Visitors tested their skills at using atlatls or playing chunky under the watchful supervision of SunWatch staff. For the less active, there were archaeology video tapes for viewing. Artifact identification services for people bringing the proverbial cigar-box full of "arrowheads" also made the events "visitor friendly". Staff from ODNR identified fossils, too. Children participated in many of the "hands on" activities as well as in special programs designed just for them.

An important aspect of each program was recognition of the contributions to archaeology made by non-professionals. We invited individual avocationalists to display their well-documented surface collections. The Sugarcreek Valley and the Sandusky Bay chapters of the ASO showed the results of the research projects in which they have worked closely with professionals. Finally, organizations including the Ohio Historic Preservation Office, the Archaeological Conservancy, the Central Ohio Valley Archaeological Society, the Archaeological Society of Ohio, and the Ohio Archaeological Council contributed informational displays describing their activities and provided visitors with the opportunity to join.

Archaeology Day was a popular event at each of the four locations. Visitors were genuinely interested in learning something about Ohio's past and the ways in which archaeologists can decipher it. We also hope that the programs inspired the visitors to take a more active part in preserving Ohio's cultural heritage. Given the success of this year's programs, we hope to schedule them again next summer.

Special thanks go to Archaeological Services Consultants, Inc. for providing the Weatherport shelter for the Serpent Mound event.

Martha Potter Otto

THE OHIO STATE UNIVERSITY INVESTIGATIONS AT THE FLINT RIDGE STATE MEMORIAL, LICKING COUNTY, OHIO, 1987-1988

Richard W. Yerkes

Department of Anthropology
The Ohio State University

INTRODUCTION

When Bell Systems of Ohio planned to lay a fiber-optic cable through Licking and Muskingum Counties in the summer of 1987, it appeared that the project would require archaeological mitigation at the Flint Ridge State Memorial. Don Bier (Ohio Historical Society) suggested that the Ohio State University field school be conducted at Flint Ridge in conjunction with the proposed mitigation project so that investigations could be conducted outside the cable right-of-way. Bell Systems moved their cable right-of-way and avoided mitigation in the State Memorial, but it was decided to proceed with the field school. The plans were discussed with Martha Potter Otto, curator of archaeology at OHS, and permits were issued that allowed the OSU archaeological field school to carry out limited survey and excavations during the summers of 1987 and 1988. Cataloging and analysis of the materials recovered during the two five-week field seasons took place in the laboratories and classrooms at OSU between 1987 and 1993. The final report on these OSU field school investigations and the collected artifacts were submitted to OHS for curation in May 1993.

Previous Investigations at the Flint Ridge Quarries

The quarry pits on Flint Ridge aroused the curiosity of the first U.S. settlers on the ridge at the beginning of the 19th century, and it was not long before archaeologists and geologists were made aware of the "Great Indian Quarry" through the publications and correspondence of scholars like Caleb Atwater (1820) and Samuel Hildreth (1838). Several decades later, Gerard Fowke conducted a more systematic study of Flint Ridge for the U.S. Bureau of Ethnology which he published (under the pen name "Charles Smith") in the 1884 annual report of the Smithsonian Institution (Smith 1885) and in his *Archaeological History of Ohio* (Fowke 1902). William Corless Mills conducted an extensive study of the quarries for the O[A]HS which he published in 1921. The Flint Ridge State Memorial was set aside to preserve parts of the quarry site in 1933.

The Ohio State University Field School Investigations

The 1987 and 1988 OSU field school investigations at Flint Ridge State Memorial were designed to collect a sample of artifacts from the quarry pits that could be used to analyze the prehistoric methods used to "mine" the flint, study the reduction "trajectories" that produced the bifacial quarry blanks and bladelet cores that were transported away from the site, and determine if there are any habitation or settlement areas adjacent to the quarries.

Prior to the start of the 1987 field school, a ground-penetrating radar (GPR) survey of portions of the east field at Flint Ridge State Memorial was carried out, but it did not reveal any clear subsurface anomalies. Twelve 2x2m test excavation units were opened in the east field, and two 2x2m units were excavated 40 meters to the west in the middle field. In the wooded area north of Flint Ridge Road and east of S.R. 668, two 1x1m units were excavated near several quarry pits, and a controlled surface collection of 75 one meter squares was completed. At the suggestion of Martha Otto, three 1m wide profiles were cut along the bank north of Flint Ridge Road. In 1988, 12 additional 1x1m squares were excavated in the east field, and James Foradas carried out a magnetometer survey in the area where the GPR survey had been conducted. The only anomaly detected by the magnetometer was an historic buried metal container.

Number and Density of Artifacts in the Test Units

During the ten weeks that OSU field school students excavated at Flint Ridge in 1987 and 1988, a total of 123,972 pieces of chipped flint, 10 hammerstones, an anvil stone, and one piece of ground stone were recovered from 28 test units and 75 surface collection squares. An average of 4,291 artifacts were found in each of the test excavation units, ranging from 383 in an historically disturbed unit to 22,118 in one of the units in the middle field. The average for the surface collection units was 51 artifacts. The test units were variable in depth and some were 2x2m while others were 1x1m, so the densities had to be adjusted to the size of each test unit. The density of chipped stone in the test units ranged from 319 artifacts per cubic meter of fill in the "disturbed" unit to 42,117 artifacts per cubic meter in a unit located where "natural" flint is exposed on the surface. The average density for the test units was 7,046 artifacts per cubic meter. Of course, the bulk of the artifacts at Flint Ridge would be classified as debitage (flint chips, chunks of flint, or other waste). Only 11 projectile points and point fragments were recovered, and only five of these could be classified. One of the vexing problems facing the investigator at Flint Ridge is the lack of chronologically sensitive stone tools (or pottery) among the vast quantities of non-diagnostic flint artifacts (cf. Mills 1921: 171).

Mass Analysis

Mesh sizes of 1/4" and 1/8" were used during the excavations to collect samples for size-grading, or mass analysis of the flint artifacts. Stanley Ahler (1986, 1987) has shown that variability in the size distribution of chipped stone debitage from quarry, workshop, and habitation sites can be correlated with lithic production stages. A number of knapping experiments with Flint Ridge flint conducted by Yerkes and Albert Pecora provided data on the size distribution of flakes produced during cobble testing, "blocking" out of bifaces and bladelet cores, and later production steps. In addition, a sample of naturally weathered flint was collected from the creek bed east of the east field during the 1988 season for comparison with the mass analysis results.

RESULTS

The soils found on Flint Ridges contain large quantities of flint fragments, and in places, large boulders and outcrops of unweathered flint are found on the surface (Wildermuth et al. 1938). The areas identified as "flint-bearing soils" on the soil maps were used to estimate the geographic extent of the ancient quarries and workshops (approximately 880 ha or 2,175 acres). The extent of the Vanport flint beds on the ridge is about 1,000 ha (DeLong 1972), but not all of these flint beds were quarried. These data do not provide an accurate estimate of the number of quarry pits and workshops on Flint Ridge or an approximation of the quantity of flint that has been removed from the quarries. Fowke made a sketch map of the "hundreds" of quarry pits around the crossroads and (Clark's) blacksmith shop (see Holmes 1919). This area now lies within the boundaries of the State Memorial. The most detailed map of the extent of the flint quarries is the one prepared by Mills in 1921 and modified by Carlson (1987: 416; 1991: 66).

The Geologic Context of Flint Ridge Flint (FRF)

Flint Ridge Flint is part of the upper member of the Vanport Formation of the Allegheny Group of Pennsylvanian interbedded fresh-water limestones, clays, coals, and marine limestones. The members of the Allegheny Group record the transgressions and regressions of a shallow sea that had covered parts of Ohio, Pennsylvania, West Virginia, and Kentucky during the Devonian and Cretaceous periods (Delong 1972; Foradas 1988). The lower member of the Vanport Formation consists of calcareous shales, shaly limestones, and flint-bearing shales, while the upper member contains pure limestones and flint (Carlson 1987, 1991; Stout 1918). A flint facies of the upper member of the Vanport Formation forms the cap rock of Flint Ridge (because of its resistance to weathering). This Flint Ridge Flint (or FRF)

outcrops in discontinuous lenticular strata with an average thickness of 1.2 meters along the ridge. These FRF outcrops have a lateral extent of several kilometers. Carlson (1987) believes that the purer deposits of FRF were formed by replacement of microfossils with silica from dissolved sponge spicules that was re-precipitated as micro granular quartz. The impure phases of FRF contain sponge spicules, which suggest a biogenic origin. The light color of most varieties of FRF and the presence of trace amounts of iron oxides (rather than iron pyrites) indicate that the deposition of silica occurred in an oxidizing environment. This is consistent with Cavaroc and Ferm's (1968) hypothesis that many of the Pennsylvanian flints in Ohio formed in shallow, near shore, brackish waters consisting of several interlinked depositional basins at the front of a prograding delta. Foradas (1988) noted that these kinds of shallow, brackish water depositional environments are also indicated by the high degree of morphological, mineralogical, and chemical variation exhibited in samples of FRF collected from various locations along the ridge.

Carlson (1987: 417) recognized four varieties of Flint Ridge Flint: (1) an impure, opaque, massive, white flint with uneven to conchoidal fracture, and (2) a pure, translucent, bluish-gray flint with conchoidal fracture. Both of these types of flint contain silicified fusulinids, but lack sponge spicules, and in some places they occur together as a breccia composed of angular clasts of white flint enclosed in the bluish-gray variety. Carlson found that outcrops of these two types were common in and around the State Memorial, while the third variety, (3) ribbon flint, was more common on the Nethers property in Muskingum County near the old Flint Ridge school (and mound, see Mills' 1921 map). The ribbon flint is massive with uneven to conchoidal fracture and alternating light and dark laminations that vary from 0.05 to 1 mm in thickness. The laminations are brown, red, or gray and contain minute grains of brown and red iron oxides. They seem to represent a type of rhythmic bedding. No fusulinids or spicules have been observed in the ribbon flint. The last type (4) is an impure, porous, light brown flint with uneven fracture. It is riddled with molds of fusulinids and irregularly shaped cavities. It contains dense mats of sponge spicules (it can be called a "spiculite"), and occurs along the western and southeastern portions of the ridge. Much of the porous flint was unsuitable for lithic artifact production, but early Euro-American settlers used it to make buhr-stones for their flour mills (Altick 1942; Mills 1921). Carlson noted that porous flint often occurs as breccias composed of clasts of light brown spiculite imbedded in massive, translucent gray flint (the gray flint in contrast to the porous flint, contains silicified fusulinids and fewer spicules).

Carlson's four part classification was used in our macroscopic analysis of the artifacts from the OSU test units at Flint Ridge State Memorial, but recent work by Foradas has focused on the chemical variation in Flint Ridge. A geochemical chert sourcing method based on the normative composition of major detrital elements in flint is being developed as part of Foradas' study of geochemical variation in Flint Ridge Flint and Vanport chert from sources in southern Ohio. Details of this study can be found in Foradas' forthcoming dissertation, but it should be noted that he has shown that since the shallow basins along the shore of the "Vanport sea" received sediments and detritus carried by streams flowing northwest from the Appalachian highlands, the mineral composition of the flint deposits would vary from basin to basin. The types of detrital minerals and their concentrations in flint-bearing facies of the Vanport Formation would differ from patterns observed in other Pennsylvanian cherts (or cherts or flints found in younger or older geological deposits). In addition, weathering of FRF would result in different abundance of secondary minerals filling the fractures and cavities of the flint. By comparing the types and concentrations of detrital and secondary minerals from different rock formations and from different facies of a single rock formation (or from different quarry areas) with concentrations found in flint or chert artifacts, analysts could identify the type of flint (formation) that was used and the specific quarry zone (facies) where the lithic raw material was obtained (Foradas 1988).

The Age of the Quarries and Workshops

Mills (1921: 209-221) concluded that most of the manufacturing activities at Flint Ridge were geared toward the production of bifacial blanks (or "cache blades") and bladelet cores and bladelets. These artifacts are associated with the Adena-Hopewell complex. Six mounds and four earthworks were recorded along Flint Ridge, and Mills excavated an elaborate Hopewell burial at one of them (the Hazlett Mound on the western end of the ridge). The association of the mounds, bifacial blanks, bladelets and bladelet cores suggested to Mills that the Hopewell were responsible for much of the prehistoric quarrying and artifact manufacturing.

We recovered 20 bladelet cores, 803 bladelets, and 152 bifaces (59 of these could be classified as cache blade blanks) in 1987 and 1988. Bladelets were found in all but two of the test units that we excavated, and they were present in 20 of the 75 surface collection units. These findings support Mills' interpretation, but this does not mean that quarrying and artifact manufacturing on Flint Ridge were confined to Adena-Hopewell times. Six of the 11 points and point fragments that we recovered were classified using Justice's (1987) formal-temporal system. Two Early Archaic types were identified: MacCorkle Stemmed (Rice Lobed Cluster, 9000-8500 B.P.) and Kanawha Stemmed (LeCroy Cluster, 8200-7800 B.P.), three Middle-Late Woodland types were found: two Jack's Reef points (1500 B.P.) and a Raccoon Notched point (1400 B.P.), and a Late Prehistoric

triangular point was also found (Madison type, 1150-350 B.P.). The temporal range of the points indicates that the Flint Ridge quarries and workshops have been operating for the past 9000 years.

Changes in the Utilization of FRF Through Time

Lepper (1989) noted that there are numerous anecdotal reports that artifacts made of Flint Ridge Flint have been found at sites across Eastern North America, but the most reliable of these reports involve finds from Paleo-Indian or Middle Woodland sites. Prufer and Baby (1963) found that FRF was the second most common raw material used for Paleo-Indian points found in Ohio (after Upper Mercer chert) and Lantz (1984) reports that FRF was the third most common raw material used to make the Paleo-Indian points found in western Pennsylvania (after Upper Mercer and Onondaga chert). This suggests that Flint Ridge Flint (or Vanport flint) was utilized by many of the earliest inhabitants of the Upper Ohio Valley approximately 11,500 years ago. The acquisition of FRF may have begun during Paleo-Indian times, but Carskadden (1969) suggests that the use of Vanport flint increased during the Archaic period (7,000 to 3,000 B.P.). He believes that extensive quarrying operations on Flint Ridge probably did not begin until the Early Woodland period (3,000 B.P.). Murphy (1989: 35) found that Flint Ridge Flint artifacts and debitage were common at Archaic and Woodland sites in the Hocking Valley (there are very few recorded Paleo-Indian sites), and like Lepper and Carskadden, he believes that the most intensive exploitation of Flint Ridge Flint occurred during the time of the Adena-Hopewell (2500 to 1500 years ago). During the Late Woodland and Late Prehistoric periods (1500 to 400 years ago) there seems to have been a decline in the use of Flint Ridge Flint (Carskadden 1969; Lepper 1989; Murphy 1989).

These views on changes in the utilization of Flint Ridge Flint are based on impressions of the ubiquity of artifacts made of that raw material at archaeological sites in the Upper Ohio Valley. However, one must be certain that the chert source for these artifacts has been correctly identified. Morgan (1929) and Stout and Schoenlaub (1945) recognized that Vanport flint that is suitable for stone tool fabrication could have been obtained from localities in southern Ohio as well as the Flint Ridge quarries. Foradas (1993) noted that flint from the southern "Raccoon" Vanport source or from the Plum Run Vanport flint quarry in northeastern Ohio may be confused with FRF. There are other FRF "look-a-likes" that could have been taken from outcrops of the Brush Creek, Burlington, and Upper Mercer Formations or from secondary deposits of chert cobbles. A reliable chert artifact sourcing method (cf. Foradas 1993) must be developed and applied to lithic assemblages from different cultural periods before changes in the utilization of FRF through time can be documented.

Clearly the Flint Ridge quarries and workshops were used to manufacture Adena/Hopewell bladelet cores and bladelets. The area that we investigated in 1987 and 1988 was within the zone of workshops "south and southeast of the blacksmith shop" where Mills (1921: 215) found that most of the core-and-bladelet manufacturing took place. In fact Mills remarked that bladelet cores and bladelets were rarely found outside of this area on Flint Ridge (ibid.). We did not find any evidence for the production of Paleo-Indian artifacts (e.g., fluted points) during our investigations, although we did recover several Early Archaic projectile points.

The impression that one gets from this is that the most intensive utilization of FRF (and the FRF quarries) was during Adena/Hopewell times (as everyone has suggested), however this may be due to the fact that the bladelets and bladelet cores that serve as "type fossils" for the Early-Middle Woodland period(s) are easy to recognize. The flakes and cores that are the byproducts of biface manufacturing are much more generic. It is possible that the area of Flint Ridge that we tested was not intensively utilized until Adena-Hopewell times, or evidence for earlier uses of the area may have been masked by core-and-bladelet production. We do not have enough data to evaluate the intensity of the utilization of the quarries and workshops on Flint Ridge during the Paleo-Indian, Archaic and Late Prehistoric periods.

Quarrying and Flintknapping Techniques

Mills (1921) identified three production stages in the manufacturing of bifaces at Flint Ridge. The first stage was quarrying the flint, the second stage was "blocking out" the flint into general bifacial form before it is taken to the workshops, and the third stage was shaping the blocked-out pieces into bifacial blanks or preforms (cache blades) that could be transported to distant sites where they could be made into points, drills, or other bifacial tools. Mills noted that the workshops where the third production stage took place were located near the quarries on Flint Ridge and at more distant locations. Since Mills' day there have been a number of technological studies of biface manufacturing based on modern replication experiments and the examination of bifaces that were discarded before they had been reduced to their final form (Ahler 1986; Callahan 1979; Johnson 1979, 1981). These studies revealed that one of the most crucial factors in biface production is maintaining the width of the tool while reducing the thickness. The thinner the biface, the more nearly completed it is (Johnson 1981: 13). The ratio of maximum width to maximum thickness is key element of Callahan's (1979) five-stage biface manufacturing sequence (Ahler 1986: 59). Callahan's scheme takes Mills' three production stages (which take place at or near quarries) and adds two final stages when the "finishing touches" are given to the bifaces. Callahan's stage 4 bifaces have been secondarily thinned, and exhibit noticeably flattened

cross-sections. His stage 5 bifaces are prepared for use and/or haft preparation. They are preforms for projectile points, or, if no notches, flutes or other modifications are made, they are "finished" bifaces.

Mills (1921) implied that the final shaping of bifaces made of FRF would probably have taken place at domestic sites away from the quarries and workshops. However, he does illustrate some finished projectile points and some finely retouched bifaces that would be classified as stage 5 bifaces. It is not clear if these final stage bifaces were found in the quarry zones at Flint Ridge or at some of the workshops such as the "Graham place" that also contained domestic refuse (Mills 1921: 219). It should be noted that Ahler (1986) did not recognize any stage 5 bifaces in the excavated sample from 32DU508, a Knife River Flint quarry and workshop.

During our investigations at Flint Ridge State Memorial, we recovered 152 bifaces. Eleven of these were points that may have been brought to the quarries and workshops and discarded during "retooling" operations. Of the remaining 141, nearly half of the bifaces that we recovered from workshop areas near the quarries were stage 2 bifaces, while 43% exhibited the primary or secondary shaping that Mills described as occurring during stages 3 and 4. Only 8% could be considered preforms or "finished" bifaces (stage 5). It should be noted that 10 of the 11 stage 5 bifaces (or preforms) were broken, and the types of fracture that they exhibited suggested that they had snapped during manufacturing (see Johnson 1981).

Johnson (1981) used a *thinning index* in his study of biface production trajectories in Mississippi. He suggested that the ratio between the weight of the biface and its surface is a more accurate gauge of how complete or "finished" the biface is. Johnson examined 952 bifaces from four sites in the Yellow Creek region, Mississippi (including two quarry sites [site Class I], one hunting camp and early stage biface manufacturing workshop [Class II], and a late stage biface manufacturing workshop [Class III]). He found that a thinning index ≥ 3.1 gm/cm^2 identifies early stage bifaces that are usually found at quarry sites, while an index between 1.7 and 3.1 is typical of middle stage bifaces, while late stage bifaces would have a thinning index < 1.7 (Johnson 1981: 25).

The computed thinning indices for the 49 whole (or nearly whole) bifaces from Flint Ridge averaged 0.90 for the points, 1.74 for the small thin bifaces, 1.72 for the large thin bifaces, and 2.43 for the crude unpatterned bifaces (only two of the 34 crude bifaces had a thinning index that was ≥ 3.1). This shows that while the later stage bifaces from Yellow Creek and Flint Ridge were thinned to the same degree, the early stage bifaces were thinner at Flint Ridge. Johnson found that 92% of the bifaces at his quarry sites (Class I) were early stage bifaces (similar to the crude bifaces found at Flint Ridge), while 87% of the bifaces found at his late stage biface manufacturing workshops (Class III) were thinned or completed types. There seems to have been a distinct separation of the biface production trajectory between Johnson's quarry sites and late stage workshops. In our sample from Flint Ridge, we found that 54% of the bifaces were early stage types (crude) while 46% were later stage forms. The complete biface trajectory seems to be represented at the Flint Ridge State Memorial, without the spatial separation of production stages that was observed in the Yellow Creek region.

The Bladelet Industry

The second industry that Mills (1921) recognized at Flint Ridge involved the manufacture of bladelet cores and bladelets. Mills illustrated several "finished" bladelet cores (1921: Figure 20) and finely made bladelets (1921: Figure 21), and noted that most of the bladelet cores were manufactured at workshops located south and southeast of the cross-roads at the blacksmith shop (within the boundaries of the Flint Ridge State Memorial). He found that the manufacturing carried on at the Flint Ridge workshops was aimed at producing bladelet cores rather than bladelets. Mills mentioned that many of these bladelet cores were carried to distant points where bladelets could be struck off as needed (1921: 219). Our investigations confirmed this (we recovered over 800 bladelets or fragments but only a dozen bladelet cores or core fragments). While we lack an independent means of determining when the quarry pits at Flint Ridge were excavated, it appears that much of the quarrying in and around the State Memorial was associated with the Hopewell bladelet industry. This seems to be an example of a case where a valued commodity was being produced for long-distance exchange.

The bladelet cores seem to have been produced by free-hand percussion. Most of the bladelets and bladelet fragments that we recovered had large striking platforms. The flaking scars on the cores and bladelets suggest that hard and soft hammers were used. It is possible that the finer Hopewell bladelets that are found at sites outside of the Flint Ridge quarry area were removed with a punch (indirect percussion), but we found very little evidence for this technique at the quarry workshops. Almost all of the bladelet cores and core fragments that we recovered were heat-treated, while 59% of the bladelets and fragments showed some sign of heat treatment (luster, crazing, or potlids). This suggests that some bladelets were struck off the cores before they were heated. While it appears that the heat treatment of bladelet cores took place at the quarry workshops, we did not find any features that could be classified as heat-treatment facilities during our limited

test excavations at the State Memorial. The bladelet cores that have been found in several caches near the quarry zone appear to be heat-treated.

It was hoped that the mass analysis would help us isolate locations where various stages of bifacial manufacturing took place and distinguish these areas from workshops where bladelet cores were produced. However, our experiments produced similar percentages of size-grade 1, 2 and 3 artifacts when we tested (bifacial) blocks and manufactured bladelet cores, consequently we could not isolate early stage biface production areas from locations were bladelet cores were being manufactured. In addition, we found that the test units that contained substantial numbers of bladelets did not produce size-grade percentages that were similar to our experimental values. It seems that a more detailed technological analysis is needed to recognize blade core production areas and distinguish them from biface manufacturing workshops. However, it also appears that several different stages of biface manufacturing were carried out at the same locations where the bladelet cores were produced. While the early stages of biface and bladelet core manufacturing seem to have taken place near the quarry pits, we did not find a neat separation of activities in the workshop areas within the State Memorial.

Settlement Patterns

We found no evidence for restricted access to the FRF quarry zone. We exposed no habitation features during our testing program. Mills (1923) concluded that the FRF quarries were common property among the tribes of the Ohio Valley. He noted that the only place on Flint Ridge that seemed to have a more or less permanent abode was the Hopewell Hazlett Mound that he excavated on the extreme western edge of the quarry zone. Mills (1923: 219) mentioned another habitation site on Flint Ridge that was found at the "Graham Place." He referred to this site as a workshop that contained pottery, animal bones, and evidence for a more or less permanent habitation. Murphy and Morton (1984) argue that the Graham site is identical to the Dodson Village that is described by Bernhardt (1977) as an intermittently occupied site that served as a production/distribution "node" in the Hopewell Interaction Sphere. Murphy and Morton relocated the Dodson/Graham site approximately 1 mile south of the Flint Ridge State Memorial just east of State Route 668. They reviewed the history of excavations at the site, reexamined the ceramics, lithic artifacts, and faunal materials in the collections from the Dodson site at the O.H.S. Murphy and Morton (1984: 24) concluded that the Dodson/Graham site was occupied for very short periods of time by small groups of people that came to the Flint Ridge quarries to obtain flint. The most frequent use of the site was during the Early, Middle, and Late Woodland periods, but it cannot be demonstrated that the flint quarrying and lithic manufacturing that went on at the Dodson/Graham "village" was linked to any larger lithic production and distribution system. Our reading of the results of these kinds of investigations on Flint Ridge during the 1920s and 1930s supports Mills' conclusion that there was no restricted access to the quarries and that there do not appear to have been any permanent habitation sites on Flint Ridge.

Craft Specialization

We did not find any evidence that support the notion that quarry specialists resided at Flint Ridge. The quarrying and manufacturing seemed to have taken place during short-term visits to the Ridge. Although the quarrying activities were demanding, we cannot demonstrate that this was a specialized task. As Mills (1923) noted, the debris from the workshops on Flint Ridge indicates that the people who came to the quarry zone extracted flint that they used to produce bifaces and bladelet cores. These items were knapped into standardized forms, but this lithic manufacturing was not necessarily done by craft specialists.

Our 1987 and 1988 investigations were limited to the Flint Ridge State Memorial, and we were not able to obtain data on the distribution of FRF outside of the primary source area, the prehistoric exchange and/or redistribution systems that included FRF, and the interaction between prehistoric societies in Ohio and other regions of North America during the Early and Middle Woodland periods when many believe that FRF reached its maximum geographic distribution. Our two short seasons at Flint Ridge allowed us to test several methods of data collection, and to train students in archaeological field methods. Our work supported most of the earlier observations made by Mills about the nature of the activities at Flint Ridge. We agree with his observation (Mills 1921: 224) that "It is very fortunate for those who wish to verify or disprove the statements made in this study of Flint Ridge that the full range of quarrying is still well within the reach of all investigators and needs only to be properly examined to reveal the facts." It is hoped that in the future, archaeologists will continue the investigations at Flint Ridge that were begun by Fowke and Mills.

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REFERENCES

Ahler, Stanley A. 1986. *The Knife River Flint Quarries: Excavations at Site 32DU508*. State Historical Society of North Dakota, Bismarck.

_____. 1989. Mass Analysis of Flaking Debris: Studying the Forest Rather than the Tree. In *Alternative Approaches to Lithic Analysis*, edited by D. O. Henry and G. H. Odell, pp.85-118. Archaeological Papers of the American Anthropological Association **1**,Washington, D.C.

Altick, Arthur R. 1942. Flint Ridge. *Society for American Archaeology Notebook* **2**(3):45-48.

Atwater, Caleb. 1820. Description of antiquities discovered in the state of Ohio and other western states. *Transactions of the American Antiquarian Society* **1**: 105-267.

Callahan, Errett. 1979. The basics of biface knapping in the eastern Fluted point Tradition, a manual for flintknappers and lithic analysts. *Archaeology of Eastern North America* **7**: 1-180. (reprinted 1990 by Eastern States Archaeological Federation).

Carskadden, Jeff. 1969. Archaeology of Flint Ridge. In *Mississippian Strata of the Granville-Newark Area, Ohio*. North-Central Section of the Geological Society of America, Field Trip No. 4, pp. 18-19. Ohio Division of Geological Survey, Columbus.

Carlson, Ernest H. 1987. Flint Ridge, Ohio: Flint facies of the Pennsylvanian Vanport Limestone. In *North-Central Section of the Geological Society of America Centennial Field Guide* **3**, edited by D. L. Biggs, pp. 415-418.

_____. 1991. *Minerals of Ohio*. Ohio Division of Geological Survey Bulletin **69**.

Cavaroc, V. V., Jr., and J. C. Ferm. 1968. Siliceous spiculites as shoreline indicators in deltaic sequences. *Geological Society of America Bulletin* **79**: 263-272.

DeLong, Richard M. 1972. *Flint Ridge: Bedrock Geology of the Flint Ridge Area, Licking and Muskingum Counties, Ohio*. (Map) Ohio Division of Geological Survey, Columbus.

Foradas, James G. 1988. Toward Intraformational Sourcing of Flint using Normative Mineral Compositions: a Preliminary study using Flint Ridge Flint. *Journal of the Steward Anthropological Society* **18**(1&2).

_____. 1993. *Ceremonial Exchange of Vanport Flint Bladelets among Hopewell Groups in the Lower Scioto Valley, Ohio: A Test of a new Method of Sourcing Flint*. Ph.D. dissertation, Dept. Anthropology, The Ohio State University (in preparation).

Fowke, Gerard. 1902. *Archaeological History of Ohio*. Ohio State Archaeological and Historical Society, Columbus.

George, Richard L. 1975. Some Woodland point types in the Upper Ohio Valley. *West Virginia Archaeologist* **24**: 22-30.

Hildreth, S. P. 1838. Report on the coal measures. In *First Annual Report on the Geological Survey of the State of Ohio* (Doc. 26), pp.25-63, Columbus.

Holmes, William H. 1919. Handbook of Aboriginal American Antiquities: Part I Introductory, The Lithic Industries. *Smithsonian Institution, BAE Bulletin* **60** (1). Washington, D.C.

Johnson, Jay K. 1979. Archaic biface manufacture: production failures, a chronicle of the misbegotten. *Lithic Technology* **8**(2): 25-35.

_____. 1981. *Lithic Procurement and Utilization Trajectories: Analysis, Yellow Creek Nuclear Power Plant Site, Tishomingo County Mississippi, Volume 2*. Archaeological Papers of the Center for Archaeological Research **1**, University of Mississippi, and Tennessee Valley Authority Publications in Anthropology **28**.

Justice, Noel D. 1987. *Stone Age Spear and Arrow Points of the Midcontinental and Eastern United States*. Indiana University Press, Bloomington.

Lantz, Stanley W. 1984. Distribution of Paleo-Indian projectile points and tools from western Pennsylvania: implications for regional differences. *Archaeology of Eastern North America* **12**: pp. 210-230.

Lepper, Bradley. 1989. Geographic and Temporal Distribution of Flint Ridge Flint. Ms. on File, Ohio Historical Society, Columbus.

Mills, William C. 1921. Flint Ridge, In *Certain Mounds and Village Sites in Ohio* **3**(3), Ohio State Archaeological and Historical Society, Columbus.

Morgan, Richard. 1929. *Geological Aspects of Ohio Archaeology*. M.A. thesis, Department of Geology, The Ohio State University, Columbus.

Murphy, James L. 1989. *An Archaeological History of the Hocking Valley* (2nd ed.). Ohio University Press, Athens, OH.

_____, and James F. Morton. 1984. Dodson "Village": A Flint Ridge Habitation Site. *Ohio Archaeologist* 34(3): 23-26.

Prufer, Olaf H., and Raymond S. Baby. 1963. *Palaeo-Indians of Ohio*. Ohio Historical Society, Columbus.

Salisbury, J. H., and C. B. Salisbury. 1862. Ancient works and white flint quarries at "Flint Ridge." In "Ancient Monuments and Inscriptions of and near the summit between the Head waters of the Hocking and Licking Rivers, Ohio." Ms. in the archives of the American Antiquarian Society, Worchester, MA

Smith, Charles M. (a.k.a. Gerard Fowke). 1885. A sketch of Flint Ridge, Licking County, Ohio. *Annual Report of the Smithsonian Institution for the year 1884*. pp. 851-73. Washington, D.C.

Stout, W. E. 1918. *Geology of Muskingum County*. Ohio Division of Geological Survey Bulletin 21.

Stout, W. E., and R. A. Schoenlaub. 1945. *The Occurrence of Flint in Ohio. Ohio Division of Geological Survey Bulletin* 46.

MEETINGS AND CONFERENCES

OHIO ARCHAEOLOGICAL COUNCIL SPRING MEMBERSHIP MEETING

May 20, 1994, 10:00 - 3:00, Ohio Historical Center, Columbus, OH. Semi-annual business and membership meeting includes morning papers and an afternoon workshop. For further information contact Bob Genheimer, Cincinnati Museum of Natural History, 1720 Gilbert Avenue, Cincinnati, OH 45202, telephone (513) 345-8503.

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Please submit letter of interest with resume. Position will remain open until filled. Questions should be directed to Pat Trader, Archaeologist, West Virginia Division of Culture and History, The Cultural Center, 1900 Kanawha Blvd. East, Charleston, WV, 25305-0300, telephone (304) 558-0220, telefacsimile (304) 558-2779.

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November 19-20, 1993	*Ohio Archaeological Council Fall Membership Meeting (19th) and A View From the Core: A Conference Synthesizing Ohio Hopewell Archaeology Conference (19-20th)*, The Comfort Inn, Chillicothe, OH. Contact Bob Genheimer (513) 345-8503.
May 5-7, 1994	*Ohio Historic Preservation Office Conference*, The Great Southern Hotel, Columbus, OH. Contact Mary Beth Hirsch (614) 297-2470.
May 20, 1994	*Ohio Archaeological Council Spring Membership Meeting*, The Ohio Historical Center, Columbus, OH. Contact Bob Genheimer (513) 345-8503.

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January 1st	February
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