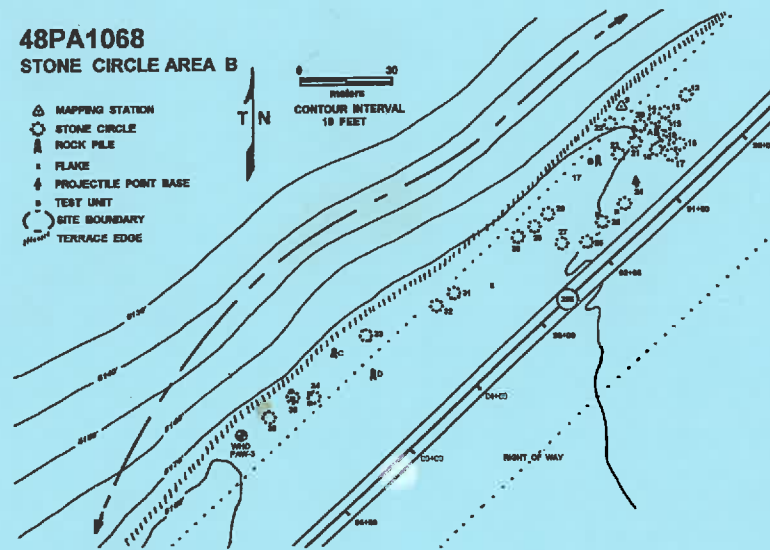


THE WYOMING ARCHAEOLOGIST

48PA1068

STONE CIRCLE AREA B

- △ MAPPING STATION
- STONE CIRCLE
- ▲ ROCK PILE
- FLAKE
- ⚡ PROJECTILE POINT BASE
- TEST UNIT
- SITE BOUNDARY
- TERRACE EDGE



VOLUME 41(1)

SPRING 1997

ISSN: 0043-9665

THE WYOMING ARCHAEOLOGIST

Wyoming Archaeological Society, Inc.

Cher Burgess President
P.O. Box 562
Sundance, Wyoming 82729

Carolyn Buff
Executive Secretary/Treasurer
1617 Westridge Terrace
Casper, Wyoming 82604

Bonnie Johnson, Editor
1301 Harney, #4
Laramie, Wyoming 82070

Danny N. Walker, Managing Editor
1520 Mitchell Street
Laramie, Wyoming 82070

Russ Tanner, Book Review Editor
745 Ridge Avenue
Rock Springs, Wyoming 82901

Richard Adams, Current News
519 South 12th St.
Laramie, Wyoming 82070

THE WYOMING ARCHAEOLOGIST is published quarterly by the Wyoming State Archaeological Society, with the financial assistance of the Wyoming Department of Commerce. Address manuscripts and news items for publication to: Bonnie Johnson, Editor, *The Wyoming Archaeologist*, 1301 Harney, #4, Laramie, Wyoming 82070.

Please send a minimum of two (2) hard copies of each manuscript submitted. A third copy would speed the review process. Please contact the Associate Editor for instructions if the manuscript is available on computer disk. Readers should consult the articles in this issue for style and format. Deadline for submission of copy for spring issues is January 1 and for fall issues July 1. Reports and articles received by the Associate Editor after those dates will be held for the following issue.

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Individual Associate Member @ \$10.00
Institutional Member @ \$15.00
Canada and Foreign @ \$19.00

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THE WYOMING ARCHAEOLOGIST

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NATIONAL ACADEMY SCIENCES NEWS

Date: April 29, 1997

Contact: Office of News and Public Information, 2101 Constitution Avenue, N.W., Washington, D.C. 20419 -- [202] 334-2138; Internet <news@nas.edu >

FOR IMMEDIATE RELEASE: 60 New Members Chosen by Academy

WASHINGTON -- The National Academy of Sciences today announced the election of 60 new members and 15 foreign associates from 11 countries in recognition of their distinguished and continuing achievements in original research. *Among these are Wyoming's George C. Frison, Professor Emeritus of Anthropology, University of Wyoming, Laramie; and director, archaeological excavations, State of Wyoming.*

The election was held this morning during the business session of the 134th annual meeting of the Academy. Election to membership in the Academy is considered one of the highest honors that can be accorded a U.S. scientist or engineer. Those elected today bring the total number of current active members to 1,773.

Foreign associates are non-voting members of the Academy, with citizenship outside the United States. Today's election brings the total number of foreign associates to 309.

The National Academy of Sciences is a private organization of scientists and engineers dedicated to the furtherance of science and its use for the general welfare. The Academy was established in 1863 by a congressional act of incorporation, signed by Abraham Lincoln, that calls on the Academy to act as an official adviser to the federal government, upon request, in any matter of science or technology.

FROM OLD BONES TO NATIONAL HONORS

'Happy digging' leads Wyo native to National Academy of Sciences

by

Susie Thomas, *Casper Star-Tribune* correspondent

To hear George Frison tell it, he just happened to be in the right spot at the right time.

The University of Wyoming anthropologist - now the state's first member of the prestigious National Academy of Sciences - said that the study of the ancient Indian cultures of the Great Plains was "a wide open field" when he began his work in the 1960s.

"I consider myself very fortunate, said the 73-year-old Frison of his remarkable career spent uncovering the secrets of the West's earliest inhabitants. "Wyoming was wide open for archeology at the time; no one had done very much and all it needed was somebody to get in there and start the research."

An unassuming appraisal, belied by three decades' worth of scientific achievement. Associate professor of anthropology Charles Reher said his former teacher Frison "set a standard of integrity and hard work" for both his students and his colleagues at UW.

"Nobody deserves this honor more than George," Reher said.

Frison's election to the National Academy of Sciences - a private organization chartered by Congress in 1863, whose members are chosen on the basis of their contributions to scientific research - is the latest, and certainly the greatest honor Frison has received.

In the 30 years since he became head of UW's anthropology department and Wyoming's first State Archeologist, Frison has been named

a Fellow of the Association for the Advancement of Science and a Smithsonian Institution Regents' Fellow. He's earned two Distinguished Faculty awards from UW, and was president of both the Plains Anthropologist Society and the Society for American Archeology.

Not bad for a guy who grew up on a ranch in tiny Ten Sleep at the foot of the Big Horn Mountains. For all its remoteness, though, Frison said that it was on his family's ranch that he began his education in archeology.

Ten Sleep 60 years ago was "one big archeological site," Frison said, and as a boy, he found himself drawn to the fossils and old bones that the area offered in abundance. Frison recalled that when he was about 10, his grandmother sent him out to meet Barnum Brown, a paleontologist from New York who was digging for dinosaur remains at a site on Shell Creek.

"He had a batch of fossils, and he sat me down and identified everything for me and encouraged me to keep collecting. I think I'd happily have stayed there digging dinosaur bones rather than go back to irrigating on the ranch."

Frison attended UW briefly in the early 1940s, but interrupted his studies to serve in the Navy's amphibious forces during World War II. After he was discharged in 1946, he returned to Ten Sleep and the family ranch, working there as a rancher, outfitter, and professional game guide until he returned to the University in 1962.

Once there, he made up for any lost time by

completing his bachelor's degree at UW in two years, and receiving his doctorate in anthropology from the University of Michigan in three - going "from freshman to Ph.D. in five years," Frison said. "I knew I had to do it, and I knew I didn't have much time - or money."

Not that those years in the Big Horns, outfitting and guiding hunters and tending the cattle ranch didn't pay important dividends later in Frison's career. He learned a lot, he said, about the ways of animals.

"I think a familiarity with animals is really what most archaeologists lack entirely, and I think it makes a difference, having had experience with bison and large animals."

His experience with bison was especially valuable. Among Frison's most important contributions to plains archeology is his research into bison bone beds -- archeological sites at which the ancient peoples of the plains used the lay of the land to their advantage by driving bison off a cliff or into a narrow canyon, where the animals were killed.

The huge piles of bones left behind at such sites, along with the stone tools used to butcher the huge animals, have much to tell scientists about how ancient people hunted, Frison said.

We're dealing with extinct species (of Bison), but they were pretty close, behavior-wise, to modern bison," Frison said. "We have evidence to support the idea that (hunters) were building corrals, even in ancient times." Paleoindian stone spear points and cutting tools are equally important historical clues: Frison was the first researcher to notice that many butchering tools the hunters used had been repeatedly re-sharpened, extending their usefulness.

His hypotheses about the lethality of ancient weaponry took him to Africa, where he engaged in some "experimental archeology" by testing ancient spear points on elephants, whose hide is about as thick as an ancient Plains mammoth's skin would have been.

He was successful in his hands-on research, although he admits that "it's not politically

correct these days to talk about spearing elephants" in the name of science.

Although he retired from teaching about a year ago, Frison has no plans to give up the research he loves -- he's currently working two bison kill sites and plans to maintain an office at UW and a home in Laramie.

He may take a break next spring and travel to Washington, D.C., where the National Academy of Sciences will hold a formal induction ceremony, but his home state continues to offer exciting scientific opportunities.

"This is where the good research is," Frison said. "I guess Wyoming kind of gets in your blood."

(Reprinted from the *Casper Star-Tribune* Tuesday, June 24, 1997, pages C1-C2)

A REQUEST FROM THE STATE ARCHAEOLOGIST FOR RESEARCH ASSISTANCE

Dear Wyoming Archaeological Society Members

Avocational archaeologists in Wyoming, especially members of the Wyoming Archaeological Society (WAS), always have been tremendous sources of information on important archaeological discoveries. Similar voluntary support is available to researchers elsewhere on the Plains, and Dr. Jack Hofman has been able to utilize such help to develop a fluted point survey in states like Oklahoma and Kansas. He and I would like to initiate a similar project for Wyoming, using the attached reporting form.

If you know of a fluted point (Folsom, Clovis) locality, or have a collection from one, please fill this form out and return it to one of the addresses listed at the bottom. You do not have to worry about completing every entry, and you only need to be as specific as you can. If you know a site location is in a particular county or township, but do not know the section, then just list the county or township. We are interested in descriptions and measurements of whole or fragmentary projectile points, and all the information you provide will be kept confidential.

We hope to compile information on as many discoveries as possible over the next year or so. Folsom and Clovis weapon technologies are relatively easy to identify compared to other Paleoindian assemblages, so we are confident the geographic distribution of known localities may help us understand certain aspects of prehistoric human behavior. From the forms you return, we can begin to get a picture of this distribution.

We also can begin to see if certain raw materials show up more in one area than another, and whether or not different production technologies (flaking patterns) occur throughout the entire region. Many other lines of research may develop from this project.

Your participation will be a big help in our effort to document fluted point localities in Wyoming, and any information you provide will be greatly appreciated. Please call the Wyoming State Archaeologist's office at the number provided if you would like to visit about filling out a form, discuss a site or artifact you would like us to see, or if you just want to talk about archaeology.

Thank you in advance for any assistance you can provide. We will try to keep the WAS membership up-to-date through *The Wyoming Archaeologist* as we interpret any findings.

Dr. Mark E. Miller
State Archaeologist
Wyoming State Archaeologist's Office
Wyoming Department of Commerce
Department of Anthropology
University of Wyoming
Laramie, WY 82071-3431

GREAT PLAINS FLUTED POINT SURVEY

specimen data sheet 5/1/92 JLH

Date: _____ Recorder: _____ Spec. Number: _____ Type: _____

Collection of: _____

Specimen found by: _____

Find Spot--State: _____ County: _____ River System: _____

Site: _____ Legal: _____ 1/4S: _____ T: _____ R: _____

Context: (field, pasture, road, streambed, terrace, upland, slope, excav.)

Type of Specimen: point--fluted/unfluted preform--fluted/unfluted

Portion present: (complete, base, blade, tip, edge, channel flake)

Lithic Material: (include translucence, color, texture)

Ultraviolet response: LW/SW _____

Thermal alteration: _____

Abrasion/Patina: _____

Measurements (cm/in):

Length: _____ Width: _____ Basal Width: _____ Thickness: _____

Fluted Thickness: _____ Basal Depth: _____ Weight: _____ (gm/oz)

Flute A: length _____ width _____; Flute B: length _____ width _____

Flake Scars (per/cm): face _____ edge _____; Stem Length: _____

Reworking: (tip/base/edge) _____

Flaking Pattern A: _____ B: _____

Flake Blank: (Y/N) _____

Distal end of flute A: (extended to tip y/n)

removed by flaking: _____ hinged: _____ feathered: _____ missing: _____

Nipple: (present/absent/remnant) _____

Base outline: _____ Edge outlines: _____

Edge Grinding A: _____ Edge Grinding B: _____ Basal Grinding: _____

Photos: y/n, b&w, slides, color/ Draw specimen below or on back

Notes:

Jack L. Hofman
Anthropology Dept.
622 Fraser Hall
University of Kansas
Lawrence, KS. 66045
913/864-4103

Return form to:
or

Mark E. Miller
Anthropology Dept.
Univ. Station Box 3431
University of Wyoming
Laramie, WY 82071
307/766-5301

CRIME DOES NOT PAY II, AND IT'S GETTING EXPENSIVE!

by
Wil Husted

THE LITTLE BIGHORN BATTLEFIELD SAGA CONTINUES

It was earlier reported that Charles Snyder of Bowie, Maryland had been indicted for the attempted sale of artifacts from Little Bighorn Battlefield National Monument (LBBNM) and possession of government property. A U.S. magistrate in Kentucky subsequently sentenced Snyder to one year of probation, a \$5,000 fine and return of the artifacts to the U.S. government. *Common Ground Spring 1996*

On November 1, 1995, public service awards were presented to nine federal agents for their outstanding investigative work in the LBBNM case. Three of the agents are from the Bureau of Land Management, one is from the Federal Bureau of Investigation and four are from the National Park Service. *Federal Archeology 8/3/4) Fall/Winter 1996*

As you may recall, George Scott, a former seasonal ranger at LBBNM, was also caught up in the scheme to sell artifacts from the battlefield. Scott plead guilty in 1994. Under a plea agreement, he led authorities to Richard P. Maniscaico (Montana Archaeological Society Newsletter 5, January 1996 and was sentenced to a fine and probation. The 173 artifacts involved in this case were returned to LBBNM on Tuesday April 23, 1996 during National Park Week. They were accepted during a day long event which included participation by MAS member Marvin Keller, archeologist for the Bureau of Indian Affairs. Speaking during the ceremony, Keller said, "The past is not some-

thing you should be able to put on the living room wall. The past belongs to all of us." Crow and Cheyenne tribal members spoke about the social and religious meaning of historic places and artifacts. Little Bighorn Battlefield National Monument Superintendent Gerard Baker said, "it is good to bring back . . . some of the looted past taken by this individual." Assistant U.S. Attorney Ed Laws, who prosecuted Scott, said, "They didn't steal from the government, they stole from the public". *Billings Gazette, Wednesday, April 24, 1996*

OREGON THROWS BOOK AT LOOTER

In another looting case reported earlier, Jack Lee Harrelson of Grants Pass, Oregon was sentenced to 90 days in jail and fined \$15,000 for the removal of the remains of two young Native Americans, their burial baskets and associated funerary objects from a site in the Black Rock Desert north of Winnemucca, Nevada, Harrelson's sentence was the maximum permitted under Oregon law for an archaeological resource violation. In addition, Harrelson also received seven years probation and was ordered to pay the Paiute tribe \$900 for reburial. He was also assessed \$3,600 for prosecution costs. The Winnemucca District, Bureau of Land Management assessed a civil penalty of \$2.1 million dollars for site restoration. Harrelson plans to appeal this assessment.

UTAH LOOTER DOES HARD TIME

Convicted looter Earl Shumway was sen-

tenced to six and a half years in federal prison, the largest sentence ever imposed in an archaeological violation case. In August 1995, a Utah jury found him guilty of looting two remote sites in Canyonlands National Park and the Manti-LaSal National Forest in 1991. The burial of an Anasazi infant was destroyed during the digging for artifacts to sell or trade. Prehistoric human remains were desecrated when Shumway illegally excavated two alcoves in the Cedar Mesa Special Management Area (BLM) in southeastern Utah in 1991. He pled guilty in this case. Shumway was convicted of four Archaeological Resources Protection Act (ARPA) violations, two counts of damaging U.S. property and one count as a felon in possession of a firearm. Already serving time for an unrelated burglary, Shumway was convicted in 1986 for taking 35 American Indian baskets and some ceramic pots from the Manti-LaSal National Forest, also an ARPA violation. He was given a two-year suspended sentence and five years probation.

Last February 1, Shumway's partner, Peter Verchick, was sentenced to four months home confinement and ordered to pay \$3,700 restitution. He had pled guilty to two ARPA misdemeanor counts the previous summer. Verchick had to wear a transmitter on his ankle that would signal authorities if he ventured more than 150 feet from his home. Had he done so, immediate return to custody would have been the result.

ESTRANGED WIFE BLOWS WHISTLE ON VANDAL HOLDOUT

In one of the first felony convictions under ARPA, Frederick J. Lindauer of Manton, California received a two-year term in federal prison for violation of a court order to provide authorities with Native American artifacts he had illegally removed from Forest Service land. In 1989, Lindauer pled guilty to the excavation of a 1,400 year-old Yana village site in Lassen National forest. He received a sentence of 60 days in jail and one year of supervised release. He was also ordered to return any Native Amer-

ican artifacts in his possession.

Lindauer is believed to have collected in northern California, northwestern Nevada and Eastern Oregon. Lassen National Forest archeologist James Johnston was given some 2,200 projectile points and some ground stone artifacts when he appeared at Lindauer's home in May 1990. Since these items were common and would be of little interest to archaeologists or collectors, Johnston became suspicious. His suspicions were confirmed in 1992. During an interview by the FBI on an unrelated matter, Lindauer's estranged wife volunteered that he had temporarily hidden most of his collection at a friend's home.

The hidden collection included spear points, beads, stone bowls, drills, mortars, pestles, charm stones and arrow shaft straighteners. Later, police searched Lindauer's home in a narcotics investigation and photographed these items as part of the inquiry. Along with the artifacts, authorities also seized maps and photographs of excavation sites. Lindauer had written dates on the photographs and boxes indicating he had been looting sites since the 1980s.

A federal grand jury returned an indictment charging Lindauer with felony contempt of court for violation of his supervised release. Native American groups, who were unhappy with what they considered a lenient punishment, were present when Lindauer was sentenced to the two-year term.

STAKEOUT PAYS OFF

Florida State Park Ranger Frank Loughran began to find empty Marlboro cigarette packs on the Olustee Battlefield, Florida, site of a brief but fierce fight between some 5,000 Union and Confederate troops in 1864. Having been sole custodian of the battlefield since 1982, Loughran was thoroughly familiar with the park and had studied every document concerning the battle. Before finding the discarded packages, he was satisfied that the battlefield had remained untouched for 130 years. He began a nightly

watch hoping to catch the person, whom he had named "the Marlboro Man," looting the park. One morning he found 176 holes six to eight inches deep.

Loughran determined that more than one person was involved following some close encounters during his nightly vigils. He enlisted the help of Forest Service officer Jim Ellis who joined him during the night watches. In January 1995, Ellis and Don Pettijohn of the state Game and Fresh Water Fish Commission surprised two men, one of whom fired a shot at the officers. Randall Edwards, 27, and Donald Heiden, 25, quickly surrendered. Edwards was charged with aggravated assault on a law enforcement officer. Edwards' brother-in-law, Ronald Allan Pearson, 23, was arrested in the subsequent investigation. The three were part of a ring selling artifacts on the black market. Pearson declined a plea agreement and was scheduled for trial in February 1996.

OREGON GRAVE ROBBERS CONVICTED

Three men planning to sell Native American human remains were convicted in Klamath County (Oregon) District Court for the 1990 looting of Wilson Cemetery, a Klamath tribal burial ground, in Chiloquin, Oregon. The trio planned to sell the human remains and associated funerary objects to finance a methamphetamine laboratory. The Klamath tribe played an active role in the prosecution process working effectively with law enforcement agencies.

A jury convicted Gordon David Baker, Jr. of eight counts of mutilation and injury to Native American graves, one count of theft in the second degree and one count of criminal mischief in the second degree. Baker's son Shawn pled guilty to four counts of grave mutilation. An accomplice, Terry Lee Schoonmaker, plead guilty to one count of grave mutilation and one count of criminal mischief in the first degree.

Schoonmaker eventually turned state's

evidence against the Bakers and received two months in jail and two years probation. Shawn Baker received six months in prison, five years probation, a \$3,500 fine and \$1,280 restitution to the tribes. Gordon Baker was given a two year sentence and ordered to pay the tribes a \$3,500 fine.

Subsequently, Schoonmaker again attempted to sell burial goods. The tribes teamed with Oregon state police in a sting operation and arrested Schoonmaker, Ella Louise Peden and Lori Kay Cvitanovich. Schoonmaker and Peden plead guilty, and the former was given 30 days in jail and ordered to pay the tribes \$1,200. He was also ordered to have no further contact with the tribes and to stay out of Klamath County. Ella Peden was sent to jail for 20 days and fined \$700. Cvitanovich had not yet gone to trial. *Common Ground, Spring 1996*

WYOMING ARCHAEOLOGICAL SOCIETY, INC. 1997 ANNUAL MEETING MINUTES

8:40 a.m. - Casper College - Casper WY
Saturday, April 26, 1997

PRESIDING: Gail Gossett, 2nd Vice President

CALL TO ORDER: 8:40 a.m.

ROLL CALL AND CERTIFICATION OF

DELEGATES: Secretary/Treasurer Carolyn Buff certified the voting delegates: Absaroka, Barbara Nahas; Ancient Trails, Cher Burgess, Clay Dykstra; Casper, Evelyn DiPaolo, Gloria Boyce; Cherokee Trail, absent; Cheyenne, Nick Palmer; Fremont, Loucille Adams; Gail Gossett; High Plains, Janice and Dewey Baars; Platte, absent; Rawlins, George Brox, Bill Scoggin; Sheridan/Johnson County, absent; and Sweetwater, absent.

Roll call showed seven chapters represented: Absaroka, Ancient Trails, Casper, Cheyenne, Fremont, High Plains, and Rawlins. Not represented at the meeting was Cherokee Trail, Platte County, Sheridan/Johnson County, and Sweetwater.

MINUTES OF LAST ANNUAL MEETING:

April 27, 1996: Motion by Barbara Nahas, second by Loucille Adams to approve the minutes as printed in the fall 1996 issue of The Wyoming Archaeologist. Carried.

TREASURER'S REPORT:

Secretary/Treasurer Carolyn Buff gave the treasurer's report showing a total net worth as of March 31, 1997 of \$27,854.29, an increase of \$1,013.18. Motion by George Brox, second by Janice Baars to file the treasurer's report for audit. Carried.

AUDITOR'S REPORT: No report given at meeting. The books were audited by David Eckles later who verified he had examined the accounts and receipts of the Secretary/Treasurer;

and found them in order.

EDITOR'S REPORT: Bonnie Johnson, editor, reported that she had cash on hand of \$3.52. The annual bulk mailing fee was deducted from the account at the Rawlins post office. The 1996 fall/winter issue has been mailed. Printing costs have been paid by the Office of the Wyoming State Archaeologist. Bonnie thanked Dr. Mark Miller for this help.

LIBRARIAN'S REPORT: Danny Walker reported that the eleven exchange publications are on file at the Department of Anthropology, University of Wyoming. Dr. Walker explained that the delay in publishing the fall 1996 issue was due to a lack of manuscripts. Without material, the journal cannot be published. Everyone was urged to submit material. Carl Belz requested that the Foundation address be printed in the Archaeologist to encourage donations and an application for a memorial donation. Danny assured that if he were provided with a prototype, he would publish it.

SCHOLARSHIP COMMITTEE: Carolyn Buff announced that the committee would meet during lunch at the Colonial Restaurant.

The president, Robin Perdue, took over the meeting at 8:52.

CHAPTER REPORTS: Were given by all chapters present.

STATE ARCHAEOLOGIST'S REPORT: Mark Miller reported that the amendments to the 1935 State Antiquities Act prohibits those who hold leases on state land from sub-contracting archaeology, and state leases are subject to

inspection by enforcement agencies. The new bill states that any person, who, for monetary gain or for commercial purposes, or any other purpose, removes any materials in violation of the statute, and those materials have value in excess of \$500, becomes a felony and can carry a fine of \$10,000. There is some danger in the bill because it could have an adverse effect on professional work on state lands.

Much of the summer will be taken up with working on fluted point locations in the state.

Curation staff (Judy Brown) will be continuing to work on the box inventory of collections.

The Wagon Box report is completed and available at the state park headquarters at Ft. Phil Kearny.

Announced that 30th Anniversary brochures from the UW Department of Anthropology were available.

Announced that the SAA had published a brochure, "25 Simple things you can do to promote the public benefits of archaeology," also available from him.

Fall workshop probably in Cheyenne - theme to be military sites.

Thanked the Society for the condolences sent upon the death of his mother.

Dr. Miller then introduced George Brox, who thanked the Society for condolences expressed upon the death of his wife, Mary.

OLD BUSINESS: Council of Affiliated Societies/Society for American Archaeology (COAS/SAA) Representative: Marcel Kornfeld reported that the council cannot be put under the Education Committee. The council serves the avocational, archaeology weeks, etc., and the bylaws do not allow for the two committees to merge. The Natural Resources Conservation Services is instituting some stewardship programs and looking for people who might be interested. The council is also working on home pages on the World-Wide Web. The council is seeking input on landmark themes and activities of member societies and chapters. Any informa-

tion can be sent to Marcel at the university. The council participates in the Crabtree Award, which is given to avocationalists who have made outstanding contributions.

Membership Committee/Brochure: Carolyn Buff - The brochures are working for getting new associate members in the Society. The increase is small but steady. Additional brochures are available by contacting Carolyn.

Archaeology Week: Julie Francis announced that the activity will become Archaeology Month in September. Several activities are planned: an essay contest on archaeology and protecting archaeological sites; on September 13, a program on "Who Owns the Past," will be presented in Laramie with Vine Dilorio and Brian Fagan as the guest lecturers; and chapter activities. A brochure will again be published listing activities. Motion by Cher Burgess, second by Janice Baars to contribute \$200 to Wyoming Archaeology Month. Carried.

Chapter Report Forms: Will be instituted in 1998.

Wyoming History Day: \$100 was awarded to an archaeology project. Gail Gossett recommended that the information go directly to the person in charge of history day at the schools.

Newsletter: Rich Adams discussed the possibility of merging the WAPA newsletter and the journal. Rich will submit current research information to Danny for the journal. The consensus was that sharing of information between WAPA and WAS will proceed.

Motion by Cher Burgess, second by Loucille Adams to table any merger pending a review by the committee of Rich Adams, Julie Francis, Mark Miller, and Carolyn Buff.

Hell Gap Benefactor's Day: Mary Lou Larson

reported that there is still a need to recognize those persons who have helped at Hell Gap.

NEW BUSINESS: Project Archaeology - Ranel Capron - Project Archaeology was originally started as a cooperative effort between state and federal agencies in an attempt to reduce the vandalism of sites. It is now a national program in which teachers' guides, "Discovering Archaeology in Wyoming," are made available to public school teachers. Facilitators have been trained in using the lessons in the guide and modeling them for teachers. The cost of the materials is \$20 and teachers must attend a workshop. Others may also attend the workshops. Interested parties may contact Ranel at 307-775-6108.

The Office of the Wyoming State Archaeologist publishes and distributes to each chapter a listing of personnel, students and topics for program presentations. This list is published every other year and sent to the chapter presidents' addresses listed in the Archaeologist at the time of the mailing.

WYOMING ARCHAEOLOGICAL FOUNDATION: George Frison announced that two ten-day sessions would be held in June at the Hell Gap Site.

ELECTION OF OFFICERS: Gail Gossett, chair, nominated the following officers for 1997-1998:

President - Cher Burgess
1st Vice President - Gail Gossett
2nd Vice President - James Stewart
Nominations for the Foundation included Bonnie Johnson, Dewey Baars, and Rich Adams (3-year term). Rich Adams was elected to the position. The term will expire in 2000.

1998 NOMINATING COMMITTEE: James Stewart, chair, Janice Baars and George Frison.

SITE OF 1997 SUMMER MEETING: No determination was made to hold a summer meeting. Several opportunities to visit sites will be published in the Archaeology Month brochure.

SELECTION OF SITE FOR 1998 ANNUAL SPRING MEETING OF THE SOCIETY AND FOUNDATION: It was the consensus of the group that we hold a joint meeting with Montana in Billings.

ANNOUNCEMENTS: Carolyn Buff mentioned that she had membership cards and membership brochures available.

Carolyn requested that chapters update their officer list.

Thank you notes were received from George Brox and Chris Hall.

A request was made for e-mail addresses.

Marcel Kornfeld discussed the George C. Frison Institute of Archaeology. Motion by Carolyn Buff, second by Barbara Nahas to donate \$100 to the institute. Carried.

ADJOURN: 10:47 a.m.

BANQUET: The banquet address was presented by Dr. Adrian Hannus, who spoke on "The Oldest That's New: A Potpourri of South Dakota Archaeology."

GOLDEN TROWEL AWARD: Dr. Julie Francis and Dewey and Janice Baars.

/s/ Carolyn M. Buff
Carolyn M. Buff
Executive Secretary/Treasurer

/s/ Robin Perdue

Robin Perdue
President

WYOMING ARCHAEOLOGICAL SOCIETY, INC.

SCHOLARSHIP COMMITTEE

MINUTES: April 26, 1997

PRESIDING: Carolyn Buff, Chair

PRESENT: Carolyn Buff, George Frison, Gail Gossett, Ray Gossett, Mary Lou Larson, Mark Miller, Bonnie Johnson, and Robin Perdue.

Motion by Bonnie Johnson, second by Gail Gossett to award the Prison Scholarship to Sam Drucker, and the Mulloy Scholarship to Orin Shanks, both in the amount of \$400. Carried.

/s/ Carolyn M. Buff

Carolyn M. Buff
Scholarship Committee Chair

WYOMING ARCHAEOLOGICAL SOCIETY, INC.			
Treasurer's Report for Fiscal Year Ending March 31, 1997			
CHECKING ACCOUNT - NC SCHOOL EMPLOYEES FEDERAL CREDIT UNION	INCOME	EXPENSES	BALANCE
Beginning Balance	\$ 3,279.98		
Deposits	\$ 2,844.74		
Interest Earned	\$ 38.22		
TOTAL INCOME - CHECKING	\$ 2,882.96		\$ 6,162.94
EXPENSES			
Natrona Printing - Stationary		\$ 233.12	
Merback Awards - Engraving Golden Trowel		\$ 16.45	
Casper College - Postage		\$ 32.00	
USPS - Bulk Permit		\$ 85.00	
Carol-Anne Garrison - Scholarship		\$ 400.00	
Christopher T Hall - Scholarship		\$ 400.00	
Sweetwater Chapter - Student Banquet Tickets		\$ 80.00	
Wyoming Archaeological Foundation - Dues Payment		\$ 340.00	
Tom Dillehay - Airfare		\$ 620.28	
Tom Dillehay - Honorarium		\$ 200.00	
Outlaw Inn - Dillehay Lodging		\$ 64.96	
Natrona Printing - Brochure Reprint		\$ 431.19	
Casper College - Postage		\$ 32.00	
Society for American Archaeology - Membership		\$ 30.00	
USPS - Bulk Permit		\$ 200.00	
Secretary of State - Corporation Dues		\$ 10.00	
Casper College - Postage		\$ 32.00	
Natrona Printing - Spring Meeting Brochures - Reimbursable		\$ 65.63	
Ancient Trails Chapter - Overpayment		\$ 30.00	
Ancient Trails Chapter - Overpayment		\$ 2.50	
Casper College - Postage		\$ 32.00	
Mary Brox Memorial		\$ 50.00	
Casper College - Foreign Postage - Spring Meeting - Reimbursable		\$ 3.82	
High Plains Chapter - Overpayment		\$ 7.50	
TOTAL EXPENSES		\$ 3,398.45	
ENDING BALANCE			\$ 2,764.49
SAVINGS ACCOUNT			
BEGINNING BALANCE	\$ 2,669.44		
Deposits	\$ 156.00		
Interest Earned	\$ 72.56		
Withdrawals - to Money Market		\$ 2,791.96	
ENDING BALANCE			\$ 106.04
MONEY MARKET ACCOUNT			
BEGINNING BALANCE	\$ 2,791.96		
Interest Earned	\$ 11.58		
ENDING BALANCE			\$ 2,803.54
CERTIFICATE OF DEPOSIT			
BEGINNING BALANCE	\$ 20,891.69		
Interest Earned	\$ 1,288.53		
ENDING BALANCE			\$ 22,180.22

TOTAL NET WORTH AS OF MARCH 31, 1997			\$ 27,854.29
Total Income	\$ 4,411.63		
Total Expenses	\$ 3,398.45		
Net Increase			\$ 1,013.18
SCHOLARSHIP ACCOUNT			
Balance	\$ (2,061.00)		\$ (2,061.00)
ARCHAEOLOGY WEEK ACCOUNT			
Balance	\$ 1,377.75		\$ 1,377.75
/s/ Carolyn M Buff			
Executive Secretary/Treasurer			
We do hereby certify that we have examined the accounts and receipts of the executive secretary/treasurer, and find them to be correct; and that the balance in her hands is \$ _____ . Date: April 26, 1997.			
/s/			
/s/			
/s/			

DIGGING DEEPER IN HELL GAP VOLUNTEERS AND FIELD SCHOOL STUDENTS EXCAVATE THE PREMIERE PALEOINDIAN SITE

by
Richard Adams

During the school year Mary Ann Koons teaches Wyoming history in Wheatland. "We begin the study of Wyoming history with Paleoindians," says the fourth grade teacher. "I have a sandbox filled with artifacts. Students practice archaeological excavation techniques and learn how to map, describe, and analyze artifacts just like at a real dig. They're thrilled when they find something important."

Koons was as thrilled as her students when she unearthed a Hell Gap projectile point preform. She took special care not to touch the

tool while it was being excavated so it could be analyzed for blood or protein residue adhering to the tool. "I was worried that I'd mess things up, but Dave (Dr. David Rapson - a UW anthropologist) and Bonnie (Field Director Bonnie Pitblado a University of Arizona PhD candidate) were really helpful and walked me through the process."

Koons is an active member of the High Plains Chapter of the Wyoming Archaeological Society (WAS). She read about the volunteer program at Hell Gap in the Wyoming Associa-



Wheatland, Wyoming, Fourth Grade teacher, High Plains WAS member, and volunteer Mary Ann Koons waterscreens matrix at the Hell Gap site.



Volunteers, field school students, and crew members listen to a lecture by C. Vance Haynes at Locality I.

tion of Professional Archaeologists newsletter and contacted Dr. Marcel Kornfeld, an anthropologist at the University of Wyoming. By the end of the two ten-day long excavation sessions, not only was Koons able to carry full buckets of dirt, but she had also mastered the complex excavation procedures that require excavators to dig in both natural and arbitrary levels, and was comfortable with the detailed recording procedure employing strings of numbers and two-letter codes to describe and locate every artifact recovered. "Now I really understand the importance of finding artifacts in place and why it is important to record every tiny bit of information during excavation." Unlike chemists who can repeat experiments, archaeologists cannot repeat an excavation. Once an artifact comes out of the ground, its context is lost. Context, which is the relationship between artifacts and the ground that contains them, provides the key to understanding what happened in the past.

Koons was part of a team of at least 24 volunteers, excavators, field school students, and

professional archaeologists that spent 20 days at the WAS-owned Hell Gap Paleoindian site. Excavation ended late in June with the recovery of a nearly complete Scottsbluff projectile point, a Hell Gap projectile point preform, thousands of artifacts, and at least 170 charcoal samples for radiocarbon dating. In addition to the daily archaeological excavation, visiting researchers conducted geological, geochronological, pedological (soils), and paleoenvironmental studies as part of an interdisciplinary approach to understanding this important Paleoindian site.

INTERDISCIPLINARY RESEARCH

Principal Investigator George C. Frison is Professor Emeritus of Anthropology at the University of Wyoming. Dr. Vance Haynes - a University of Arizona Geochronologist, UW Anthropologists Dr. Marcel Kornfeld, Dr. Mary Lou Larson, and Dr. David J. Rapson are the co-Principal Investigators. Together, these four researchers oversee excavation and direct analysis of Hell Gap site materials. In addition, there

are other participants studying everything from chipped stone to fossil pollen.

Dr. Haynes' battered field hat could often be seen poking out of trenches that Dr. Frison dug with a small backhoe. Both Haynes and Frison are members of the prestigious 1700 member National Academy of Science. Crew members joked that few, if any, other NAS members had spent so much time in trenches or knew how to operate a backhoe.

Over 170 radiocarbon samples were collected by Haynes. Each sample was located in a three dimensional grid to the nearest millimeter with an electronic surveying instrument known as the EDM. Accelerator Mass Spectrometric (AMS) dating of these samples will provide much needed dating brackets of the Paleoindian occupations. Haynes will apply for funding from the National Science Foundation to date the 300 charcoal samples he hopes to collect by the end of the next field season from Hell Gap, making the site the best dated Paleoindian site in North America. The dates will allow Haynes to develop a model of how the site formed and how archaeological artifacts became buried.

The 300 AMS should go a long way toward explaining the sequence of occupations at Hell Gap. The traditional interpretation holds that the Hell Gap site is a sequence of stratified Paleoindian cultural complex occupations, "a unilineal Paleoindian sequence" as Kornfeld puts it. Did Folsom follow Goshen, who followed Clovis and so on? Or were there numerous groups making different projectile points at the same time? New research by Frederic Sellet, a French PhD candidate at Southern Methodist University, supports the contention that there is chronological overlap between Folsom, Goshen, and Agate Basin occupations at Hell Gap. New AMS dates on Goshen cultural materials from the Mill Iron site in Montana and the Jim Pitts site in South Dakota overlap Clovis dates as well. "The implication has always been that Clovis was replaced by Goshen, which was replaced by Folsom, and so on. That interpreta-

tion now seems overly simplistic," said Kornfeld.

In addition to refining the chronology of occupations at the site, researchers hope to learn more about the Goshen cultural complex. "The Goshen complex was one of the three Paleoindian cultural complexes defined at Hell Gap in the 1960s," says Dr. Larson, "the other two complexes were Hell Gap and Frederick." Goshen artifacts were not observed elsewhere until George Frison and others excavated the Mill Iron site in eastern Montana - a Goshen bison kill and campsite. Since then other Goshen sites have come to light, but the Goshen level at Hell Gap is poorly known.

While archaeologists ponder the dozen or more occupation levels exposed in the profile, researchers from other fields attempt to reconstruct the site's history. Soil scientist Dr. Richard Reider, from the UW Geography Department, spent long hours profiling the trenches. Instead of looking at geologic strata, Reider is unravelling the story of soil formation and environmental conditions at Hell Gap. The lowest soil, is what Reider calls an aquoll -- a wet meadow soil developed in low-lying areas with a steady water table. The soil is similar to paleosols found at other Paleoindian sites like the Carter/Kerr-McGee site near Gillette, Wyoming.

Assistant State Archaeologist Dr. Danny N. Walker was on site to recover micromammal bones and wound up finding a nearly complete Scottsbluff projectile point in situ in the wall of a backhoe trench. Walker, assisted by field school student Ian Hough and crew members Todd Surovell and R.A. Varney (both graduate students of Haynes' at the University of Arizona), removed a column of soil from top to bottom in Locality I. While other excavators were using bamboo picks and small trowels, Walker and his crew chunked out the soil using shovels, picks, and a pry bar. The point of removing the soil in big clods was to recover small mammal bones in an efficient way. When

the site was first excavated in the 1960s, the Harvard excavators did not save small rodent bones, so there is no record of the smallest members of the local fauna. Walker and crew saved approximately 10 gallons of soil from each stratum, screening the remainder for artifacts. Each time they encountered concentrations of artifacts and charcoal, they switched from shovel to bamboo picks and brushes. The ten gallon samples will be water screened later this year and analysis of the micro-mammals will lead to a better understanding of the site's past environments.

Soils scientists Michael McFaul and Grant Smith, of LaRamie Soils Service, began a sediment coring program last year. Sediment coring is an inexpensive, relatively non-destructive alternative to backhoe trenching or large scale excavation. As they demonstrated the coring technique for the Advanced Field school, they focused on two main pedagogic points. First, few landscapes in Wyoming are more than 2 million years old and it is rare to find a Late Pleistocene landscape like Hell Gap second, that the dominant geomorphic trend in Wyoming is erosion. McFaul emphasized that the chance of finding significant deposits diminishes as their age increases, and that is why the Hell Gap site is so important.

Global Positioning Satellites (GPS) can accurately locate any point on the globe in a matter of seconds. UW Geographer Dr. Bill Gribb conducted a workshop at the site on the use of GPS receivers in archaeology. GPS technology will allow investigators to accurately locate the site on topographic maps.

Archaeomagnetism is a dating method using subtle changes in the location of earth's magnetic poles to produce an absolute (calendric) date. Dr. Jeff Eighmy of Colorado State University sampled a 1200 year old hearth in the upper strata at locality I. This research focuses on developing an archaeomagnetic curve for the high plains.

Paleoenvironmental specialist Dr. Glen

Fredlund, from the University of Wisconsin, has analyzed phytolith samples taken at 5 cm intervals from the 2.5 m high wall of the excavation. Phytoliths are silica structures found in plants that differ from species to species. Identification of phytoliths can indicate the types of plants growing at the site in the past and add to understanding of past environments.

ADVANCED FIELD SCHOOL

Four students studied advanced excavation and recording techniques in the first Advanced Field School in Wyoming Archaeology. According to Field School instructors Kornfeld and Larson, each student is expected to take on a small project, formulate a research design, collect and analyze the data and write a professional paper. Students took the opportunity to pursue research questions relating to site formation, organization of technology and subsistence studies.

Ann Begeman, a University of Kansas at Lawrence graduate student from Topeka, will examine bones from the past two year's excavation, identifying species, element, and the changes the bone has undergone since burial. Cynthia Craven, a former contract archaeologist from Oregon is examining the orientation of bones and artifacts from all levels to document changes in site formation processes. Ian Hough, who starts graduate school this fall at Northern Arizona University, assisted Walker in excavating the soil column. Hough removed small samples from every strata, which he then examines for seeds and other plant remains that will aid in reconstructing the site's past environments. Jeanine Martin, a graduate student in mathematics at Loyola University in Chicago, wants to pursue graduate studies in anthropology after her math degree. When she told her advisor, he suggested that she come to UW. Her project at Hell Gap is a mathematical model of biface production.

VOLUNTEER PROGRAM

"Volunteers are the backbone of the Hell Gap Project," said Kornfeld, "We have many volunteers that come back every year. Lee Garner and Joan Rupprecht have come all the way from upstate New York for two years now." While they find the paperwork daunting Lee and Joanie love the camaraderie and the high level of excitement. Leon Lorentzen, a retired US customs agent from Tucson has worked at Hell Gap for the past three years. Cherie Freeman, a retired military nurse now living in Tucson, goes on annual Earthwatch archaeological expeditions and also volunteers at local and regional excavations.

Due to the long learning curve associated with the complex nature of the excavation and recording process, volunteers are asked to spend at least a week at the site. "We hope to implement a volunteer program for people who are only able to spend a day or weekend," said Kornfeld. In the future, people with time constraints who want to volunteer may be able to assist in mapping the many stone circles that surround the excavation area. Teachers from Wyoming and Colorado have asked about developing a continuing education program. Kornfeld would like to implement such a program, but notes that his time is already filled up by Field School teaching duties, book-keeping demands, equipment repair, decision-making, tour guiding and research directing. He hopes to find a volunteer coordinator for future field seasons.

FIELD LIFE

Bleary-eyed cooks get up at 5 a.m. to make hearty breakfasts that are served at 6 am. The first priority is to make one gallon of cowboy coffee. As the crew stumbles into the dining hall, cups of steaming brew in hand, one excavator mutters "I hope somebody donates a big electric percolator, so I don't have to strain coffee grounds with my teeth next year." Cooking is done by crew and volunteers on a rotating basis, so that each person cooks twice

during a ten-day session.

By 7 am the crew leaves camp and heads for the site. Rapson disconnects the electric fence, and crew members herd slow moving cattle away from the site. Next, plastic sheeting, which protects the site from evening showers, is pulled back to expose a surprisingly high, vertical dirt wall.

After retrieving their excavation tools and clipboards from the lab, the diggers carefully fold themselves in their "units." The site is set up on a metric grid. The basic area of excavation is a one meter by one meter square known as a unit. The digging is slow, but as Haynes explains, the current phase of excavation at Hell Gap focuses on understanding the stratigraphic sequence. When Harvard excavated the site in the 1960s they found distinctive projectile points from all Paleoindian cultures except Clovis. While the Harvard excavators employed state of the art techniques, the nature of archaeology has changed and new techniques such as accelerator mass spectrometric dating (AMS) now allow resolution that was only dreamed of in the 1960s. Haynes, who worked at Hell Gap in the 1960s, considers Hell Gap to be the "premiere Paleoindian site in North America" because nowhere else can the remains of all known Paleoindian cultures be found stacked on top of the other.

By now the EDM is up and running and excavators can begin to map artifacts. Nicole Waguespack, a UW anthropology graduate student and excavator calls out for a "shot". A shot is excavator's parlance for what the EDM does. An EDM consists of a precise surveying transit, an electronic distance measuring device (hence the name EDM), and a computer chip. When the EDM is set up over a known point in the grid system it can tell you the location of any artifact to the nearest millimeter. The use of EDMs has revolutionized archaeology by allowing almost instantaneous determinations of an artifact's location in the grid system. EDMs have replaced the old system of locating artifacts

in the grid using tape measures, line levels, plumb bobs and quite a bit of dexterity. Waguespack holds the "peanut" -- a prism that reflects an infrared light beam from the EDM -- so-named because of its resemblance to Mr. Peanut. Volunteer Frank Sander, a snowbird retiree from Laramie and Tucson, who met Frison at the VFW club in Laramie operates the EDM and calls out the coordinates to Waguespack.

Using trowels, brushes and bamboo picks, excavators painstakingly dig their units in 5 cm increments called "levels." The reason for this procedure is to keep as much control over stratigraphy and the location of small artifacts as possible, explains Rapson. "Besides, a 5 cm level just fills up a five-gallon bucket," he adds. Excavators use measurements from the EDM and carpenter's levels to make sure that the surface of their units are not only at the correct elevation but also level and flat. After getting a shot from Sander, Begeman says that the EDM's measurement indicates that her unit's surface is three millimeters (the thickness of three credit cards) too high, so she uses her trowel to shave it down to the proper height and Sander confirms this with the EDM. Begeman is now set to start excavating a new level.

A visitor shows up near mid-morning "cookie break." Richard Loudon is a third generation rancher from the Trinidad, Colorado area. Field Director Bonnie Pitblado studied his collection of Paleoindian projectile points as part of her dissertation research earlier this spring and invited him to visit the site. Loudon is an active avocational archaeologist and historian, and was past president of the Colorado Archaeological Society. An archaeological museum at Trinidad State College is named after Loudon and his brother Willard. Chris Hall, a UW anthropology graduate student, is the crew chief and designated tour guide. He shows Loudon the site and the lab and then learns that Loudon, who lost his right arm in an accident, still flintknaps. Excavation comes to a standstill as Loudon produces a small case containing beauti-

fully flaked arrowhead earrings.

More visitors show up throughout the day. Forest Fenn, owner of a cache of Clovis points that Frison is writing a book on, flies up from Santa Fe in his private plane. Fenn, who owned a gallery in Santa Fe, is a major contributor to archaeological excavations like Hell Gap. Shortly after Fenn leaves, Charlie Norton, an artist who has a late Paleoindian bone bed on his ranch in Kansas, arrives and asks Hall and others to paint word pictures of what the site looked like when it was occupied. Norton displayed his bronzes in Fenn's gallery and was sorry to learn that he'd missed Fenn. Guests gather under a nearby shade tree and visit while excavators toil in the hot sun.

When the crew heads back to camp for lunch, Rapson, Sander and Haynes stay at the site. Haynes uses the peace and quiet to update his notes. Haynes is excited by the opportunity to trace the stratigraphy in two new backhoe trenches. He explains that the earliest Paleoindian inhabitants of Hell Gap camped on sediments called loess - wind deposited silt. Later Paleoindian inhabitants occupied a site where colluvium -- sediments moved by water and gravity from the granite hill to the north of the site -- dominated the environment.

From preliminary analysis of animal teeth, Rapson believes that the site was occupied during autumn and winter more often than summer. Since artiodactyls - deer, antelope, and bison - give birth at fixed times in the spring, it is possible to determine the age at death of these animals by comparing their tooth eruption and subsequent wear to teeth of specimens of known age. By using the sequence of eruption and wear, faunal analysts like Rapson can determine the time of year when the animals were killed and brought to the site.

Just before 1 p.m., the crew returns to the site. Koons and Sarah "Sam" Richings take their buckets of matrix and head toward the waterscreening area. The contents of the buckets get water screened through wooden frames

with window screen bottoms. On hot days this can be enjoyable work since the water screening station is down in the arroyo in the shade of large juniper and box elder trees. Richings explains that no matter how carefully you dig, there are always a few small artifacts that are missed. Richings, a graduate student in Anthropology at the University of Wyoming with an interest in the zooarchaeology of camels, says that in addition to removing clay and silt adhering to artifacts, water screening exposes snail shells, insect parts, and small mammal bones that can be used to reconstruct paleoenvironments.

Jonathan Durr, a UW graduate student from Alaska, picks up his clipboard and a bag of artifacts and heads to the field lab. Every artifact and sample gets processed through the on-site field laboratory. The field lab is a partially converted railroad car. Plastic bags and excavation supplies are stored in the unused shower stalls. The lab contains computers, cataloging and sorting areas, as well as displays on the history of Hell Gap excavations, preliminary results from the recent excavations and some preliminary faunal analysis. Beth Ann Camp, the laboratory manager and UW Anthropology graduate student, checks Durr's artifacts and paperwork to make sure that every bit of information matches. Camp has a vested interest in making sure that everyone's paperwork is in order; she hopes to write her thesis on refitting chipped stone artifacts from the site and it is important that she know the proper location of every flake and tool.

Toward quitting time, Dr. Rapson quietly talks with every excavator and records their thought on what they did during the day. "You can never take too many notes, something that may have seemed inconsequential at the time might hold the key to future interpretation," says Rapson whose specialty is the analysis of bones from archaeological sites. "The Harvard excavators took copious notes in the 1960s, which has allowed us to reconstruct what they did. They were way ahead of the curve in excavation

techniques."

Quitting time is 5 pm, although folks are reluctant to leave and it is usually 5:30 before the site is buttoned up for the night and the crew heads back to camp for much appreciated solar showers and ice-cold drinks.

The camp building is a former dormitory from Eastern Wyoming College. There is a small kitchen, a lavatory, and some of the interior walls have been taken out to create a large dining hall. Dewey Baars of the High Plains Chapter of the WAS and past president of the Society, is the Hell Gap site steward. Baars, along with other WAS volunteers, continue to maintain and make improvements to the camp and the site facilities. This afternoon, Baars and Sander worked on updating the electrical wiring in the camp building.

An informal knot of guests, PhDs and senior staff gathers in the shade outside the Frison's Airstream trailer. The day's highlights are discussed and tales of past excavations are traded. One of the volunteers asks the Frisons (George and his wife June, who have known each other since their childhood in Tensleep, Wyoming) if they have visited every country on earth yet. "Not yet, but we're working on it," says June. They are making plans for a trip to Australia this winter. June then recounts a tale about a rigorous experience during a visit to Olduvai Gorge in Kenya. Lorentzen reminisces about excavating a Paleolithic rockshelter in France. Haynes has worked in Egypt, Surovell in Israel and Denmark: It is clear that these archaeologists are a peripatetic bunch.

Dinner is served at 6 pm from a crowded table in the small kitchen. The dining hall also serves as an impromptu lecture hall for nightly slide shows (the Harvard crew took over 1200 slides in eight years) and presentations by visiting researchers. Camp manager and UW anthropology graduate student Steven Highland shops for 20 to 35 people in the nearby town of Guernsey, adding over \$1000 every ten-day session to the local economy. In addition to the

food budget, fuel, lumber, hardware and supplies are purchased locally. Cooking is done by crew and volunteers, often with assistance and donations from guests, on a rotating basis. Crews noted that even though they spent all day digging in the hot sun, some were able to gain weight. It wasn't hard to see why: the team and guests feasted on lasagna, roast leg of lamb, pot roast with wild mushrooms, barbecued ribs, smoked chicken, and roast turkey.

WHAT THE FUTURE HOLDS

What is the future of excavation at Hell Gap? "We have enough work at Locality I to keep us busy for 20 years," observed Frison. "Then there are the other localities that we really haven't studied." Interest is high in the "premiere Paleoindian site." Unfortunately there isn't enough time and money to match the interest. All the researchers have other commitments - teaching, excavating other sites and the ever-present pressure to publish. "A longer field season isn't really feasible at this time," says Kornfeld. "The more we work in the field the more lab work we have, and money becomes a problem." The Hell Gap Project is funded by an annual contribution of \$10,000 from Joseph L. and Maude R. Cramer, matched by a similar contribution from the Wyoming Archaeological Foundation (WAF). One of the stipulation of the Cramer grant is that it and the match money cannot be used to pay staff and crew salaries. "Not only do we have to raise \$10,000 to match the Cramer grant, but we have to raise money for salaries in addition," laments Kornfeld. The WAF - which administers the site and raises money for research - is actively soliciting donations for next year. So far, thanks to contributions of individuals and families we have raised at least \$600.

Mary Ann Koons plans to go back to Hell Gap next summer. "I learned so much about Paleoindians and soil that I can use in my classes that I can't wait to get back."

SUGGESTED READINGS

- Frison, George C.
1991 *Prehistoric Hunters of the High Plains, Second Edition*. Academic Press, San Diego.
- Haynes, C. Vance
1967 Carbon-14 dates and early man in the new world, in *Pleistocene Extinctions: The search for a cause*, edited by P.E. Martin and H.E. Wright, Jr. University of Utah Press, Salt Lake City. Pp. 591-631.
- Irwin-Williams, Cynthia, Henry T. Irwin, George Agogino, and C. Vance Haynes
1973 Hell Gap: Paleo-Indian occupation on the High Plains. *Plains Anthropologist* 18(59):40-53.

Richard Adams
Wyoming State Archaeologist's Office
Department of Anthropology
University of Wyoming
Laramie, Wyoming 82071

A PREHISTORIC STONE LINE COMPLEX FROM NORTHWEST WYOMING

by
Daniel H. Eakin

INTRODUCTION

The Two Dot Flats site (48PA1068) was discovered in 1989 during cultural resource investigations of the Dead Indian Pass area by the Office of the Wyoming State Archaeologist for road construction activities by the Wyoming Department of Transportation (Eakin 1990). The Two Dot Flats site consists of over 400 stone cairns presumed to be parts of a prehistoric bison drive line complex, and around 40 stone circles believed to both predate the drive system and be a part of it.

The site is located near the base of Dead Indian Hill at an elevation of 1512 m (5040 ft) along the western edge of the northern Bighorn Basin in northwest Wyoming (Figure 1). The drive line has been constructed on a prominent bench (a Pleistocene alluvial fan known locally as Two Dot Flats) which has been dissected on the west and east by two small tributaries of the Clark's Fork River. Stream erosion has inverted the Two Dot Flats surface to 36 m (120 ft) above the modern floodplain. Two Dot Flats is a geomorphic extension of the Chapman Bench that lies two km (1.2 mi) north (Makin 1937). Both landforms are composed of poorly sorted late Pleistocene gravel and boulder deposits. These gravel and boulder deposits are exposed at the margins of Two Dot Flats but become buried by eolian sediments toward the center of the landform. Presently both landforms support a sagebrush-steppe environment and are used as grazing land.

Sediment relationships on Two Dot Flats can be illustrated (Figure 2). A Stage I+ - II (Birkeland 1984) calcium carbonate horizon is present

in the uppermost portion of the gravel unit. This is, in turn, buried by as much as 0.5 m of mixed eolian silty sand that can be further divided into three strata by slight differences in clast size and proportions. The fine grained unit shows little to no pedogenic development, suggesting a relatively recent Holocene age. The thickness of this unit varies but probably does not exceed 30 cm before a marked increase in gravel percentages occur.

DESCRIPTION

The stone line complex consists of two main drive lines and several subsidiary lines located along the east and west margins of Two Dot Flats (Figure 3). The drive line system extends for approximately 3.2 km (2.0 miles) in a southwest to northeast direction.

The cairns outline the drive system and show the V-shape typical of animal drives. The system opens to the southwest and converges to the northeast, at the site's down-gradient terminus. The cairns are interpreted as markers of a preferred escape route for bison to follow during a controlled stampede (Agenbroad 1978; Frison 1970). To date, 472 cairns have been associated with the drive lines but an unknown number have probably been destroyed by incorporation into stone circles, road construction and gravel quarrying. Within the two main wings are subsidiary lines delineating what are thought to be additional drive lanes, short rock piles, and stone circles. No associated kill, butchering, or processing sites are known from below the bench. Since all of this area is on a floodplain, it is entirely possible that such a component is

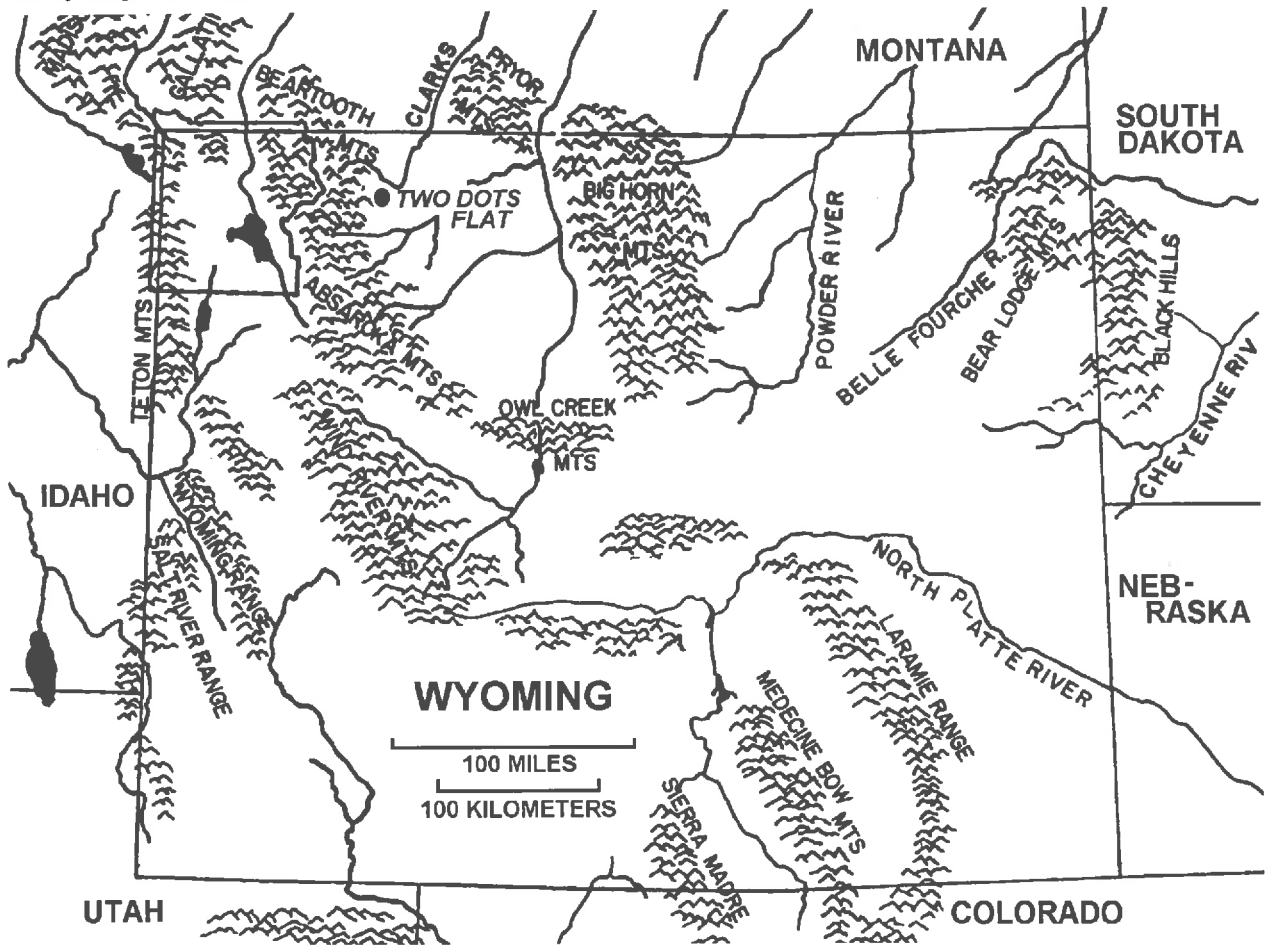


Figure 1: Map showing location of the Two Dot Flats site.

present although deeply buried.

**THE DRIVE LINE COMPONENT
TOPOGRAPHIC RELATIONSHIPS WITH
THE DRIVE SYSTEM**

Mapping of the stone features at the Two Dot Flats site revealed several relationships between the arrangement of the cairns and the surrounding topography. Examples of this are seen at the northeast end of the site where two ephemeral drainages have cut into the bench (Figure 3). Both ephemeral drainages are narrow, steep sided, and descend fairly rapidly to the valley below. Both drainages would have been good locations for an impoundment, jump, or merely a place to station hunters, since the

steep slope would insure invisibility from the bench-top.

The drive line arrangement shows that both man-made and natural topographic features were integrated into the layout of the drive lanes. The east wing extends continuously along the edge of the bench and ends at the larger ephemeral drainage. The head of this drainage begins as a low swale, visible up to one-half mile away, suggesting that it may have been a natural route for animals leaving or coming onto the terrace from below. The unbroken character of the east wing may reflect abandonment of the wings at the head of the smaller drainage. It also possibly indicates a relative age between the two drive lines or some aspect of preferred use under

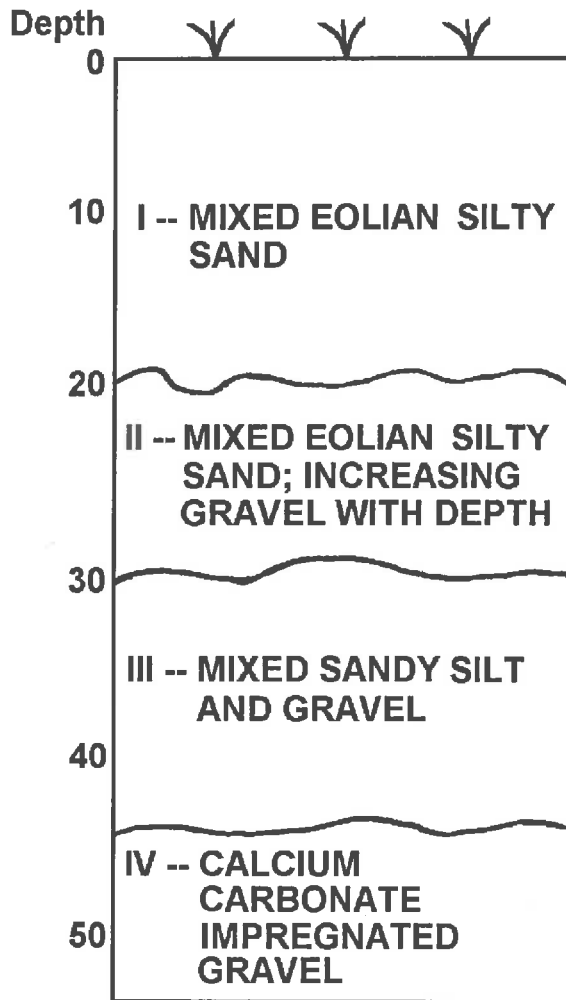


Figure 2: Representative stratigraphic profile, Two Dot Flats site.

special conditions.

The incorporation of ephemeral drainages into the system may suggest the exploitation of natural travel routes to and from the bench-top, since all other routes involve relatively steep banks. It could also be in response to a lack of vertical drop-offs around the perimeter of the bench. In drives using the jump method, animals were driven off a vertical cliff of sufficient height to deliver a traumatic or fatal injury. At Two Dot Flats, however, animals may have been driven down the steep-sided drainage either

to a pound where they were contained before killing, or simply past hunters stationed at the sides of the drainage where several animals could have been killed or fatally wounded. This should not rule out the possibility that the drainage contained low jump areas. Short lived topographic features, such as knick-points or even small vertical ledges, could have been present in the drainages and have since eroded away.

THE DRIVE LINES

The primary drive lines follow the east and west bench edges fairly continuously (Figure 3). The west wing is consistent in this respect. The east wing, however, appears more complicated by virtue of many short, perpendicular cairn lines along the southern third of the wing, and the additional lines associated with both the small and large ephemeral drainages at the north end.

The cairn lines at the head of the small drainage could indicate an earlier and unsuccessful attempt at running animals along the east bench edge in an attempt to run them down the narrow and relatively steep drainage leading to Pat O'Hara Creek. Conversely, the gaps present in the main line at the head of the smaller drainage could have been deliberately placed for bison to escape through, but in the mass confusion suggested by historical accounts of drives, panicked bison may have avoided or not noticed gaps of such narrow width (Verbicky-Todd 1984). A small number, not pushed too rapidly, however, could attempt an escape through such gaps. Another factor worth considering is that the lines at the head of the small drainage were constructed to intercept animals running up-drainage from Pat O'Hara Creek. The creek undoubtedly served as a watering area and the ephemeral drainage may have been a preferred route for animals traveling to and from feeding grounds on Two Dot Flats. At any rate, the smaller drainage route was apparently later blocked by the main line that would have de-

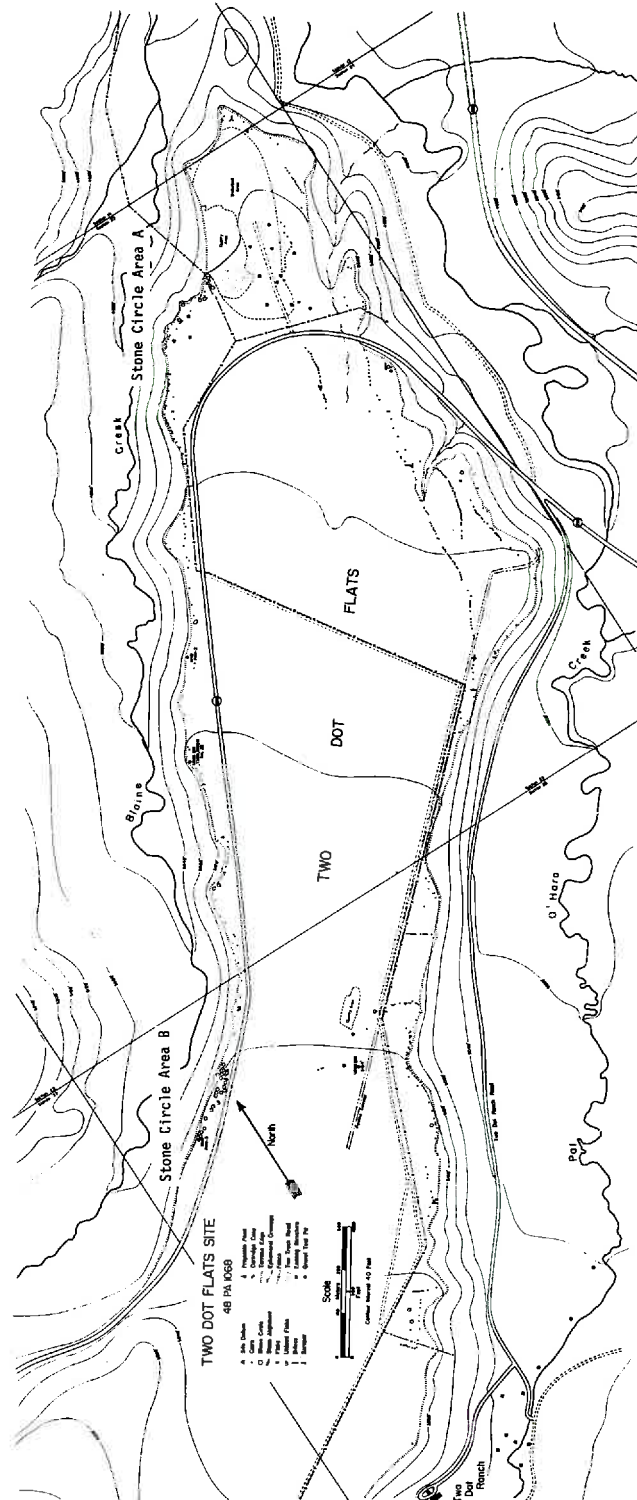


Figure 3: Map of overall site area, Two Dot Flats site (48PA1068).

toured animals around the smaller drainage and funneled them into the well defined lane at the head of the larger ephemeral drainage. The short cairn line running parallel to the west side of the larger ephemeral drainage forms a distinct lane and indicates this was the principal drive route used at the site.

At the southeast end of the site, four sets of short cairn lines are laid out perpendicular to the main drive line and the edge of the bench. The function of these lines is unclear. Similar features may be present in mountain sheep traps from the Absaroka mountains near Dubois (Frison et al. 1990), in which case the features at Two Dot Flats may have been employed to disrupt natural escape routes or served as shooting blinds (see below).

CAIRNS

As mentioned, 472 cairns are associated with the site. The cairns range from small, two-stone sized piles, to piles involving more than 30 stones (Figure 4). Most cairns appear collapsed and some even dispersed. Sometimes, the number of rocks associated with some cairns would suggest they may have been up to 0.6 m (2.0 ft) tall. Stones are both stream-rounded and tabular. Both types can be found locally. The majority have been partially buried by eolian sediments and most of the exposed surface area of the individual rocks are totally encrusted with lichen.

In some accounts, cairns were used as landmarks and places of concealment for hunters as bison were encouraged along the desired route. Grinnell (1893:229) mentions lines of rock and brush piles in Blackfeet drive lines. Medicine Crow (1978:250) claims that the Crow Indians burned incense at stone piles in drive lines and that no animal would violate this barrier. In his description of Eskimo cairn lines used to channel caribou, Binford (1983:127) describes the addition of clumps of moss and old clothes to cairns to mimic the shape of a human.

Cairn 106 (Figure 5) was tested to evaluate the artifact densities and sediment composition

associated with the cairns. This cairn was chosen because it was similar to other cairns at the site and it was located within a stone circle. The cairn was disassembled rock-by-rock to the ground surface. Fourteen rocks were moved to excavate the 90% of the cairn within the test unit. Interstitial sediments were composed of windblown very fine sand and silt. All interstitial sediments associated with the cairn were screened. No cultural materials were recovered from sediments associated with the cairn. The test unit was taken an additional 16 cm below surface to the gravel contact to evaluate the potential of the stone circle interior to yield buried materials. Stratigraphy was similar to that representative of the entire site (Figure 2). No cultural material was recovered from these depths.

STONE ALIGNMENTS

All three small, closely spaced stone features (marked as "Stone Alignment" in Figure 3 legend) are located near the head of the larger ephemeral drainage. These consist of a series of rocks arranged in a straight or arcuate line varying in length from ten to 14.5 m. They may have originally been built up with brush and functioned as blinds from which hunters shot at passing animals. Among some ethnohistorical accounts of the Blackfeet, similar features allowed hunters to better direct the herd or deliver a final push into the drive lane (Barrett 1921:24). Although these statements are speculative, there is little evidence to go on other than historical accounts, feature positions relative to the drive lines, and aspects of local topography.

STONE CIRCLES ASSOCIATED WITH THE DRIVE LINE

Two stone circles located near the heads of the ephemeral drainages are associated with the drive line. Both stone circles are isolated and lie approximately 300 m from one another. Both are over six m in diameter and are located on surface gravel. No artifacts were found in association with either one. Frison (1970:5) found nontypical rings associated with the drive

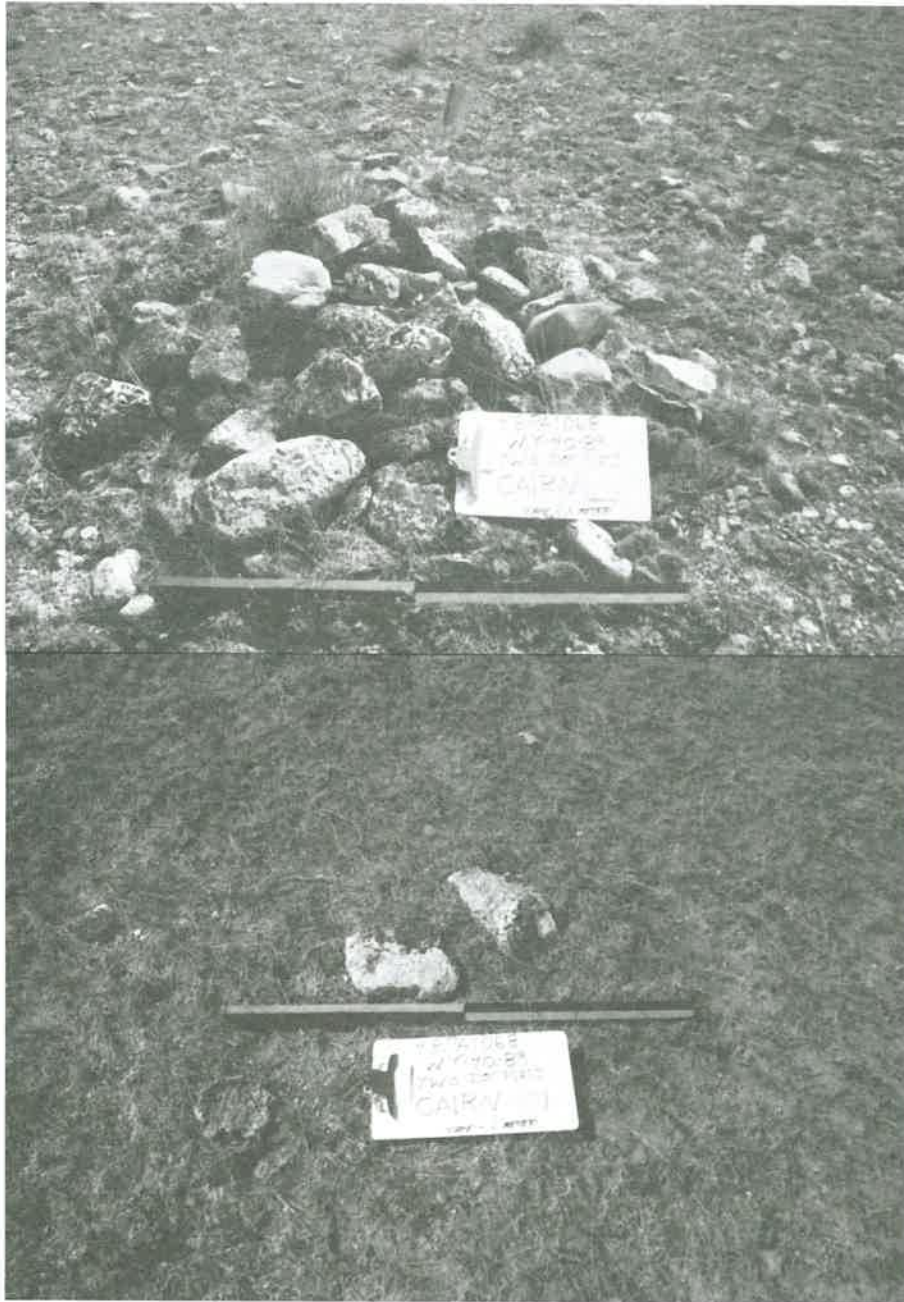


Figure 4: Typical examples of cairns at 48PA1068.

lines at the Glenrock Buffalo Jump that he attributed to ritualistic activity. Other authors (Schaeffer 1978:245; Barrett 1921:82-84) report ethnohistorical accounts mentioning pre-drive

ceremonies associated with lodges, but the lodge location in relation to the drive area, specifically in such proximity to drive lanes, is not revealed. If the rings at Two Dot Flats reflect some ritual-

istic aspect of the drive, the tradition they represent may have died out or changed to a sufficient degree to elude sources on which the late 18th and 19th century ethnographic accounts were based (see Verbicky-Todd 1984:115-132).

GATHERING AREA

Two Dot Flats extends southwest from the main site area about another kilometer (0.6 mi) beyond the drive lines and stops at the base of the foothills (Figure 3). Bison may have naturally collected on these foothills and been the target of drive efforts. Sometimes, bison may have been collected from Two Dot Flats itself. During the 1989 site investigations, low, hummocky areas were found on the flats. An absence of associated dune deposits and a total lack of running water may allow speculation that this topography resulted from bison wallowing. This, considered with the fact that the bench probably provided a good grass source high above the insect ridden stream valleys, suggests the drive lines were built around a landform regularly used by small bison herds (Verbicky-Todd 1984:110-115).

STONE CIRCLE COMPONENT

The second component at the Two Dot Flats site consists of 36 stone circles (Table 1). Thirty-three of these form two concentrations (Stone Circle Areas A and B) and three are found in dispersed localities (Figure 3). Some may predate the drive line because the presence of several incomplete stone circles that could suggest use of their stones to build drive line cairns or possibly other stone circles. Stone circle area A was tested to evaluate the potential of the area to yield prehistoric cultural material.

Eight stone circles were recorded at the northwest corner of the site, near the large quarry area (Figure 6). Some are only partially preserved due to their apparent disassembly for cairn or stone circle construction materials, suggesting they may predate the drive line. The average size of the stone circles is 2.92 m. No artifacts were found in this area. No testing was

conducted because of the lack of fine grained deposits within and around the stone circles.

Twenty-five stone circles were recorded approximately 50 m south of the terminus of the west wing (Figure 7). A single unknown Archaic projectile point base was recovered from this area. The average stone circle diameter in this area is 5.5 m. Like Area A, some have been partially disassembled, presumably for cairn or stone circle construction. Most of the stone circles in this area contained fine grained sediments. Seven test units were judgementally placed in and around the stone circles (Table 2). Sediments were consistently shallow and lithologically similar to those described for the site in general (Figure 2). No cultural material was recovered during testing. Because of the negative testing results, all stone circles in this area are considered surface manifestations and sub-surface evaluation was not further pursued.

DISPERSED STONE CIRCLES

These include two stone circles on the west edge of the bench (approximately 300 m north of stone circle Area B; Figure 3), and three stone circles at the east edge of the bench; one approximately 300 m south of the small drainage (Figure 3), and the other two at approximately 300 m north of the southern terminus of the east wing (Figure 3). Incorporation of stone circle rocks into the two cairns along the west edge, the one cairn south of the small drainage and one of the two cairns north of the southern terminus suggests these particular rings may predate the use of the drive. Because of the absence of internal features (useful for dating purposes) and associated artifacts, these stone circles cannot be associated with a particular occupation episode or period other than that previously stated.

DISCUSSION OF STONE CIRCLES

Stone circles are found on the Plains from the Middle Archaic through the Late Prehistoric periods (Frison 1978). The location of the stone circles at the edge of a prominent ridge is actually a commonly encountered situation. Mulloy



Figure 5: Cairn 106 before (upper) and after (lower) excavation.

(1965) presented evidence suggesting that stone circles represent all that remains after the removal or disintegration of various superstructural types. Many stone circle sites are noted

for low amounts of cultural material and may be totally lacking in artifacts or other cultural remains. Sites such as these could be a result of very short-term occupation. While fieldwork

Table 1: List of stone circles and stone cairns, Two Dot Flats site (all measurements in meters).

AREA A	STONE CIRCLE	N-S DIAMETER	E-W DIAMETER	AVERAGE DIAMETER	CAIRN	TEST UNIT
	2	2.2	?	2.2	2	
	3	1.8	?	1.8	2	
	4	2.3	3.0	2.65	1	
	5	3.2	3.6	3.4		
	6	3.1	3.6	3.35	1	
	7	3.0	3.4	3.6		
	8	3.3	3.9	3.6		
	9	3.2	3.2	3.2		
NO AREA	10	2.8	3.6	3.2	1	1
	11	2.5	2.6	2.55		
	37	4.0	5.5	4.75		
AREA B	12	4.0	6.0	5.0		
	13	4.3	3.2	3.75		
	14	2.3	2.8	2.55		
	15	4.4	4.1	4.25	1	
	16	--	--	--		
	17	--	3.5	3.5		
	18	2.5	2.7	2.6		
	19	1.9	2.1	2.0		
	20	4.0	4.0	4.0		
	21	3.4	4.2	3.8		
	22	4.2	--	4.2	1	
	23	3.8	4.0	3.9		
	24	3.4	4.0	3.7		
	25	4.5	4.4	4.45		1
	26	3.4	--	3.4		
	27	3.6	3.8	3.7		
	28	4.1	--	4.1		
	29	4.0	4.2	4.1		
	30	3.4	3.8	3.6		
	31	3.7	2.5	3.1		
	32	3.2	3.8	3.1		
	33	3.9	4.1	4.0		
	34	4.0	3.5	3.75		2
	35	4.9	5.0	4.95		2
	36	2.7	3.8	3.25		

areas, the present densities do not reflect those before Euro-american collecting.

DISCUSSION

Archaeological sites containing evidence of mass killing of bison are relatively common throughout the prehistoric period in Wyoming (Frison 1974; Frison 1978; Frison and Todd 1987; Moss et al. 1951). Mass kills from Paleoindian through the Middle Plains Archaic appear to have depended mainly on topographic features such as sand dunes or steep-sided arroyos to contain bison or deter their escape. The earliest physical evidence for construction of artificial barriers appears about 4500 B.P. in southcentral Wyoming at the Scoggin site, where a corral structure was used to contain bison after they were driven over a low ledge (Frison 1978:210). Variations on this theme continue into later times and are represented at the Late Archaic Ruby and Muddy Creek sites in eastern Wyoming (Frison 1978:213-223).

The main component of the Two Dot Flats site is a classic example of a bison drive. Such drives are common to the Plains and Rocky

was being conducted, several local artifact collectors stopped to inquire what we were doing and said they had picked up artifacts from the area in the past. This suggests that although the artifact densities are low in the stone circle

Mountains and represent a technique by which large amounts of meat were obtained by the communal efforts of the people involved. Nearby areas may yet yield undiscovered components of the site such as a kill, butchering or

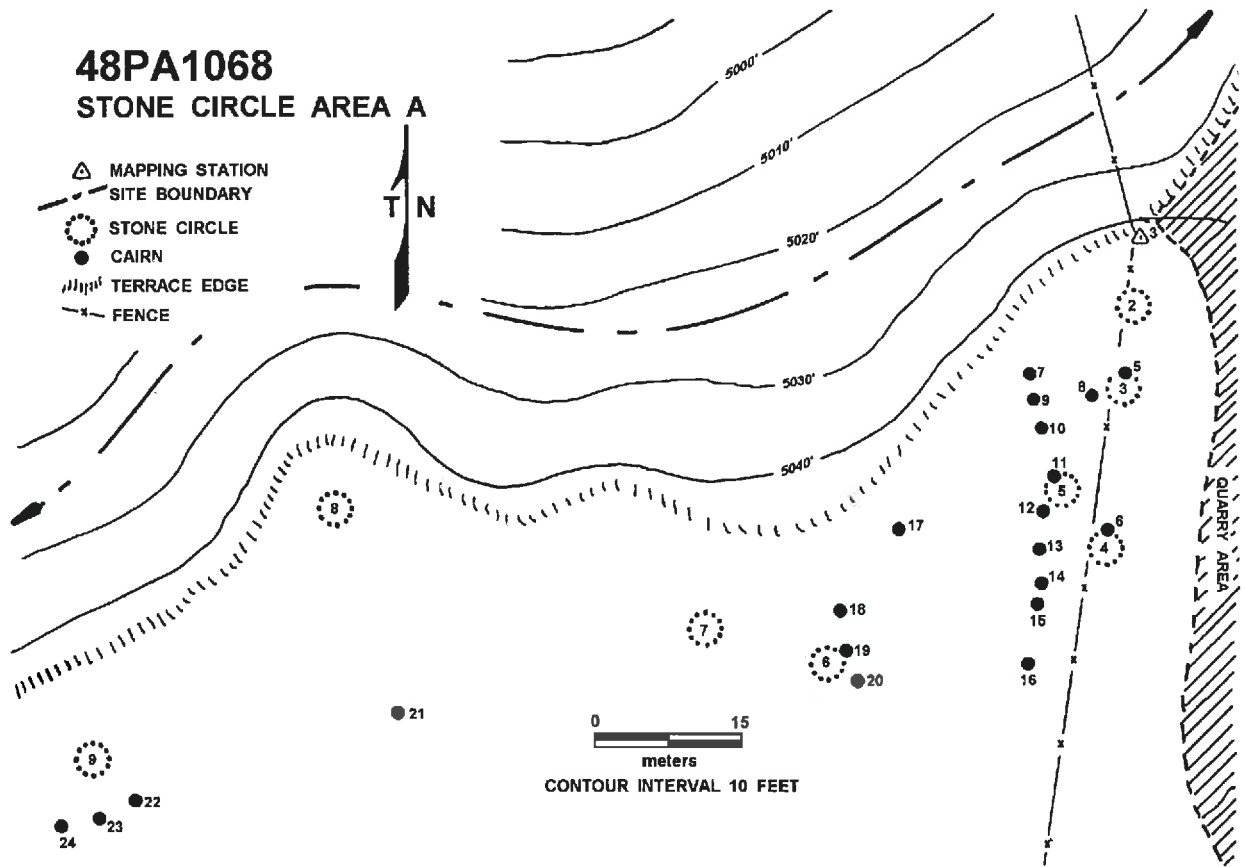


Figure 6: Map of Stone Circle Area A, Two Dot Flats site.

processing area that would improve the interpretation of the driveline component. Until a kill or processing area is found that can be associated with the drive lines at 48PA1068, we will not know when the drive was in use or even what animals were obtained by its use. Considering the age and use of cairn alignments in bison procurement, Frison (1978:230) states

"The Late Prehistoric buffalo jump was usually characterized by long lines of stone piles called drive lines. The stone piles were usually not large. Some contained only 4 or 5 boulders; others, 20 or more. Short grass can hide the drive lines during a normal grass year. Cowhands and others have been known to ride over miles of drive lines for years without noticing their presence. Yet they are quite obvious to the

archaeologist interested in the methods of prehistoric bison driving."

Despite the absence of a kill to provide conclusive determinations for the drive system at the Two Dot Flats site, the age is tentatively assigned to the Late Prehistoric period based on the presence of drive lines. Association of drive lines only with Late Prehistoric bison procurement should be regarded cautiously, considering erosional forces may have obliterated cairn lines at other sites dating to earlier periods. At the Head-Smashed-In site in Alberta, known for a nearly continuous record of bison kills dating from 3700 B.C. to the Historic period, many drive lines exist on the bluffs overlooking various jump localities (Reeves 1978). Correlation

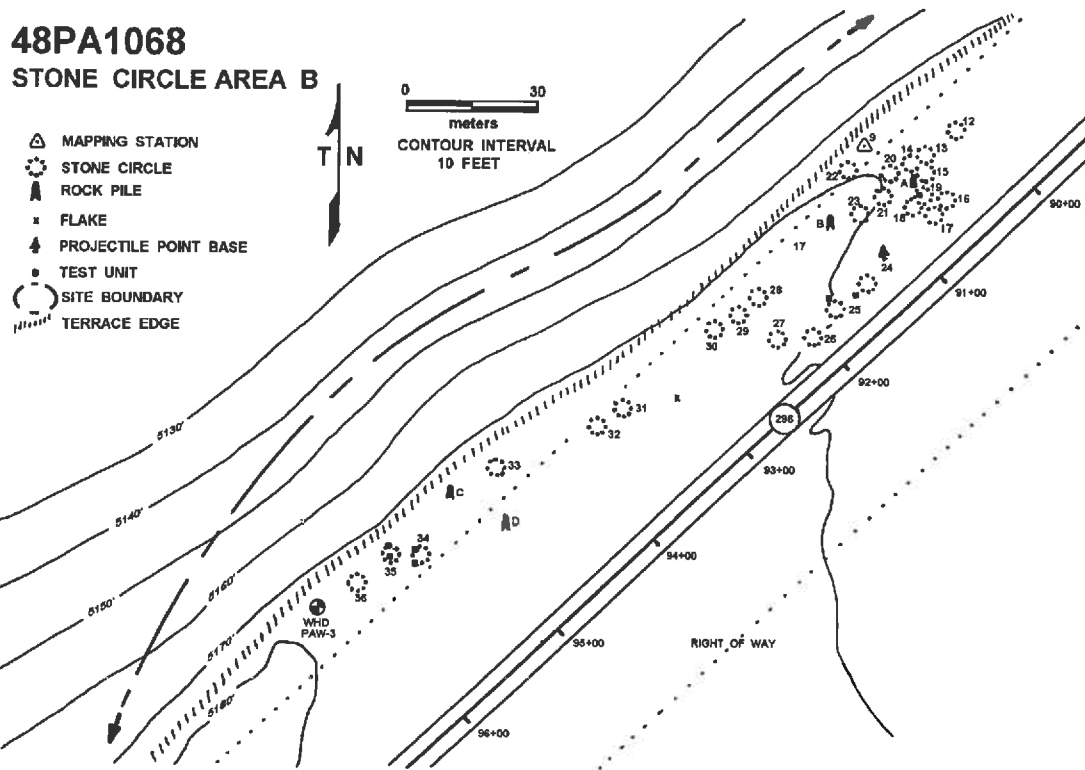


Figure 7: Map of Stone Circle Area B, Two Dot Flats site.

of the earlier kills with the drive lines is difficult.

If the Two Dot Flats site dates to the Late Prehistoric, it may be associated with the Crow Indians, since they considered this area as their territory for at least some of that time (Medicine Crow 1978; Russell 1929). Although tribes such as the Blackfoot or Shoshone may have been responsible, specific tribal affiliation of the drive will probably never be known. Medicine Crow (1978:251) does discuss a Crow buffalo jump operated in the 1860's near Heart Mountain (Heart Mountain is approximately seven miles southeast of Two Dot Flats). It is a jump, however, and its recent use coupled with its Shoshone name "Painted Cliff," does not fit the description of the Two Dot Flats site locality. Interestingly, however, only a few miles north of Heart Mountain, the Chugwater Formation

(known for its brilliant red color) forms a several-mile-long ridge that drops off nearly vertically into the south rim of Oxyoke Canyon.

The actual routes the animals followed that have been discussed in this report are merely speculative. However, the large ephemeral drainage at the north end of the site begins as a low, almost imperceptible swale some distance from where it departs from the bench and descends to the floodplain below. Today this drainage would be the route of least effort from the bench top to the stream bottom. From modern-day observations, topographic situations such as these are typically used by animals possessing a daily cycle of feeding and resting. In such a situation it would be a totally logical step to incorporate known paths of ingress and egress into an animal procurement system.

A drive the size of the one at Two Dot Flats

Table 2: Testing results for Stone Circle Area B, Two Dot Flats site.

UNIT LOCATION	DEPTH AT BASE	NUMBER ARTIFACTS	OBSERVATIONS
18-1	32 CM	0	eolian silty sand; gravels increase at 23 cm; become thick at 28 cm
sc 24/25	22 cm	0	eolian silty sand; base at gravel contact
25-1	12 cm	0	gravel encountered at 12 cm
34-1	15 cm	0	gravel encountered at 15 cm
34-2	19 cm	0	gravel encountered at 19 cm
35-1	18 cm	0	same silty sand; gravel encountered at 18 cm
35-2	14 cm	0	gravel encountered at 14 cm

probably would have been well known to prehistoric inhabitants of the area. At times it could have been used by a large group to obtain large quantities of meat while at other times it may have only been used by a few individuals in an opportunistic situation. Then too, there may have been taboos against approaching the area for fear that it would drive the bison away and none would be available when procurement time arrived. Another factor to consider is maintenance. In its present form the drive lines are essentially invisible and alone would not influence the movement of any type of animal. For these markers to delineate a route for a controlled bison stampede, and to successfully contain the animals during such an event, there would have had to have been additional components such as pole or brush barriers with additional decoy materials that would flap in the wind or otherwise keep the animals from breaking out of the desired path. Consequently we are left to merely imagine how the feature would have appeared just before a drive. The Two Dot Flats site in all likelihood exemplifies the knowledge and ability of aboriginal hunters to integrate structures, local terrain and animal behavior into a system of food procurement.

ACKNOWLEDGEMENTS

Archaeological fieldwork at the Two-Dot Flats site is the result of reconstruction of State Highway 296 (now known as the Chief Joseph Scenic Highway) by the Wyoming Department of Transportation. WYDOT must be thanked

for their cooperation, patience and interest during the investigations. Secondly, the cooperation of the Two-Dot Ranch, which owns the property on which the site was found, also deserves recognition. Site documentation was possible through the efforts of the field crew from the State Archaeologist's Office: Rick Blatchley, Bill Latady, John Potter, Steve Sutter, and Danny Wolf. Danny Wolf also deserves recognition for drafting the excellent map of the site used in this report, which was no small task.

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- Dan Eakin
 Wyoming State Archaeologist's Office
 Department of Anthropology
 University of Wyoming
 Laramie, WY 82071

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EMail: Ken_Cannon@nps.gov

Jack Fisher
Department of Sociology
Montana State University
Bozeman, MT 59717
Phone: 406/994-5250
Fax: 406/994-6879
EMail: isijf@msu.oscs.montana.edu

ARCHAEOLOGICAL COLLECTIONS MANAGEMENT: FROM SHOEBOXES TO COMPUTER SYSTEMS

by
Vicki Finley

ABSTRACT

Proper collections management is crucial to archaeology. Recent trends in conservation archaeology recognize the nonrenewable nature of archaeological sites and highlight the research potential of existing archaeological collections.

INTRODUCTION

Awareness of the need for proper collections management is a recent addition to the field of archaeology. For this paper, "collections management" and "curation" refer to the action of providing optimum control, both organizational and environmental, over archaeological collections and their related documentation. This requires permanent storage in a repository-type facility (Boen 1994). This paper investigates the issue of archaeological curation and its relationship to the scientific research potential of existing collections.

Conservation archaeology recognizes the limited and nonrenewable nature of archaeological resources. Related to this is an accompanying realization of the importance of maintaining archaeological collections "in perpetuity." Site destruction is occurring at an alarming rate because of looting, vandalism, development, and, although we as archaeologists don't like to think in these terms, our own scientific research excavations (Lipe 1977). As sites disappear, the research potential of existing collections must be considered. Archaeological collections represent the physical remains of the archaeological record that have been excavated as a part of a systemat-

ic scientific research study or removed during an archaeological surface survey (Bleed and Nickel 1989). Proper collections management represents a way to literally "save the past for the future."

HISTORY

Individuals have always collected objects of interest and beauty. Fagan (1991:25) declares: "There seems to be some fundamental human desire to collect things . . ." These collections often end in shoeboxes in someone's closet and represent the unscientific gathering of materials, with no provenience and little potential for scientific information. The management of "official" collections in America began 150 years ago with the establishment of the Smithsonian Institute in 1846 and the Peabody Museum of Harvard University twenty years later in 1866 (Woosley 1992:147). The passage of the Antiquities Act of 1906 increased the acquisition of archaeological materials that were then housed in one of these two museums in the East. The choices of materials saved from archaeological investigations during the first half of the twentieth century centered on "the long-standing art museum collecting practice in which only the subjectively defined most beautiful object of any material category was of value and the rest were ignored" (Woosley 1992:148). Unfortunately, many old collections reflect this incompleteness and have limited scientific research potential because of it.

Although both the Antiquities Act of 1906

(Section 3) and the Historic Sites Act of 1935 (Section 2a) provided for the preservation of archaeological and historical data and materials, it was not until the mid-twentieth century that a conservation ethic in American archaeology began to appear due to salvage archaeology requirements. Unfortunately, this new trend in conservation "did not extend to a concomitant sense of long-term curatorial responsibility" (Woosley 1992:148) and many collections from this period were subsequently lost. With the change in archaeological theory beginning in the 1960s to a more scientific, processual paradigm (Binford 1962) and the phenomenal growth of Cultural Resource Management (CRM) programs initiated by the National Historic Preservation Act of 1966, massive quantities of materials were collected. Advances in methodologies such as the screening of excavation units generated a wide and diverse array of assemblages. Another significant change in archaeological method was the excavation of bison bone beds, previously thought unimportant in archaeology, that occurred during this period. Huge amounts of faunal material were excavated and required storage (Frison 1991).

The attitude regarding the importance of, and need for, archaeological curation began to change with the passage of preservation legislation by the United States Congress. The National Historic Preservation Act (NHPA) of 1966, Section 101(a)(7)(A), requires that the material remains from public undertakings be "deposited in an institution with adequate long-term curatorial capabilities" (Department of the Interior 1991:3-4). The Archaeological Resources Protection Act (ARPA) of 1979 requires that "resources and copies of associated archaeological records and data will be preserved by a suitable university, museum, or other scientific or educational institution" (Hutt et al. 1992:34) as part of the permitting process through the federal land managing agencies.

In 1987, because of obligations required by NHPA and ARPA, regulations were issued in

36CFR Part 79 of the Code of Federal Regulations (CFR) "Curation of Federally-Owned and Administered Archeological Collections" specifying definitions, standards and guidelines, and procedures to be followed by federal agencies (Department of Interior 1991). Although these regulations list many specific suggestions, they were purposely left fairly general so they could be used by different government agencies with a certain amount of freedom of application. Examples include regulations regarding:

- 1) the selection of repositories for long-term management and storage of archaeological collections,
- 2) what curatorial activities may be funded by government agencies,
- 3) the terms and conditions to be included in agreements for curatorial services,
- 4) requirements for housing collections in physically secure conditions, and
- 5) ensuring that collections are available for scientific, educational, and religious uses. (Department of the Interior 1991:2-27).

CONSERVATION MANAGEMENT

Today, conservation management is a highly specialized, professional field associated with collections management and is involved in the examination and preservation of objects. Conservators offer expertise in many areas, including stabilization and removal of fragile archaeological materials in the field (Marquardt et al. 1982). Conservation specialists should be added to the growing list of experts required in today's multidisciplinary approach to archaeology.

"Both archaeology and archaeological conservation have matured to the point where collaboration between them should be given a high priority in designing archaeological research projects" (Bourque et al. 1980:795).

If the need for a specialist trained in archaeological preservation is anticipated due to the site specifics, that person should be included during the research design phase (Bourque et al. 1980).

CURATION

Curatorial services, as defined in 36CFR79, include the necessary steps to permanently manage and preserve collections "according to professional museum and archival practices" (Department of the Interior 1991:7). Curatorial services include cataloging, inventorying, identifying, evaluating, documenting, and periodically inspecting collections that are stored in a repository, which is "a facility . . . that can provide professional, systematic and accountable curatorial services on a long-term basis" (Department of the Interior 1991:10).

In the past, a basic problem in the area of collections management has been that of educating archaeologists with respect to the importance of curation and long-term storage of collections. Archaeologists must realize that "curation starts in the field" (Renee Boen, personal communication 1996). The care with which archaeological materials are removed and records completed during excavation and surface surveys must continue through analysis and publication. Only when the materials are appropriately packaged in acid-free containers and permanently stored in a repository is the field archaeologist's work completed. Bourque et al. (1980:794) report:

Most archaeologists, of course, are concerned about the proper recovery and short-term preservation of fragile specimens, and most wish to see them secure for the future. However, once a project is completed and the report is prepared, the care of . . . collections often becomes a low priority indeed.

Although attitudes are changing and improving with today's conservation ethic, there is still the problematic nature of archaeological collec-

tions to be considered. Collections can be heavy and difficult to move. They take up considerable shelf space and may require a wide range of controlled environments (Bleed and Nickel 1989). The curation of materials requires specialized and expensive packaging materials and storage containers. "Acid-free cardboard boxes, for example, cost about ten times as much as do readily available common boxes" (Bleed and Nickel 1989:28).

The data associated with the archaeological materials are important and must be included with the collection, for as Kintigh (1981:471) argues, "The research value of a collection depends not only on its size, scope, and collection technique, but also on its present condition and the supporting documentation that is available." Recording of provenience information must accompany each artifact. It is extremely time consuming to write the same information on plastic bags for each individual artifact within a huge collection. "Clearly such redundant labeling increases curation costs, but it helps to assure that even if some part of the packing system fails, vital collection data will not be lost" (Bleed and Nickel 1989:29). Additionally, the need for storage facilities can only increase in the future (Lipe 1977). In spite of all the problems of permanent storage for archaeological collections, their importance to archaeology is undeniable.

ARCHAEOLOGICAL COLLECTIONS AND THE PUBLIC

An important point seldom discussed or considered in the field of archaeology is that "all archeological data . . . falls into the domain of public interest and concern" (McGimsey 1972:5). Archaeological collections are part of the public trust. As archaeologists, we have a social and "ethical responsibility to deal with past cultural remains" (Knudson 1991:5). Just as it is the right of every individual to know about the past as part of her/his cultural heritage, it is the responsibility of the professional

archaeologist to share "the knowledge contained in archeological sites" with the public (McGimsey 1972:7). It is easy for archaeologists concerned with their own research questions and the interpretation of broad patterns of human existence to forget that the materials they are working with represent part of the heritage of all people. Archaeologists have obligations to the public concerning "... the completeness of the data recovered and the ultimate and continued public availability of the artifacts, properly and permanently identified and with adequate accompanying data permanently preserved" (McGimsey 1972:6). In the latter part of this statement, McGimsey highlights the importance of proper collections management as one responsibility of the archaeologist to maintain the archaeological public trust. This was recognized in public protection laws and reflected in 36CFR79 through specifying that collections be made available by "providing access and facilities to study a collection" (Department of the Interior 1991:7). Besides responsibilities to the public

there is . . . the responsibility to the archaeological profession to maintain this resource base for its research potential. Until collections and their associated documentation are curated adequately this research potential cannot be realized (Marquardt et al. 1982:410).

Besides proper curation, the organization of collections and the accessibility of data they contain are crucial. Computerization of inventory information for collections available in repositories, can greatly enhance their utilization for research use. There is a need for compatible data management between, and within, repositories to assure access to data and the capability to retrieve artifacts for research use. Computerization enables us to "assess the range of available data, to select those pertinent to our needs, and do it without returning to original materials" (Woosley 1992:157). For example, the sorting

capabilities within a computer data base allow a researcher to locate categories of archaeological materials that may be stored in several different locations.

WYOMING COLLECTIONS

The University of Wyoming Archaeological Repository (UWAR) in Laramie is one of two federal repositories within the State of Wyoming. The second is the Western Wyoming College Repository in Rock Springs. The UWAR archaeological collections consist of over a million items from at least 25,000 sites and contain materials with high scientific and educational value (Frison et al. 1993:i). The data from these collections are especially important in gaining an understanding of the prehistory of the Northwestern Plains and to Paleoindian research in particular, for Wyoming is rich in stratified Paleoindian sites. A list of Wyoming sites such as Agate Basin 48NO201 (Frison and Stanford 1982), Casper 48NA304 (Frison 1974), Colby 48WA322 (Frison and Todd 1986), Hell Gap 48GO305 (Irwin-Williams et al. 1973), Horner 48PA29 (Frison and Todd 1987), Medicine Lodge Creek 48BH499 (Frison 1976), and Mummy Cave 48PA201 (Wedel et al. 1968) make up a who's who of Paleoindian material in the West. Extensive faunal comparative collections as well as lithic and ceramic comparative assemblages are also available for use. There are many possibilities for the research potential of existing collections in archaeology today. The University of Wyoming Archaeological Repository has repeatedly proven its value to scholars and researchers:

Materials from the repository have already been used in a variety of ways . . . Since 1971, over 40 Master's Theses from the University of Wyoming have documented various aspects of these collections. Many dissertations across the country also have utilized portions of the collection . . ." (Frison et al.

1993:5)

The archaeological materials housed in Wyoming repositories reflect the research potential and use of collections and their importance to archaeology today and in the future. As Lipe points out,

At some future time . . . archaeological sites . . . will be very rare, and field-work almost a thing of the past. All that will be left for the prehistorian will be the reports we publish today and the basic records and collections that remain (Lipe 1977:38).

As we excavate less frequently, we will come to depend on existing collections in repositories and museums to investigate research questions and test new theories and methodologies.

FUTURE OF ARCHAEOLOGY

In America today there are trends that suggest archaeology may face a limited future. The movement toward conservation archaeology emphasizes the protection and scientific and historical use, to the fullest extent possible, of all cultural remains and the saving of archaeological sites for the future through non-excavation (Larson 1980). Archaeological sites are a finite resource. Reflecting on this idea, Lipe (1977:20) observes, "If our field is to last beyond a few more decades, we need to shift to resource conservation as a primary model . . ."

Another factor affecting archaeology today is public perception. According to Woosley (1992:154), social attitudes toward archaeology are changing in the United States from "an almost wholesale acceptance and enthusiasm to a questioning and even a suspicion of its social value."

CONCLUSION

Site destruction, resulting from several factors, is a rapidly occurring phenomena.

Trends in conservation archaeology have brought the importance of collections management to the forefront. As federal spending cuts restrict or eliminate funds for programs, the curation and management of existing collections will become more important to archaeological research as we excavate less and less. Proper curation of collections begins with survey and excavation of archaeological materials and must follow through to the final, permanent storage in a repository. The need to educate archaeologists regarding these processes should begin early in their training by adding a curation component to introductory archaeology classes and field school curricula. Collections management has come a long way since the days of storing artifacts in a shoebox. Today, the careful management of archaeological collections remains a crucial aspect of archaeology's ability to enrich human experience through knowledge and understanding of past cultures.

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Vicki Finley
2021 Southfork Road
Cody, WY 82414

**Wyoming Archaeological Society and
Association of Professional Archeologists
Fall 1997 Meeting and Workshop
October 24-25, 1997**

LOCATION:

Plains Hotel at Central and Lincolnway in Downtown Cheyenne; NRHP Listed; Bar and Restaurant; Close to other Bars, Restaurants, Movies, etc.

Room Rates: Single \$29.95; Double \$35.95; Mini-suite \$39.95 to \$44.95; Hot Tub Suite \$55.00; Make your own reservation at 307-638-3311 by Sept 1.

AGENDA:

Friday, Oct. 24:

10:00 Executive Board Meeting, Dusty Rose Restaurant in the Hotel.

12:00 - 1:00 Buffet Lunch at the Dusty Rose, \$5.25 Registration required.

1:00 - 5:00 Symposium -- Military Sites Archeology (Free)

*Featured speaker, Heywood Schrock, Curator, Wyoming State Museum, "Bastions of Manifest Destiny"

+Papers/Presentations by WAPA/WAS members.

5:00 - 8:00 -- No Host cocktails in the Dinner on the town

8:00 - ?? -- Bus tour - Ghosts of Cheyenne/Air Base Registration Required \$5.00

Saturday, Oct 25:

9:00 - 12:00 -- WAPA Business Meeting, Plains Hotel

12:00 - 1:00 -- Lunch on the town

2:00 - 3:00 -- Bus Tour of F.E. Warren AFB Historic District, Curation Facility, Archeology Center and Museum (Free)

REGISTRATION FORM

Yes, I will be attending the Fall WAPA/WAS Meeting and Workshop

I will be taking the Ghost Tour (\$5.00 each enclosed)

I will be attending the Friday Lunch (\$5.25 each enclosed)

Name (s) _____

Number attending _____ Phone () _____ - _____

Total Enclosed \$

Return by Oct 10th, 1997 to: Rick Bryant
2602 E. 21st. Street
Cheyenne WY 82001

Questions?: 307-632-7899 (H) 307-773-3667 (W)

TRAGEDY FOR POMPEII: TRIUMPH FOR ARCHAEOLOGY ¹

by
Piper Taylor Grandjean

In A.D. 79, early one afternoon in August, a volcano to the north of the Roman city of Pompeii began an eruption that continued through the night. When the eruption of Mt. Vesuvius was finished, more than 20,000 people had been killed, and entire cities were lost (Time-Life Books 1992:10).

Although this tragedy cost the lives of many people, through the archaeological record we can recover valuable information about the civilization and appreciate how these people lived. In this essay, I am going to describe the cities of Pompeii and Herculaneum and the tragedy of the volcanic eruption. I will also explain how archaeologists have worked to enlarge our understanding of Roman culture through their excavations at Pompeii. Finally I will discuss ways in which Pompeii's tragedy has proven a triumph for the study of history,

THE ERUPTION OF MT. VESUVIUS

The residents of Pompeii and Herculaneum did not know they lived near an active volcano. They thought that they were living under the friendly view of a very fertile mountain named Mt. Vesuvius. On the sides of this mountain, the residents of Pompeii and Herculaneum had planted their vineyards. Both cities were centers of Roman culture and activities, known for their

EDITOR'S NOTE: This paper won the Wyoming Archaeological Society award at the 1997 Wyoming History Day. It is reprinted here in its entirety. We congratulate Piper Grandjean for her excellent work on this project.

wine, fishing, and agriculture. Pompeii was also known for the production of perfume, bread, wool, and olive oil (Humphrey 1990). Located on the western coast of what is now Italy (which was then near the center of the Roman Empire), the cities were quite prosperous, participating in trade on the Mediterranean Sea.

The residents of Pompeii and Herculaneum had a preview of the geological forces beneath them in A.D. 62, when an earthquake destroyed several buildings. Roofs caved in, statues were toppled, and columns crumbled. A major water reservoir cracked and flooded the streets of Pompeii (Gore 1986:557). Quickly the citizens of the cities worked to repair the damage. Most homes were rebuilt within a few years, although several temples were still under repair in A.D. 79.

On August 24 of that year, about one o'clock in the afternoon, Mt. Vesuvius became a fiery rage of ash and lava (Gore 1986:577). This eruption continued for over seventeen hours, until six o'clock the next morning. The people of Pompeii and Herculaneum had never experienced such a phenomenon before. At the start of the eruption, the earth began to shake; the sea heaved and churned, and a loud deep noise was heard. Ash, gas, rocks, and steam were thrown from Mt. Vesuvius, as well as nearly one-third of its top (Gore 1986:559). The rock and ash debris were blown south, and changed the color of the afternoon sky to the blackest night over Pompeii.

Shortly after the rock and ash were thrown upwards from the volcano, poisonous gas and

lava began to gush outward and quickly enveloped Herculaneum (Gore 1986:577). The citizens tried to escape the rushing lava by running to the boat house from where they might escape by sea. However, this escape failed. When Herculaneum was excavated, the archaeologists found many skeletons of people near and in the boat house, but not many were found in the city. In fact so few were found that until excavations reached the boat house, many archaeologists believed that most of the people of Herculaneum had escaped.

A second surge of gas and lava flowed to the east of Pompeii. At 5:30 in the afternoon, a third surge of lava flowed from Mt. Vesuvius and reached the north walls of Pompeii. Additional surges of lava followed, finally covering the city of Pompeii with ash and pumice by 8:30 the next morning (Gore 1986:577).

Even at Misenum, only twenty miles away, the dark clouds from Mt. Vesuvius had their effects. Pliny the Younger, in a letter to the Roman historian Tacitus (translated in Deiss 1985:13-14), wrote this description:

For several days, we had experienced earth shocks, which hardly alarmed us as they are frequent in Campania. But that night they became so violent that it seemed the world was not only being shaken, but turned upside down . . . Though our carts were on level ground, they were tossed about in every direction, and even when weighted with stones could not be kept steady. The sea appeared to have shrunk, as if withdrawn by the tremors of the earth . . . In the other direction loomed a horrible black cloud ripped by sudden bursts of fire, writhing snakelike and revealing sudden flashes larger than lightning. . . And now came ashes, but at first sparsely . . . [then] darkness and ashes, thick and heavy. From time to time, we had to get up and shake them off for fear of being actually buried and crushed under their weight.

The terror of the volcanic eruption must

have been great, and few citizens survived in either Pompeii or Herculaneum (Goor and Goor 1986:10).

ARCHAEOLOGISTS AND THE LOST CITY OF POMPEII

This would not be the last time that Mt. Vesuvius erupted. There were other major eruptions in A.D. 202, 306, 472, 513, 533, and 1631, the last of these almost as severe as the one in A.D. 79 (Time-Life Books 1992:24-25). After 1631, the volcano became relatively quiet and gradually began to reveal the secrets buried beneath its layers of lava and ash.

In 1707, near the base of the fertile destroyer Mt. Vesuvius, local citizens living in the country we now know as Italy were gathering bits of pottery and pieces of columns, and selling them at markets (Time-Life Books 1992:25-27). Prince d'Elbeuf decided to build a villa for himself in the area in hopes of placing some of the artifacts into his own home. He organized his own excavation crew and began digging. The workers found three magnificent statues, and as work continued they uncovered more objects from the past.

Excavations continued in this area of Italy, but Pompeii still lay beneath the cover of ash and lava. In 1748, a group of Spanish engineers who had been excavating at Herculaneum turned their attention to an area that the local people called La Civita, which in Latin means "city" (Time-Life Books 1992:26). They very quickly unearthed beautiful antiquities, but it was not until 1763 that the identity of the forgotten city was known, when the workers uncovered an inscription that had the words: *Res publica Pompeianorum* - "the commonwealth of Pompeians" (Goor and Goor 1986:14).

As people continued to explore Pompeii, there were difficulties in excavating the artifacts and the buildings. These difficulties have come from wars between countries, from workers at the site, and from local citizens. The geographic area in which Pompeii and Herculaneum sit

was under the control of Spain from 1748 to 1798. Then in 1798, France took over the area. Italy did not regain control of this region until 1860 (Time-Life Books 1992:28). Each of these countries had its own set of engineers, doing their own excavations, and sending artifacts to their own country's museums. Therefore, early excavations at Pompeii and Herculaneum were more like ransacking and looting, rather than attempts to understand the life of these cities. Also, the engineers that worked at the site, and people who lived nearby, took artifacts and sold them for profit. If not for the protective cover of lava and ash, even more of the evidence from the area would have been lost before it could be studied by modern archaeologists.

After the unification of Italy in 1860, serious work on reconstructing the cities of Pompeii and Herculaneum began. King Victor Emmanuel II appointed an engineer named Giuseppe Fiorelli, who stayed in charge of the excavations until 1875. Under Fiorelli's leadership, debris was removed, a drainage system was installed to keep the rainwater from flooding the site and stopping the excavations, and general upkeep of the sites was maintained (Time-Life Books 1992:25-27). This was to make certain the sites did not deteriorate. Unlike earlier excavations, Fiorelli made certain that when objects were found, each one was given a careful description. Its position in the building was noted, and its relationship to other objects was also described. Most important of all, whenever possible Fiorelli kept objects at the site rather than sending them off to museums. Fiorelli's work marked the beginning of systematic archaeology at Pompeii.

An interesting technique developed during the excavations at Pompeii by Fiorelli involved the use of plaster. Fiorelli noticed that there were many empty cavities within the packed ash. He reasoned that objects such as plants and animals covered with ash and hardened lava would decay over time, leaving a cavity in the form of the plant or animal. Fiorelli decided to pour plaster into the cavities he discovered, then

crack the lava around the dried plaster to uncover plaster replicas of plants, animals and people, in the last moments of their lives (Time-Life Books 1992:32).

The findings from the excavations at Pompeii and Herculaneum were immense. Eggs, plates, furniture, rooms, homes, avenues, and buildings were uncovered. One of the best descriptions of the findings is the following from *Pompeii: The Vanished City* (Time-Life Books 1992:32-33):

In Pompeii, eggs and fish were found lying on the dining table; pots still contained meat bones, and shops still displayed in desiccated form, onions, beans, olives and figs. All manner of household effects remained in the rooms where they were used. Personal items turned up -- jewelry, cosmetics, perfume, bronze mirrors, ivory combs, good luck amulets. Herculaneum told the same story of ordinary life stopped in its tracks. Bread, salad, cakes and fruits were found on the tables; nuts were scattered on the counter of a shop; ropes and fishermen's nets were preserved; straw lay where it had just been removed from the packing case of a shipment of glassware.

Excavations at Pompeii and Herculaneum continue today. The ash preserved many wooden artifacts, such as chairs, tables, and cradles. On a beach where many skeletons had been found, diggers in 1982 came across a boat, described as follows (Time-Life Books 1992:150):

It had been carbonized by the heat and was extremely fragile, but its structure was largely intact, with the bronze nails that fixed its timbers still in place. The sweeping hull -- similar to ones featured in wall paintings of the time -- and the workmanship seem worthy of a master carpenter. A long tapered timber found close by may be the ship's mast. Perhaps a few of those who rushed, to the shore in their last moments

thought of escaping in this very boat.

THE SIGNIFICANCE OF THESE FINDINGS FOR MODERN SOCIETY

For the people who may have wished to escape the destruction on that boat, and for the other residents of both Herculaneum and Pompeii, the events of August, A.D. 79, were an overwhelming tragedy. However, the boat and all the other remains of those terrible hours have proved a triumph for archaeologists and historians.

Archaeology is the scientific study of the life and culture of early peoples through excavation of ancient buildings, relics, and artifacts (Webster 1979:96). Some of the most famous evidence about the ancient world comes from sites such as the Roman Coliseum and the Egyptian pyramids. In cases like that, many relics were destroyed or taken long before archaeologists had a chance to study them. Often the evidence that survived does not reveal very much about how ordinary people lived their everyday lives. For example, the pyramids were tombs for the rulers of Egypt (Easton 1966:26). Artifacts found there tell us much more about the wealthiest and most powerful Egyptians than they say about how ordinary people lived.

Unlike these sites, the evidence from Pompeii and Herculaneum was captured in time, mostly protected by ash and lava from erosion and looting. Both the wealthy and the poor, and everyone in between, were caught by the power of the volcano. The artifacts caught with them show some of the smallest details of their everyday lives, from bread to dog collars.

Archaeological studies of Pompeii and Herculaneum have therefore helped us to learn much more about the history of Roman society. The studies also help us to understand how our lives are similar to those who have lived before us: graffiti on the walls, combs on dressers in the bedrooms, wooden baby cradles, and families living together. The people who left behind these commonplace scenes, along with their

skeletons in buildings and along the beach, "bear mute testimony to the hopelessness of that dreadful day. In their humanity, they bridge the gap between then and now, stirring a desire to learn even more about their lives" (Time-Life Books 1992:150).

From the study of Pompeii and Herculaneum, archaeology also helps us to understand how quickly life can come to an end. Even though we go to school and set goals for our lives, we cannot always predict what will happen. Thanks to the archaeologists, we can tell how people before us lived and how they died, and perhaps understand our own lives better. The people of Pompeii and Herculaneum did not recognize the power of the fertile destroyer nearby, Mt. Vesuvius. Today, we too may not fully appreciate the power of the natural environment and how it can affect us. Modern science allows us to understand, and sometimes to predict or even contain, natural disasters. However, our technology also creates a risk of causing environmental tragedies through our own actions. Perhaps by learning from the past, we can more wisely shape our future.

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Piper Taylor Grandjean
2022 Holiday Drive
Laramie, WY 82072

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