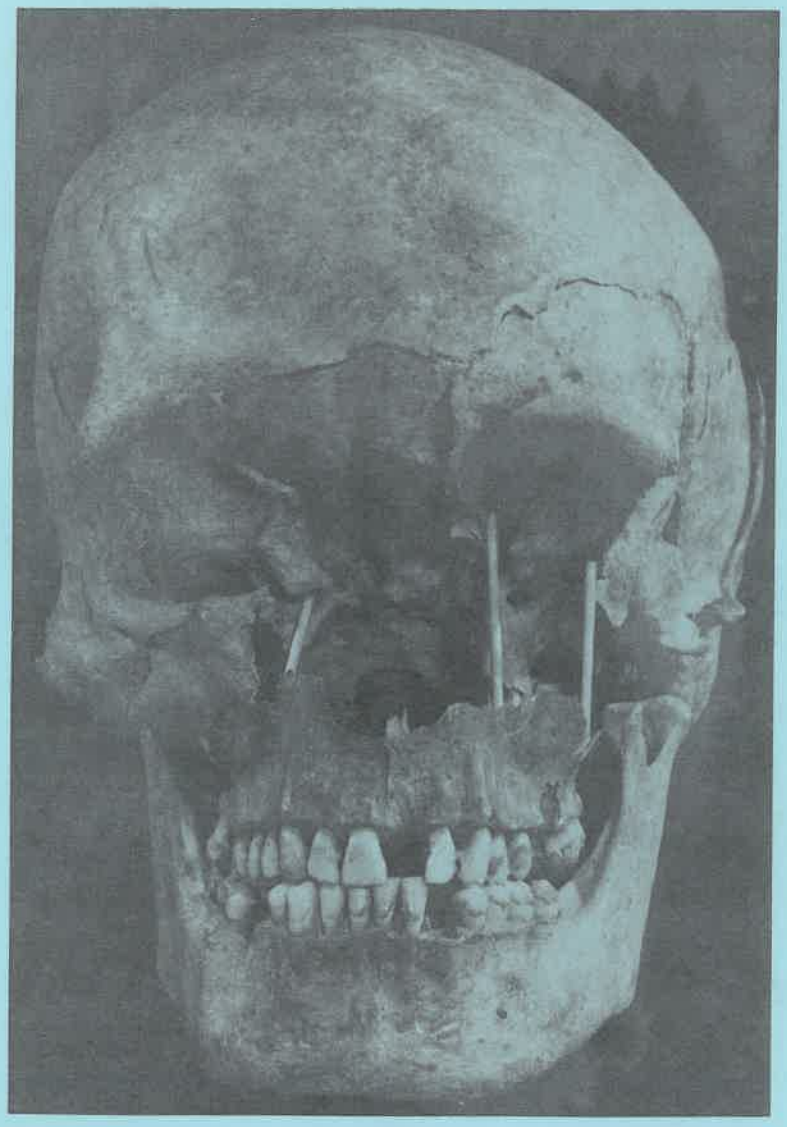
THE WYOMING ARCHAEOLOGIST



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interpretive conventions explicitly or at least lays them out for examination by others. In an endeavor as slippery as the interpretation of past human behavior there is great value in such communication. Finally, archaeology necessarily is an exercise in sampling. Since sampling systematically biases the materials available to us, some understanding of its effects is requisite for all archaeological researchers.

In summary, *Quantifying Diversity in Archaeology* is a volume that every archaeologist should at least skim. Archaeologists who compare assemblages with each other (and who doesn't?) *must* read this collection of papers. The avocational archaeologist might not be tempted to read this book at all. But, there are some compelling studies in the middle section of the book that are accessible to readers at all levels. It would be a shame for anyone to miss these.

Eric E. Ingbar
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Rindos comprise this section. Jones and Leonard introduce the volume. They note the diversity of approaches in the papers as a whole, but effectively summarize the *trend* of research. Bobrowsky and Ball provide a general introduction to theoretical research on diversity and the mechanics of its measurement. The chapter is extremely useful, providing a recap and excellent source of references. Necessarily, it is not a chapter for the algebraically challenged. Rindos, perhaps best known for work on origins of domesticated plants, continues the theoretical-methodological bent of Bobrowsky and Ball. In evolutionary terms, diversity is a key property of population models of selection; Rindos underscores the importance of diversity in these terms, and argues that the utility of diversity studies is only realized in evolutionary theory.

The next section of the volume moves from the lofty heights of theory and statistics to the application of diversity in archaeological studies. Papers by Kintigh, Schiffer, Simek, Jones, Beck, and Grayson present a variety of methodological arguments and use archaeological data to illustrate them. All the studies are well-crafted. Yet, some papers fall into the very interpretive trap cautioned against earlier. Simek, for example, examines spatial and assemblage heterogeneity within the Upper Paleolithic site of Le Flageolet I. In doing so, the presumption is made that we somehow have prior knowledge of heterogeneity *signatures* (my term) of different behaviors. Yet, we do not have these, at least to my knowledge.

The third section moves even further into archaeological applications. In the preceding section, applications served as examples. In this section, the application is the end in itself, and interpretation is intended less to reflect upon methodological adequacy than archaeological interpretation. The authors in this section (Thomas, Rothschild, Leonard, Smiley, Cameron, Rice, and Conkey) apply variety, heterogeneity, and homogeneity measures to hunter-gatherer data in the Great Basin, faunal remains in early New York and St. Augustine, Florida, Anasazi settlement patterns in Arizona, ceramic production in the southwest, and the study of style in Paleolithic rock art. Clearly, the problem (and the value) of such studies is pan-archaeological in scope. In the most controversial paper of this group, Conkey argues that style carries a social message, and until we better understand stylistic diversity we will never be able to decode these messages. Based on these papers alone, one would be tempted to conclude the authors are relying too heavily upon aspects of diversity to interpret the archaeological record. Most of the papers, however, are aspects of larger works. These larger works make clear that studies of diversity are not the sole appropriate technique of archaeological investigation.

The volume concludes with commentaries by Cowgill and Dunnell. Of the two, Cowgill is the more optimistic, but also the more doctrinaire: he applauds the increasing rigor of studies employing diversity. At the same time, Cowgill provides some cautionary advice (and examples) concerning the statistical determination of diversity in different settings. One would do well to read Cowgill's paper before leaping into quantitative studies of diversity with both feet. Dunnell, on the other hand, argues that our present methodologies leave diversity a technique in search of an application. He makes clear that diversity studies are important but will achieve their greatest potential only when archaeology itself moves from "story-telling" to scientific inquiry. Otherwise, Dunnell cautions that diversity studies could simply be used as technical window-dressing for narrative study.

Dunnell's points are well-taken. None of the authors in this volume are guilty of using diversity studies simply to razzle-dazzle a conjectural narrative for the professional audience. It is easy to see how this could happen though. The beauty of quantitative approaches lies in the ease with which comparative studies can be made when quantitative data are presented. *Any* move toward better communication of basic observations on the archaeological record has to be seen as progress. Diversity studies need to be applauded for this alone. For the reasons mentioned at the introduction to this review, quantification forces the researcher to state

BOOK REVIEWS

Quantifying diversity in archaeology. Edited by ROBERT D. LEONARD and GEORGE T. JONES. 1988. Cambridge University Press, Cambridge. 170 pp., figures, tables, references cited. $42.50 (cloth).

Alfred Kroeber once stated that "culture is a thing of shreds and patches." Archaeology, an action that is a minor portion of our culture, is no different. The discipline unabashedly borrows from other fields of inquiry. The benefits of this diffusion are evident in *Quantifying diversity in archaeology*. Much of the inspiration for the papers collected in this well-edited volume comes from mathematical ecology. This is a book most profitably read by the statistically inclined professional reader, but there is something here for all archaeologists, and it is important. Before discussing the volume, some background on the concept of diversity is required.

A fuzzy concept of diversity underlies much of our interpretation of the archaeological record. Consider, for example, the notion that campsites should have a larger variety of stone tool types than kill sites. The concept behind this expectation is that because more kinds of activities occur at campsites, there should be more kinds of stone tools discarded there than at kill sites. Yet, "variety" is inherently relative -- there are always "less diverse" and "more diverse" assemblages of tools, or bones, or features, or whatever. So, one can always find the necessary relative variety to "interpret" differences in how sites were used. There are many problems with such categorical logic generally, and especially with this fuzzy concept of diversity and its linkage to interpretation.

The fuzzy concept of diversity really comprises three distinct measures. First, *variety* or *richness* is the number of different kinds of objects in a group. Second, *equitability* or *evenness* is how objects are distributed into classes or kinds. For example, an uneven distribution would be 10 objects in three classes, with 8 objects in one class, and only one in the other two classes. Third, *heterogeneity* summarizes the relationship between the variety of classes or kinds and the evenness of objects' distribution into classes. This is most commonly the fuzzy concept of diversity.

Mathematical ecologists have developed many different mathematical measures of these three classes. All are subject to a seemingly fundamental property of "diversity": they are proportional to the number of objects in a group. Sites with more artifacts can be expected to have more types of artifacts than sites with fewer artifacts. So, comparison of variety as in the fuzzy concept of diversity is often a comparison of sample size and has nothing to do with human behavior.

The archaeological record is full of objects, that is, artifacts. Artifacts come in a bewildering array of sizes, shapes, materials, and frequencies. To make sense of this wealth of differences, archaeologists are forced to place artifacts into categories. Here lies the rub: diversity is an important part of the archaeological record and undoubtedly has something to tell us about prehistoric behavior. However, our perception of it is almost wholly filtered through the relationship between sample size and variety.

This not only argues for enforced extinction of the fuzzy diversity interpretive concept, it forces archaeologists to quantify their research. *Quantifying diversity in archaeology* starts from this point. It is an in-depth series of articles ranging from considerations of mathematical ecology and its application to archaeological materials (Bobrowsky and Ball) to actual applications and critical cautions.

The first section of the book is devoted to the concept of diversity. Three excellent papers by Jones and Leonard, Bobrowsky and Ball, and

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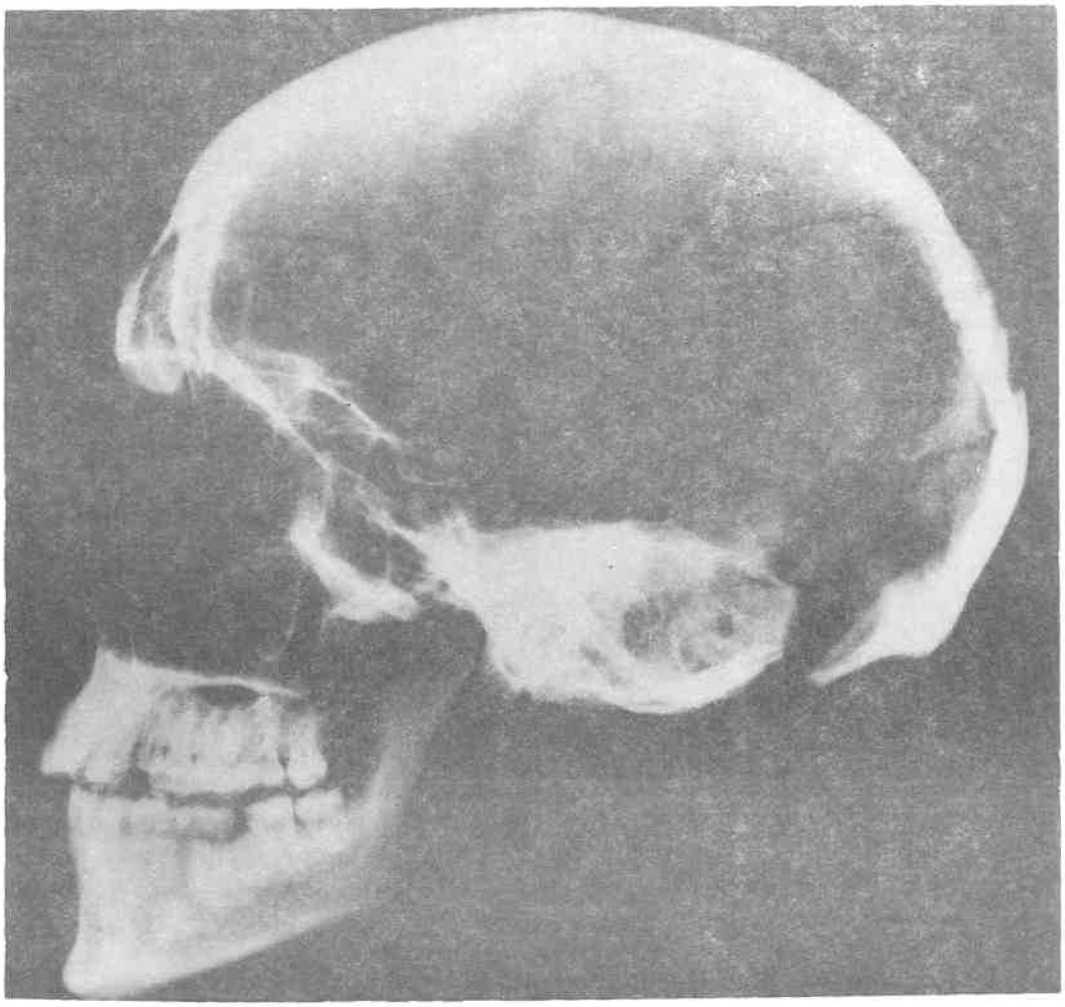

Figure 6: Radiograph of Fort Caspar Burial #3 skull, showing cranial gunshot entry wound with characteristic lateral fracture lines and lead fragments along anterior margin.

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Cranial Traits	Occurrence Left	Right
Lambdoid ossicle(s)	+	+
Parietal foramen	o	o
Epiteric bone	o	o
Mastoid sutural ossicle	o	o
Parietal notch bone	o	o
Asterion ossicle	o	o
Tympanic dehiscence	o	o
Double anterior condylar canal	o	o
Accessory lesser palatine foramen	o	o
Supraorbital foramen	o	o
Zygomaticomaxillary suture curve	-	+
Accessory infraorbital foramen	-	o
Os japonicum	-	o
Mylo-hyoid bridge	o	o
Accessory mental foramen	o	o
Mandibular torus	o	o
Rocker mandible	o	
Epactal bone	o	
Inca bone	o	
Palatine torus	+	
Pharangeal fossa	o	
Superior sagittal sinus-left	+	
Metopic suture	o	
Bregmatic bone	o	

Table 2: Discrete morphological characteristics on Fort Caspar Burial #3 skull. (+) indicates presence of trait, (o) indicates absence, (-) indicates particular trait cannot be assessed.

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Letitia Merriam, radiology technician at the University of Wyoming Student Health Center, and Robert A. Christensen, ballistics examiner of the Wyoming State Crime Laboratory, have both volunteered time and effort to this project. Their work has added substance to this study. The members of the Office of the Wyoming State Archaeologist have all been a great help in providing new techniques and equipment. Rick Young, museum director at Fort Caspar, granted permission to investigate the site. Finally, we would like to thank Sonia Haoa from Easter Island for her assistance in the field, and Dale Wedel whose efforts have materially helped this study.

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CRANIAL MEASUREMENT			
Cranial length	(181)		
Cranial breadth	146		
Basion-bregma height	129		
Porion-bregma height	118		
Auricular height	(116)		
FACIAL MEASUREMENT			
Nasion-prosthion**	(71)		
Nasion-alveolar prosthion	(74)		
Nasion-gnathion	(119)		
Bizygomatic breadth	(139)		
Nasal height	(53)		
Nasal breadth	(23)		
MANDIBULAR MEASUREMENT			
Symphyseal height	33		
Bigonial diameter	95		
Bicondylar diameter	115		
Ascending ramus breadth	29		
Ascending ramus height	63		
Corpal length	75		
Gonial angle	36°		
POST-CRANIAL MEASUREMENT			
(maximum lengths)	Right	Left	
Femur	444	446	
Tibia	345	—	
Fibula	345	341	
Humerus	326	325	
Radius	230	225	
Ulna	—	253	
Clavicle	134	131	
(midshaft measurements)			
Femur:			
perimeter	92	92	
Humerus:			
maximum diameter	25	25	
minimum diameter	19	20	
perimeter	71	72	
CRANIO-FACIAL INDICES			
Cranial index	80.66	Brachycrany	
Mean basion height	78.90	Low-medium	
Mean porion height	72.17	High	
Upper facial index	53.24	Mesene (medium)	
Total facial index	85.61	Medium	
Nasal index	43.40	Leptorrhiny	
Orbital index	——		
Cranial modul	152.00		
Cranial capacity	1431.67 cc		

Table 1. Measurements and Indices. All measurements in mm unless otherwise indicated. Measurements marked with ** are from Howells (1973) and not used in calculation of indices. ( ) indicates estimated measurements or indices derived from estimated measurements. Estimated measurements are considered to be within ±1-2mm.

Beneath the back of the head was a piece of fibrous, interwoven cloth. This cloth did show an almost perfectly round hole that would easily accommodate a 44/45 caliber round. This could have been coincidence or possibly represent the entry of the projectile. The material may have been part of a cap, hat or cloth that was used to cover the victim's head prior to the fatal shot. This cannot be proven as there were no lead deposits on the cloth when examined through x-rays.

The pioneer from this grave was a short, robust White male. If the man was a soldier, the short stature may suggest cavalry since men in that line of service were sometimes selected for small statures (and the average for Wyoming frontiersmen was three inches greater in height: 5' 8 1/2"). Yet, no conclusive evidence bears on this point of his precise affiliation.

He had a characteristically Caucasoid-looking projecting chin and high cranial profile. His skull was large for his size, and brachycranic (broad-headed) in form.

Often, studies of this nature generate certain problems that turn into needed research subjects themselves. This is an example of that trend, as several problems in analysis are confronted. First, gunshot trajectories are difficult to estimate, especially when there are only minute fragments of the projectile left and there is no soft tissue remaining on the body. Second, research on coffin types of the frontier west can be helpful in dating burials. There are several studies on coffin handles and engravings available, but they proved to be of little value in this case. Third and finally, forensic applications to archaeological cases such as this improve the skills of researchers and help develop new methods of approach for examining skeletal remains that have historical value. How frontier people lived and died, and how to determine cause of death in a case that is over 100 years old are challenging and useful questions that should be given the full attention of forensic scientists and archaeologists.

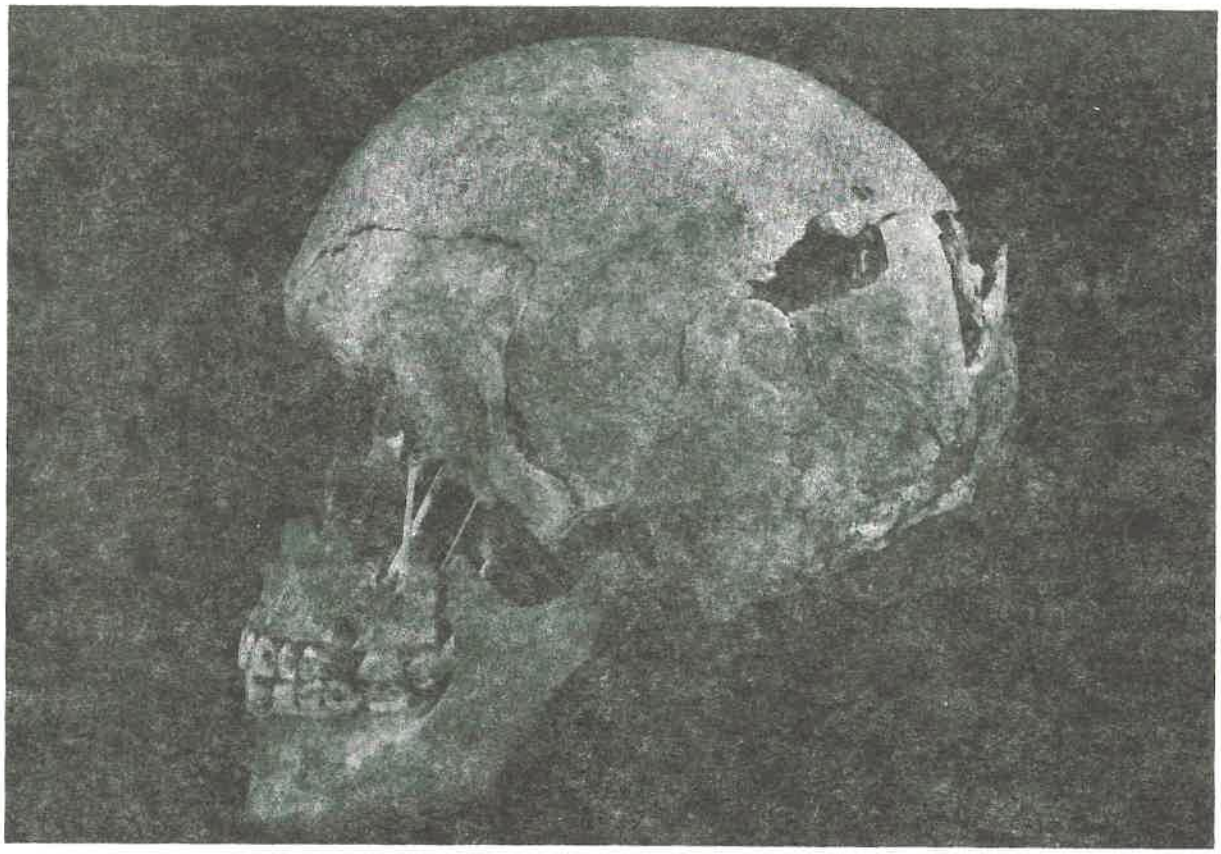

Figure 5: Left lateral view of Fort Caspar Burial #3 skull, showing large cranial gunshot entry wound to left posterior parietal.

left orbital margin missing. Severe damage to the face and skull created by the front-end loader entry can be discerned from the older ones caused by the bullet. These differences are seen by color and texture differences along the fracture surfaces. Thus, a close examination quickly reveals a clear distinction between the bones injured premortem and those damaged by postmortem disturbances to the interment.

CONCLUSIONS

Based on the Wyoming skeletal sample, a significant number (over 35%) of pioneers on the Wyoming frontier died by violence (Gill n.d.). Certainly, the lifestyles and lack of regulation of that time were conducive to individuals taking the "law into their own hands." The individual found at Fort Caspar, Wyoming seems to show every indication of being violently gunned down from behind. Probably, the assailant(s) shot the man at least twice with a large caliber weapon. The lead ball found in the chest tells us that a 44/45 caliber weapon with a rifled barrel was used. Considering the area of this injury, the wound may not necessarily have been fatal and if the right lower chest was the site of entry for the bullet, this individual could have possibly survived that trauma. Conversely, the wound to the head is massive and would have been fatal. The projectile entered the left posterior parietal from a superior position and exited the midfacial area slightly lower than the entry wound. It is not known whether this individual was standing and the attacker was elevated, or the victim was on his knees or in the prone position.

A rectangular wooden coffin with square headed nails was used to inter this individual.

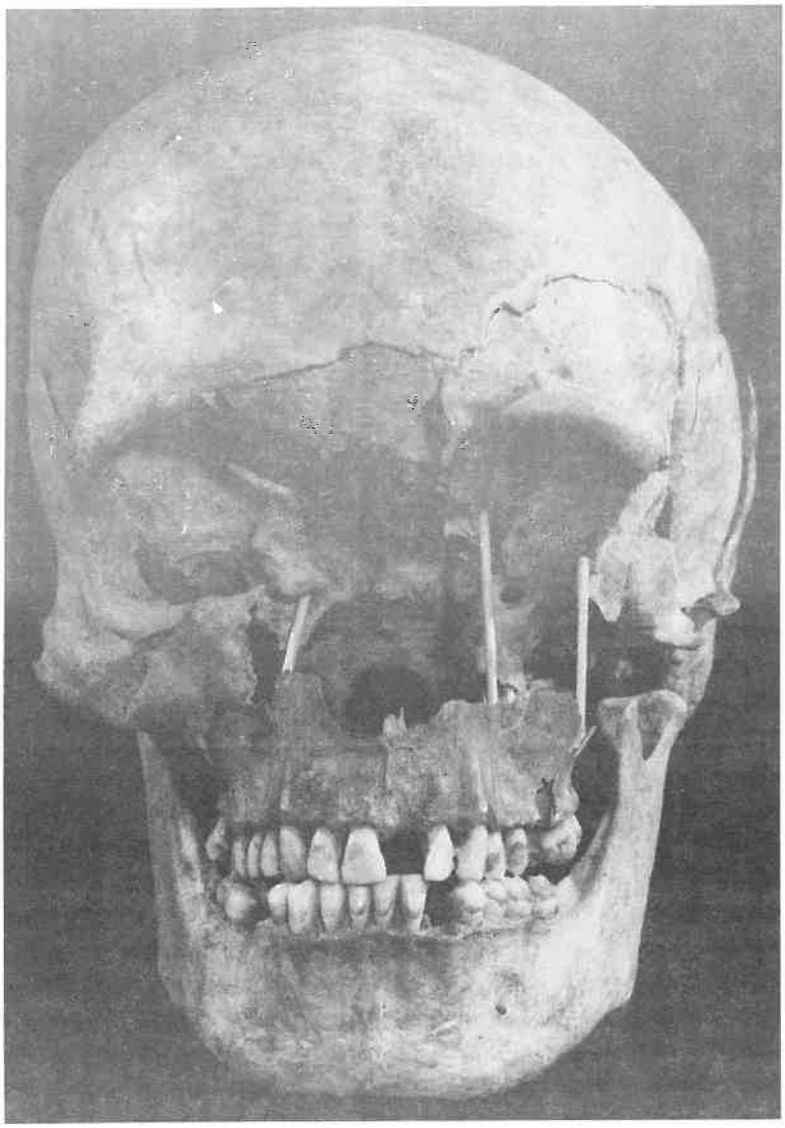

Figure 4: Frontal view of Fort Caspar Burial #3 skull, showing exit wound between eyes. Nasal and midfacial skeleton destroyed.

cavity was found on the labial surface of the left maxillary canine.

Cranium

There is a large hypertrophic osteoma that has grown over the sagittal suture just superior to point lambda. There is no indication that this was an injury because of its formation strictly over the sagittal suture and no deformation on the interior margin is seen. Additionally, there is no sign of hypervascularity or bone resorption that would point to an injury.

There is, however, an obvious injury to this specimen: a cranial gunshot wound. A large caliber firearm, probably 44/45 caliber, was fired from behind the individual. The bullet entered the left posterior parietal bone and exited from the mid face (see Figure 6). Also, a lead ball, as mentioned earlier, fired from a rifled firearm, was found in the lower right thoracic region of the skeleton. It is possible that this is the same projectile that exited through the face, but this seems unlikely in view of the circumstances. The projectile left the face at a high velocity; it is therefore improbable that it would remain associated in any way with the body. The entry wound is angled downward. The interior beveling seen in most cranial gunshot wounds can be partially observed on the upper posterior surface of the hole. X-rays reveal several impacted metal fragments on the anterior ridge of the hole suggesting imbedded tangential fragments of the projectile. The exit wound proves to be a little more subjective as no metal tracings were found and the entire upper face was destroyed. It is our estimate that the bullet exited near the left nasal bone (thus explaining the missing left malar). The entire area is irregular in shape with both nasals, most of the left maxilla and the lower

Bascom 1873). Thus, the body also could be that of an early pioneer.

BASIC OSTEOLOGICAL ANALYSIS

The Fort Caspar Burial #3 remains (Catalog Number HR166) from site 48NA209 have proven to be a challenge in both metric analysis and morphological assessments because of the damage done by the heavy equipment that exposed the burial. There are several interesting characteristics of this individual discernable, mostly concerning massive gunshot injury, but it is prudent to begin with the more basic information presented below.

Sex

According to the morphology of the cranium and the pelvis, this individual was male. A pronounced supraorbital ridge, large mastoids, and a large occipital ridge all show maleness. The Giles and Elliot discriminant function method supports this finding with a value of 923.78, well into the male range of general cranial size and proportion. Other supporting evidence for this conclusion includes the femoral and humeral head diameters (both above 42 mm), the developed deltoid muscle attachments on the lateral shaft surface of the humeri and the pelvic morphology (short, compact frame with a small obturator foramen, narrow subpubic angle, and narrow pubic form).

Age

In determining the age of this individual, the changes of the pubic symphysis area, dental occlusal wear and general age changes in the entire skeleton were examined. The Todd system (Krogman and Iscan 1986) of pubic aging resulted in a placement of this individual between phase 9 and phase 10. This results in a range of 48-52 years (Median of 50 years). The dental occlusal wear was not particularly indicative of this age. It must be noted that Caucasoids (see next section) often show uneven or contraindicative patterns of wear on their dentition.

Race

The race of this individual was determined to be Caucasoid. This finding is based on the morphological aspects of the cranium, dentition, and femur shape and curvature. Lack of malar projection and any prognathism, and a rounded cranial outline tend to rule out both Negroid and Asian ancestry. The lack of shovel-shaped incisors precludes American Indian. Furthermore, this individual did show a curved zygomaticomaxillary suture (also Caucasoid). A parabolic palate form, very sharp nasal sill, rhomboid orbital form and a rounded sagittal outline suggest Caucasoid (Gill 1986). The Giles and Elliot discriminant function (Krogman and Iscan 1986) also placed this individual within the Caucasoid range (see Figures 4 and 5). Finally, the femoral index of platymeria of this individual shows a eurymeric or middle-round shape that is also indicative of Caucasoids. The sciatic notch, which is normally narrow in males, is slightly wider than usual. This is also a Caucasoid tendency. The craniofacial dimensions and proportions (Table 1) and discrete trait observations (Table 2) are also consistent with Caucasoid ancestry.

Stature

The living stature of this individual was estimated at 165.99 $\pm$ 2.99 cm or approximately 5 feet, 5½ inches, using the Trotter and Gleser femur and tibia formula for male Whites (Krogman and Iscan 1986).

PALEOPATHOLOGY

Several characteristics of this skeleton are interesting and tell much about this individual. The following is a detailed description of the pathology found on this skeleton.

Dentition

The lower right second premolar was lost during life as was the upper left incisor. Whether these were extracted by a specialist or fractured away is unclear. The resorption of the alveolar area suggests that these happened in adult life, at least a year before death. There is also a large carious lesion on the mesial surface of the right second mandibular molar. Another

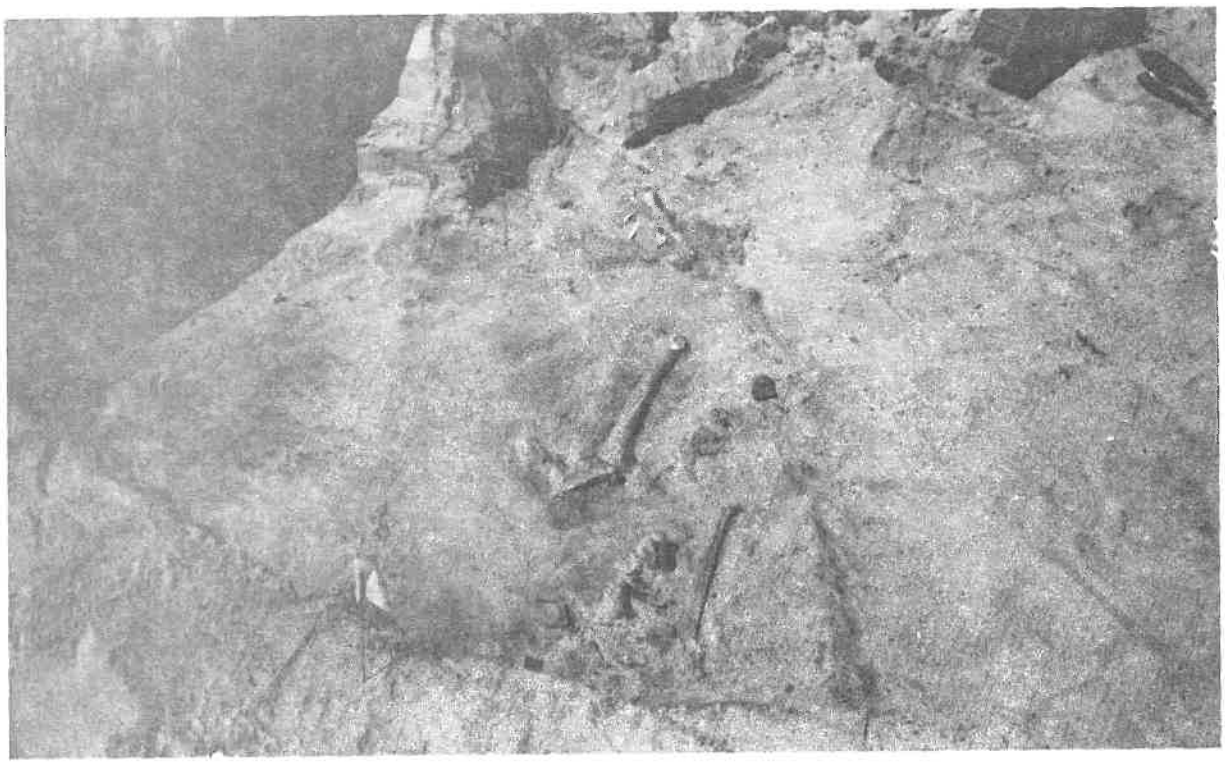

Figure 3: View of some undisturbed skeletal elements *in situ*. Note outline of coffin.

future investigators choose to conduct chemical analysis.

An unidentified, woven fabric or cloth was found directly beneath the individual's head. Strands were interwoven in a square, cross-mesh pattern. We do not know if this is part of a hat, blanket or shroud. Neither could we determine if it had been worn by the individual or simply placed beneath the head.

A nearly circular hole penetrates one large piece of fabric found behind the occipital fragment in the bottom of the coffin. The aperture looks suspiciously like a bullet hole, but the material was so fragile anything could have punctured it. No metal traces were found on the fabric when the margins of the hole were x-rayed for "bullet-wipe."

Five metal buttons were collected when volunteers screened the matrix dumped by the front-end loader. Presumably, these artifacts came from the burial. None exhibited military insignia, and each was so corroded that little can be said of its morphology. It does appear, however, that they are two-piece, four-hole iron buttons similar to those used on soldier's trousers (Scott et al. 1989). Fort Caspar specimens are of two sizes, each of which approximates sizes recovered at the Custer Battlefield (Scott et al. 1989:196). The two larger buttons average 17.48 mm in diameter and may have connected trousers to suspenders, or been used to close the fly. The three smaller specimens average 14.36 mm in diameter and probably were used to close the fly of the trousers.

In spite of this evidence, we could not determine whether the body was that of a soldier or civilian. There was no conclusive proof that the individual was in the U.S. Army at the time of death, even though the burial occurred at a military garrison. On the other hand, the lack of military insignia on clothing may mean only that the individual, or the burial party, selected other apparel. This practice was not unusual for soldiers (e.g., Scott et al. 1989:90-91). Even so, civilian interment at military posts was not an uncommon occurrence on the frontier (e.g.,

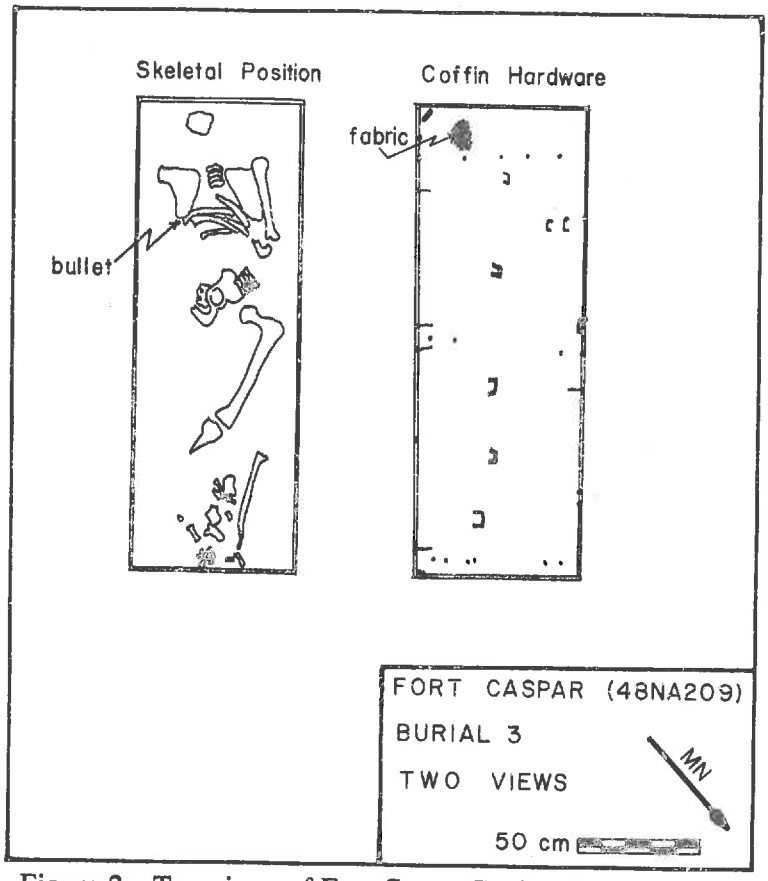

Figure 2: Top views of Fort Caspar Burial #3 grave.

bones were carried away in the bucket.

The body was lying on its back in an extended position with the head toward the southwest end of the grave (Figure 3). Some appendicular elements from the left extremities, and portions of the thorax and cranium, were still in or near their primary, anatomical position. The left arm apparently was bent at the elbow and folded across the chest, judging from the location of the humerus and proximal ulna. Specific skeletal attributes are discussed below in detail.

Associated Cultural Material

All but one artifact can be classified as coffin parts, clothing, or blanket/shroud fragments. The exception is a deformed, large caliber (possibly .44 or .45), lead bullet fired from a rifled firearm.

All the metal artifacts are heavily corroded, so item counts were not always possible. Artifact restoration was not attempted. Most of the cultural material came from screening the backdirt pile dumped by the front-end loader. However, several pieces of coffin hardware, fabric and the bullet were found in place (Figures 2 and 3). Screening also produced a chert flake, but this stone item probably came from elsewhere in the dune sediments.

Seven U-shaped metal artifacts are pointed on their ends, and may be coffin staples. Most were found in place along the seam between two rotted boards that formed part of the coffin base (Figure 2). They apparently were hammered into the wood to hold adjacent pieces together.

Many corroded items probably are the remnants of nails or other coffin hardware. Only ten are clearly identifiable as square cut nails. The function of some nails is clearly shown by their position in the feature (Figure 2). These were embedded in remnants of joined, perpendicular support boards that formed the sides and floor of the coffin.

The exclusive use of cut nails suggests the coffin predates 1890 (see IMACS 1990:Section 470). However, square nails continue to be made and used today (Davis 1990), so this chronological placement must be considered tentative. Even so, it seems that nail morphology, combined with the advanced stage of artifact corrosion and unmarked grave status, argues for a 19th century burial context.

Two large pieces of the upslope sides to the coffin were placed in plaster casts for removal to the lab. Each was treated with Acrysol (TM) preservative diluted 1:20 with water. Acrysol (TM) is a patented, commercially available preservative. Green and purple paint pigments occur on some pieces of wood, but neither these residues nor the wood itself have been analyzed in detail. Some wood samples with these pigments were not treated with preservatives in case

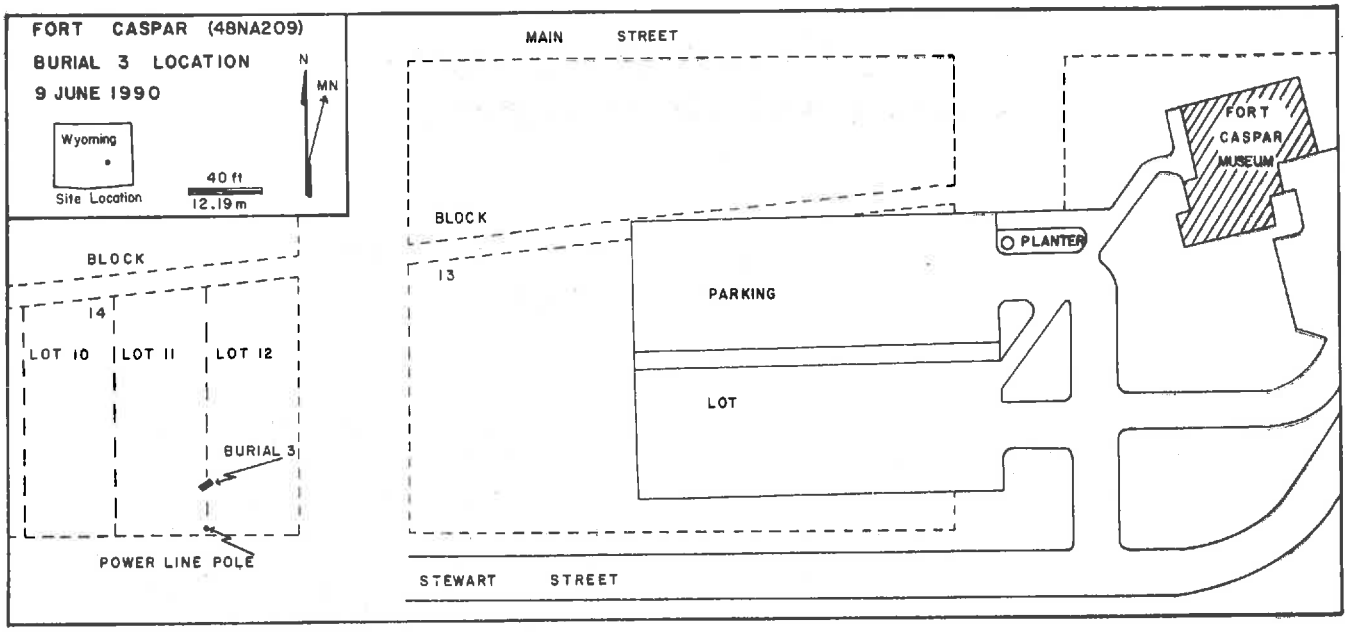

Figure 1: Fort Caspar Burial #3 (48NA209) site area.

with the senior author serving as the primary examiner of the skeleton and coordinator of the entire project. Several specialists beyond the four authors of this report have participated in this investigation. The contributions of each are mentioned within the appropriate sections of this report and/or within the acknowledgments section.

THE BURIAL

Fort Caspar Burial #3 was unearthed when a front-end loader cut into rolling, sand dune topography west of the museum parking lot at Fort Caspar (Figure 1). Construction crews were leveling the landscape to build a playground. One pass with a tractor blade dug into the eolian sediments from the north. This tractor blade then carved an upward arc as the scoop rotated back filling the bucket with dirt. Unknown to the operator, this bucket began its fill along the north edge of a buried, wooden coffin. The ensuing scrape gathered the upper 90 percent of the coffin and most of its contents. When the operator dumped the load of sand, human bone and decomposed wood fell out with the sand.

Grading operations ceased and Rick Young, director of the Fort Caspar Museum, requested archaeological assistance. When the first archaeologists arrived, the only visible evidence was a rectangular stain approximately two meters long. Hand excavations began when additional help arrived. The irregular surface of the blade cut was leveled off, and all sediments within the stained area were run through a 1/4 inch, dry screen. These excavations exposed a partial human skeleton resting on the bottom of a wooden coffin, approximately 73 cm below a vegetated, dune surface (Figure 2).

The buried coffin was oriented along a northeast-southwest axis, diagonal to the eventual route followed by the front-end loader. The wooden floor of the coffin was sloping downward toward the north. Elevations on the upslope margin were about 10 cm higher than on the downslope. Apparently, the burial pit either stopped on an irregular surface, or the coffin settled unevenly after interment.

All the articulated bones rested in the lowest, downslope portion of the feature. These elements would have been just beneath the tractor blade as it entered the dune. Adjacent, upslope

A FRONTIER BURIAL FROM FORT CASPAR, WYOMING

by
Eric A. Combs, George W. Gill, Mark E. Miller, and Carolyn M. Buff

ABSTRACT

On June 9, 1990, a Wyoming Archaeological Society/University of Wyoming archaeological team excavated a human burial at historic Fort Caspar near Casper, Wyoming. Unique to this find is a bullet found in the individual's lower right thoracic cavity. The skeleton is that of an adult White male, approximately 50 years of age. Evidence suggests a very interesting osteological and archaeological profile. Questions concerning this find have been answered through detailed examination by several experts in different fields. This report is the compilation of these examinations and it is intended to provide a more complete picture of frontier life in the late 19th century.

INTRODUCTION

Contrary to popular belief, human remains from archaeological settings are not abundant. When site workers recover a human skeleton, this increases the knowledge and importance of the site because of the direct information that can be derived from the individual. Unfortunately, full examinations by one observer tend to be time consuming and to omit critical details from areas of inquiry outside the investigator's scope of experience. There is, however, another approach to the detailed investigation of archaeological sites with human remains. That is a team approach.

By using a team approach, the present study was completed rapidly and effectively. The initial field archaeology team consisted of the junior author Carolyn Buff and several members from the Casper chapter of the Wyoming Archaeological Society. On June 9, 1990 they were assembled at 48NA209, the discovery site at historic Fort Caspar near Casper, Wyoming (Figure 1). During backhoe operations, an apparent human burial had been encountered. This burial has been designated as Fort Caspar Burial #3 since two other burials were found in the local area several years earlier (Rick Young, personal communication 1990). The site of interment was immediately cordoned off, and left intact while the front-end loader dump area was screened for redeposited osteological and archaeological remains. An archaeologist spent the night on site due to heightened media attention about the discovery, and the need to protect the find from potential vandalism. The Natrona County Sheriff's office and the Casper City Police also made periodic nightly visits. These costly efforts could have been avoided if news of the discovery had not reached the public until the following day when the remains were scheduled for removal.

The Office of the Wyoming State Archaeologist was notified, and on June 10 an additional recovery team was dispatched to the site. This team consisted of Dr. Mark E. Miller, Wyoming State Archaeologist; Dr. George W. Gill, University of Wyoming physical anthropologist; and Sonia Haoa, visiting archaeologist from Easter Island. The laboratory analysis of the skeleton (University of Wyoming, Department of Anthropology Human Osteological Collection Catalog Number HR166) and the associated cultural material was also approached as a team effort

som culture. We had worked at Hell Gap, Wyoming, one of the most productive Early Man sites in the New World. In our eight years of research, we had a cultural sequence running from one thousand years ago to eleven thousand years ago. All the cultural sequences had been clearly identified except a time period about 10,500 years ago. We were almost sure it was the Folsom culture that filled this notch, but until we found a point, we could not be certain. After our third season at the site, we were packing to return home. I walked down the arroyo for a final look at the arroyo banks. Suddenly, I had an urge to dig in a specific location that showed no evidence of any cultural items being present. To this day, I cannot know why I felt this spot would produce Folsom artifacts. I begged my co-directors, Dr. Cynthia Irwin-Williams and her brother Henry Irwin, to give me a half hour to dig in this spot. They were reluctant, for no evidence was present, and wondered why I though I could produce a Folsom point when in three years, we had not found any at the site, when some thirty people were constantly digging. Anyway, even I was shocked when after a few scrapes with the trowel, my blade hit some lithic objects and our first Folsom point was unearthed. Why I had the irresistible urge to dig here, and how I defied all odds to find a Folsom point, I cannot explain today. Perhaps like the water dowser, I saw some seemingly unconscious clues that I could not record clearly in my mind that presented the possibility I would find a Folsom point at that spot.

I recall as a child I went fishing at Deal Lake in New Jersey, only to find midway in the day I had run out of fish hooks. My reserve supply was a good two miles away back at my parents' campsite. I hated to take the four mile walk, to and from this location, but had no other recourse if I wanted to continue fishing. I had gone no more than a hundred yards, when something told me if I put my hand on the bark of a tree along the path, I would find a fish hook imbedded in the tree. Not really believing I would find anything, I did so, and touched an old and rusty fish hook. My only rationalization for this event is that I had seen that fish hook on many occasions as I walked to and from Deal Lake, but never needed it. Now, my subconscious was activated to save me a four mile walk. Is this similar to what the dowser does in his activity? I think it is. It brings the subconscious to the conscious level when needed.

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DOWSERS: CAN THEY BE USED IN ARCHAEOLOGY?

by
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Portales, New Mexico, is a town of 11,000 on the high Plains of eastern New Mexico. This uplift, nearly a mile in height, is a flat land, largely without any running water. Wells supply water for humans, livestock and peanuts, the major agricultural crop in the region. Since wells are so valuable for the survival of people in this area, the water dowser is a respected and frequently sought after professional. Clearly, his services are appreciated. However, it is not completely clear if the dowser's talents depend solely on the magic of the forked hazel branch or an unconscious knowledge of the terrain and where water is most probably to be found.

The earliest known reference to dowsing is a statement by a Benedictine monk named Basile Valentin. Valentin, in his writings, quotes the use of the magic rod, or dowsing rod, over two thousand years ago. Valentin also quotes from the bible (Genesis 37-38):

> "I will stand before thee upon the rock in Horeb and thou shalt smote the rock and there shall come water out of it, and the people may drink. And Moses did so in the sight of the Elders of Israel" (Paine 1981:368-369).

Now I do not believe in dowsing. If success is obtained, I feel it is the subconscious of the operator, not the forked stick. In fact, more modern metal rods are often used today and even sold commercially. In my belief, the twisting or drop of the rod, be it forked stick or metal rod, is the involuntary muscular action by the dowser at a spot felt to probably produce positive results. It is the subconscious, not the rod that predicts.

I must confess, in my own experience I have used other than visual means of finding archaeological items in my profession as an anthropologist. The second oldest known culture in the New World is the Folsom culture. The oldest and largest site is that of the Lindenmeier site in northern Colorado. It was found in 1923 and by 1960, the culture was not dated by any scientific means. At that time, Dr. Vance Haynes and myself undertook a project to date this site by the recently developed radiocarbon method. It required roughly a thimble full of charcoal from the productive level that had not been displaced by any rodent or other earth moving activity.

However, no fire hearths were found, just flakes of scattered charcoal. After over six hundred hours of laborious work, we failed to meet our goal. Only a few specks of charcoal were in our possession from the productive level. Time was running out. Our research funds were nearly exhausted. One night, we lay in our sleeping bags and one of us stated: "Let us hope we can dream of the source where we can find charcoal and complete our task." The next morning, one of us, I can't recall which, dreamed we should go down the arroyo to a location we though earlier would not be productive and there we would reach our goal. With little to lose, since we could not find the elusive charcoal in prime locations, we followed our dream, saying maybe the Paleoindian ghosts may have advised us in the dream. To our surprise, the new location was so productive we finished our task in less than eight hours. After analysis, we produced the first radiocarbon date for Folsom at 10,780 years ago (Haynes and Agogino 1960).

The second incident also concerns the Fol-

betters, more sensitive individuals, cannot enjoy this link with the past.

Comparable to this situation would be someone leaving their initials on the altar of Saint Peters Cathedral in Rome, the Lincoln Memorial, or by marking with paint across a priceless canvas of a long dead master painter. The only permanence these vandals leave behind is their names, initials or the permanent destruction of something valued by millions. Their names and initials, identifying them as people, are such that I would never want to meet or to be associated with in any manner.

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DESECRATION OF VALUABLE PICTOGLYPHS

by
George A. Agogino

My message will be brief and to the point. I will only show one example, from the Twin Buttes site west of Kenna, New Mexico (Figure 1). Few interested in archaeology, anywhere in the United States, have not seen the wholesale senseless destruction of this art. The destruction is normally either by vandals signing their names to this art, or simply shooting pistol or rifle bullets into the stone canvas holding this art.

In every state of this nation, some centuries old, non-replaceable Indian art is painted over or etched over. Native American artists used stone as their canvas, because it seemed to promise that this work would withstand the ages of time. It has withstood erosion well, but not the stupid sacrilege by the hand of contemporary man.

I have speculated why this is done, yet I cannot come up with a logical answer. It is destruction totally without any understandable reward. The religious and artistic creations by the hands of our Native Americans, a link between the past and present, have been broken by unthinking vandals. I am glad my initials are not on such representations. My only conclusion is that the individuals that do such destruction are soulless, mindless, individuals without compassion or feeling for either the past or the future. What they cannot appreciate themselves, they are destroying, so that their

Figure 1: Vandalized pictoglyph, Twin Buttes site, New Mexico.

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ing. A similar cobble was found in a surface context in association with a Pryor Stemmed point in Big Horn Mountains foothills (George Frison, personal communication, 1991).

Cultural dynamics for the post-Altithermal period in this area also remain clouded by gaps in the record, poorly dated aspects of the record, and an ambiguous understanding of the range of variation of cultural traits and/or settlement and subsistence patterns. Samples from this period are small and as with earlier periods tend to be skewed toward the larger and more obvious kill and hunting sites. For example, there are now probably over 300 Woodland sites known in this general area. We still know very little about the stylistic range of variation of that particular ceramic type, the range of variation of associated projectile point types, or much about other aspects of the Woodland cultural phenomenon on the western High Plains.

The point is that many mysteries remain concerning all aspects of the cultural record in this area. The Sommers site is not a kill or a major hunting camp and contains stratified cultural deposits dated to more obscure segments of the record. Sites like Sommers harbor rare and sensitive evidence critical to the pursuit of many multi-faceted research problems. That is why we chose to acquire a systematic sample of this site and not stand by and witness further destruction of the deposits in spite of our meager resources with which to do the job.

Regarding future work, we will focus our efforts mainly on raising funds for dating, analysis of soil samples, and acquiring the expertise of a geomorphologist. Adequate analysis of the stratified deposits will require several more radiocarbon dates and with respect to the lower zone, only expensive accelerator (AMS) dates will be possible.

ACKNOWLEDGEMENTS

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Eisenbarth, Dennis, and Harry Earl

graph from the rock. Any such effort would surely break the panel into many small pieces. The only practical options to preserve the panel seem to be to obtain a good photographic and metric record and to block-off animal traffic. Both have been accomplished as part of this project.

Faunal Remains: Large quantities of bone are not present, and as mentioned earlier, bone is almost nonexistent in the lower zone. Most of the fauna recovered has come from the mixed deposits of the upper zone and will be of little value. Much of the bone is undoubtedly non-cultural and the result of rodent, carnivore, and perhaps bird activity in the shelter. A list of species present has not been prepared yet but will include bison, deer, carnivores, rodents, fish, turtle, fresh water mollusk, and snails.

Evidence for cultural modification of some bone is shown by cuts or burning. The list of bone tools recovered so far includes three broken awls, two antler tips, and two small tubular bone beads.

Seeds: Several hundred hackberry seeds were recovered from the lower zone. The seeds were most prevalent in the late Paleoindian deposits, seemed to be indigenous, and showed no evidence of cultural modification (grinding, charring, etc.). Hackberry seeds are not edible but they are high in tannic acid and produce a reddish dye. It is possible that they were used for hide tanning or the coloring that they produce. The Pryor Stemmed level contained many of these seeds and the edge-ground cobble and sandstone slab from that level were a reddish color. It is tempting to speculate that the discoloration of these stones is due to processing of seeds rather than heat as was originally thought.

Milton Green of the University of Wyoming Cooperative Extension Services, Goshen County Office submitted a sample of these seeds to the Wyoming Department of Agriculture Analytical Services Seed Laboratory for identification. Rita Parker from that laboratory identified the seeds as *Celtis laevegata* (sugar hackberry). It seems this is a species no longer present here, but now endemic to lower coastal areas. The current natural distribution of this species is Virginia to Florida, west to Texas, and north to southern Kentucky, Indiana, Illinois, Kansas, and Oklahoma.

The significance of this find with regard to environmental reconstruction and interpretations is not known at this time. It is interesting, however, that we found the same seeds in the Harvard faunal and debitage collections from the Hell Gap site. It seems this species was also present there during late Paleoindian times.

SUMMARY

The chronology of early Paleoindian cultures in this region have been pretty well established predicated on stratified deposits at the Hell Gap and Agate Basin sites. Problems relevant to particular cultural relationships linger throughout the Paleoindian sequence such as the Clovis, Goshen, Folsom, Midland questions and for the later Alberta, Cody, Eden, Scottsbluff, First View complex or complexes. Temporal relationships between cultures during the Late Paleoindian and Early Plains Archaic eras are presently probably the most obscure portion of the archeological record. During these later periods, variation in projectile point types increased dramatically, and large, communal kill sites are rare. Most evidence for cultural occupation comes from the mountain/foothills areas, especially from caves, rockshelters, and around springs (Frison 1973; Benedict and Olson 1978). These sites seldom contain early Paleoindian evidence and seem to reflect a shift in settlement patterns from earlier times. These sites usually exhibit multiple occupations but more often than not, stratified deposits have become deflated or otherwise mixed. Cultural levels are typically thin and difficult to date. They often lack the stylistically dynamic projectile point, by far the most useful technology to differentiate cultures. As more late Paleoindian and Early Plains Archaic sites are excavated and the inventory of non-projectile point artifacts grows, perhaps items representing other than hunting assemblages will become culturally diagnostic. In this regard, the edge-ground cobble from the Pryor Stemmed level at Sommers is especially interest-

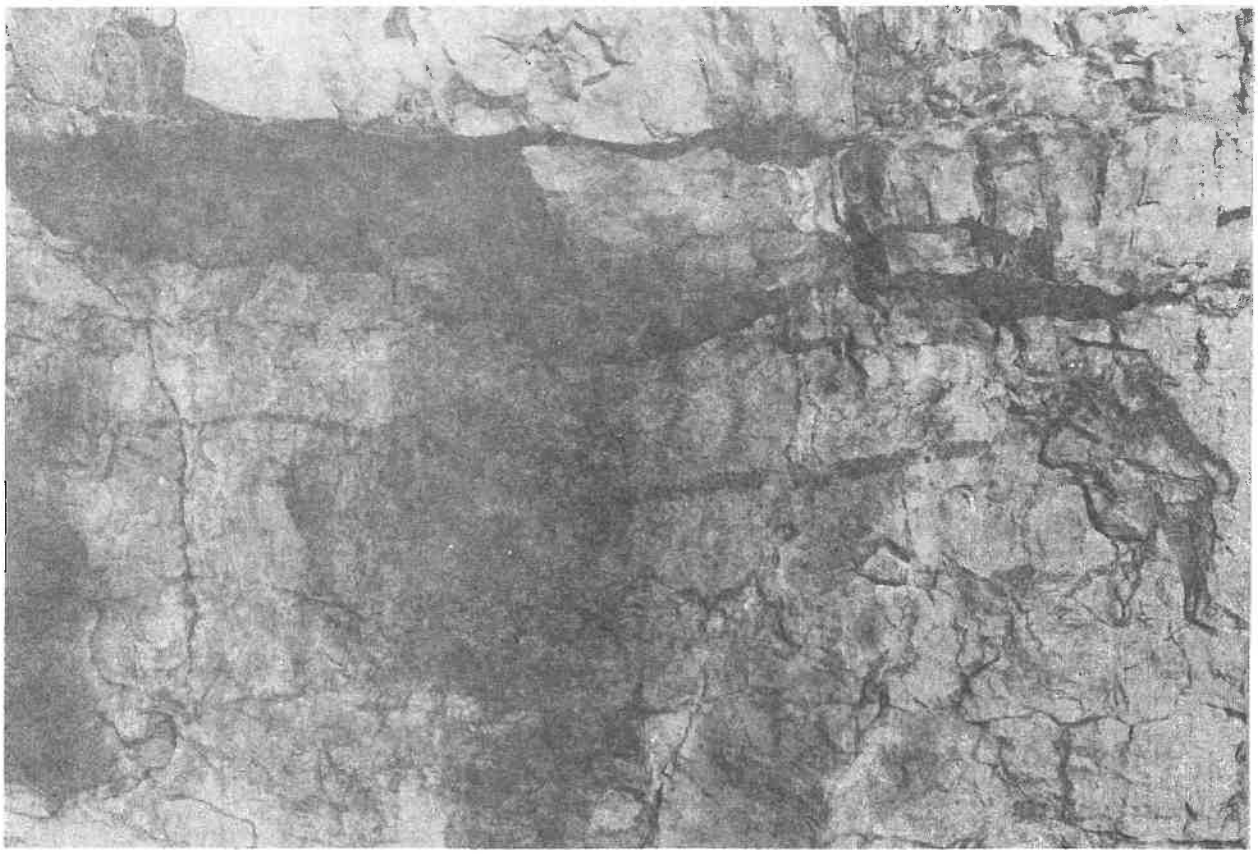

Figure 7: Pictograph on shelter wall, Sommers site.

leeching from the rock. There is evidence of moisture seeping from the rock. The panel contains one large depression 14 cm x 15 cm and 2 cm deep that existed when the glyph was made because the right connecting line runs through it and follows its contours. The right figure is elevated and cocked forward at an approximate 40° angle to avoid the indentation. There is a vertical fissure bisecting the left side approximately halfway between the left figure and the bear.

Red ochre is present in all of the cultural levels below the pictograph. One piece of ochre found in a more recent level had a facet that is the same width as the wide line that connects the animal with the human figure on the right side of the panel. This would suggest that this art is relatively recent if indeed this piece of ochre was used to construct the lines, but again, ochre is present in all levels. The fact the ochre was apparently applied directly to the panel without being mixed with oil or fat precludes radiocarbon dating. Even if the ochre had been mixed with some organic material, the pigment has been contaminated from the oily skins of animals rubbing against the rock.

Any rock art is rare in this region. The bear motif is common in other parts of Wyoming and Montana. The only unusual aspect of this panel seems to be the apparent head ornaments depicted on the human figures. These are not common at least in the Wyoming area (Hendry 1983).

This pictograph is deteriorating at a relatively rapid rate. Some unknown party had chalked the perimeter of the figures probably for photographic purposes. The chalk may be responsible for the smeared appearance of some of the edges. The fractured nature of the limestone wall renders it impossible to remove the picto-

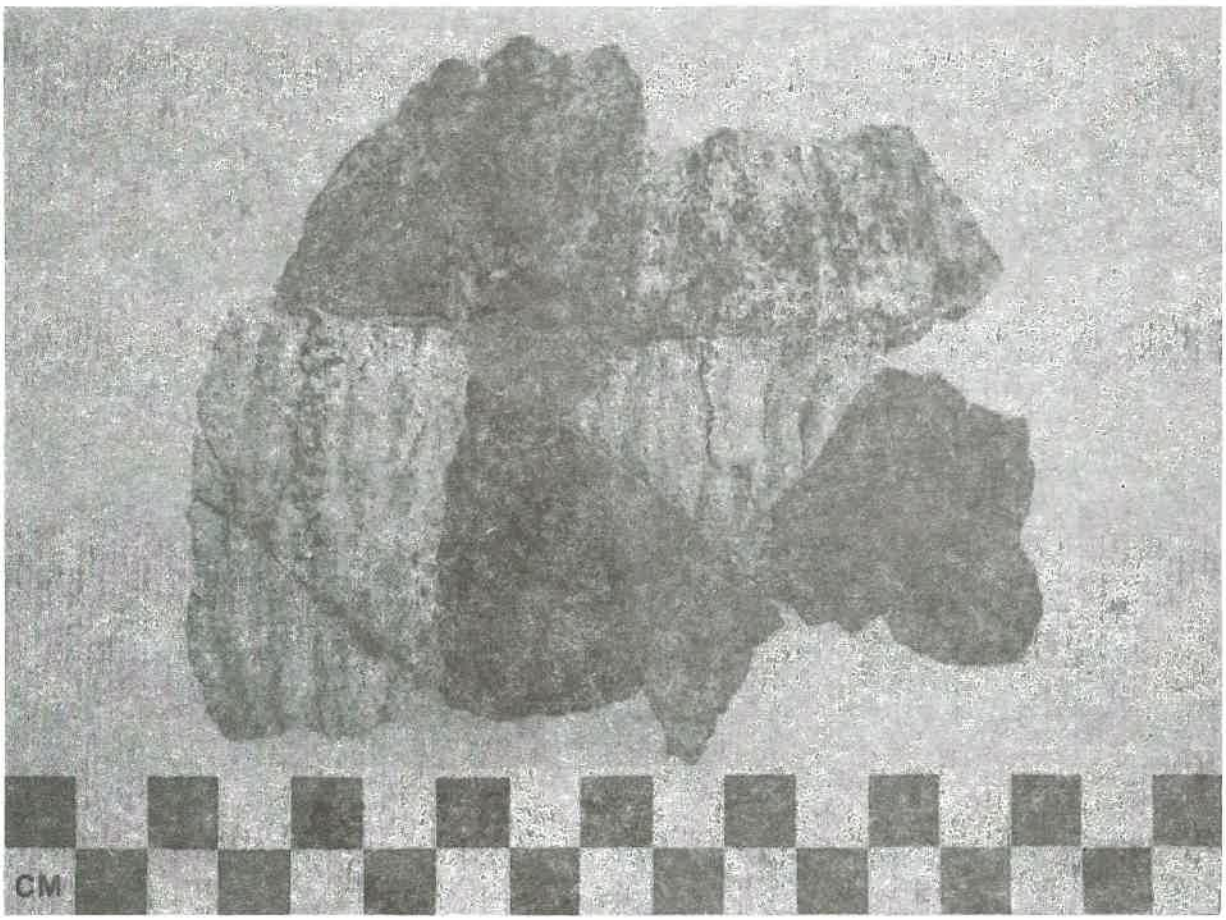

Figure 6: Body sherds from Woodland level, Sommers site.

The foremost paw of the bear carries five claws. The other forepaw was too smeared to show clearly. The bear is connected to the two human figures by a series of lines. The right line extends from the throat area of the bear and connects with the front arm of the human figure on the right. This line is the thickest, being approximately 0.5 cm in width and 17 cm in length. The left figure is connected to the bear by three thinner lines. Two of these connect to the loin area on the back of the bear and one with the buttocks.

The human figures are displayed in side profile. Again, their torsos and limbs are depicted on a flat plane. Both figures are approximately 13 cm tall and have a top-knot or head ornament which measures 0.5 cm in length. On both figures, the arms are turned upward at the elbows. Each exhibits three wide-spread digits on each hand. The figure on the right has an extra line forward of the obvious arm that may be either another arm or an object being thrown in the direction of the bear. The figures are relatively proportional anatomically and both are depicted as facing toward the bear.

The ochre coloring of the bear is very thin near the midsection. There is evidence of smearing, probably from cattle or other large animals rubbing against the picture. There has been some smearing and streaking of the ochre overall. In addition, some white overwash is present. This has streaked the left section of the pictograph and was probably caused by lime

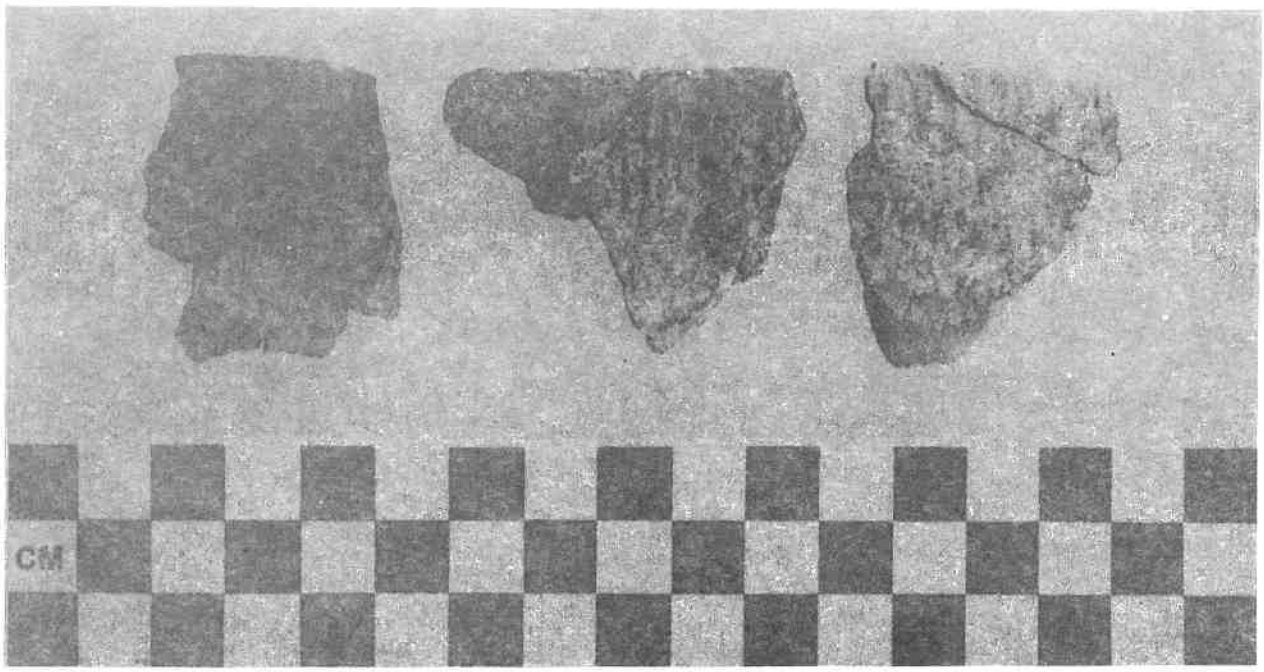

Figure 5: Rim sherds from Woodland level, Sommers site.

The slabs of stone lining the pit were burned and oxidized to a bright red color. The pit contained a dark brown soil but no charcoal or rocks other than the lining. A radiocarbon date of 1290 ± 50 B.P. was obtained from scattered charcoal from the surrounding level (Table 1). Slab-lined pits are common in the northern and western part of Wyoming. This is the only feature of this kind that we have ever seen in this region.

Yet another unique feature was present in the eastern portion of the shelter. Here, in an undated but obviously recent level, were found several pieces of wood covering a packed floor located between a large rock and the shelter wall. The east end of this area was delineated by a wall constructed of small stones. The wall is presently 28 cm high but may have been higher once. If a wall was present at the west end of this feature, that evidence was destroyed by vandalism. Several rocks scattered around the west end suggest that a wall may have also existed there. If enclosed, the area would have encompassed about 4.5 m square. Whether the wood served as lining or bedding for the floor, or was part of a wooden superstructure that once covered the area and later fell to the floor could not be determined. No temporally diagnostic artifacts were present in this level but it was stratigraphically above the Woodland level. Also, several small pieces of cut leather were recovered from the level suggesting that this feature is relatively recent.

Several small burned areas in the lower zone may represent the remains of late Paleoindian hearths. However, so far these have all been very obscure features that are difficult to describe.

Pictograph: A pictograph is drawn with red ochre on an unaltered limestone rock face beneath the overhanging ledge (Figure 7). The painting measures approximately 83 cm in length by 18 cm in height. There are three figures depicted. These appear to be a bear that is flanked by two human figures. The bear measures 25 cm in length and is 12 cm high through the thickest portion of its body. The bear is naturalistic but displayed in a flat, stylized pattern showing all four legs distinctly. It has a muzzle, two ears, and a large shoulder hump.

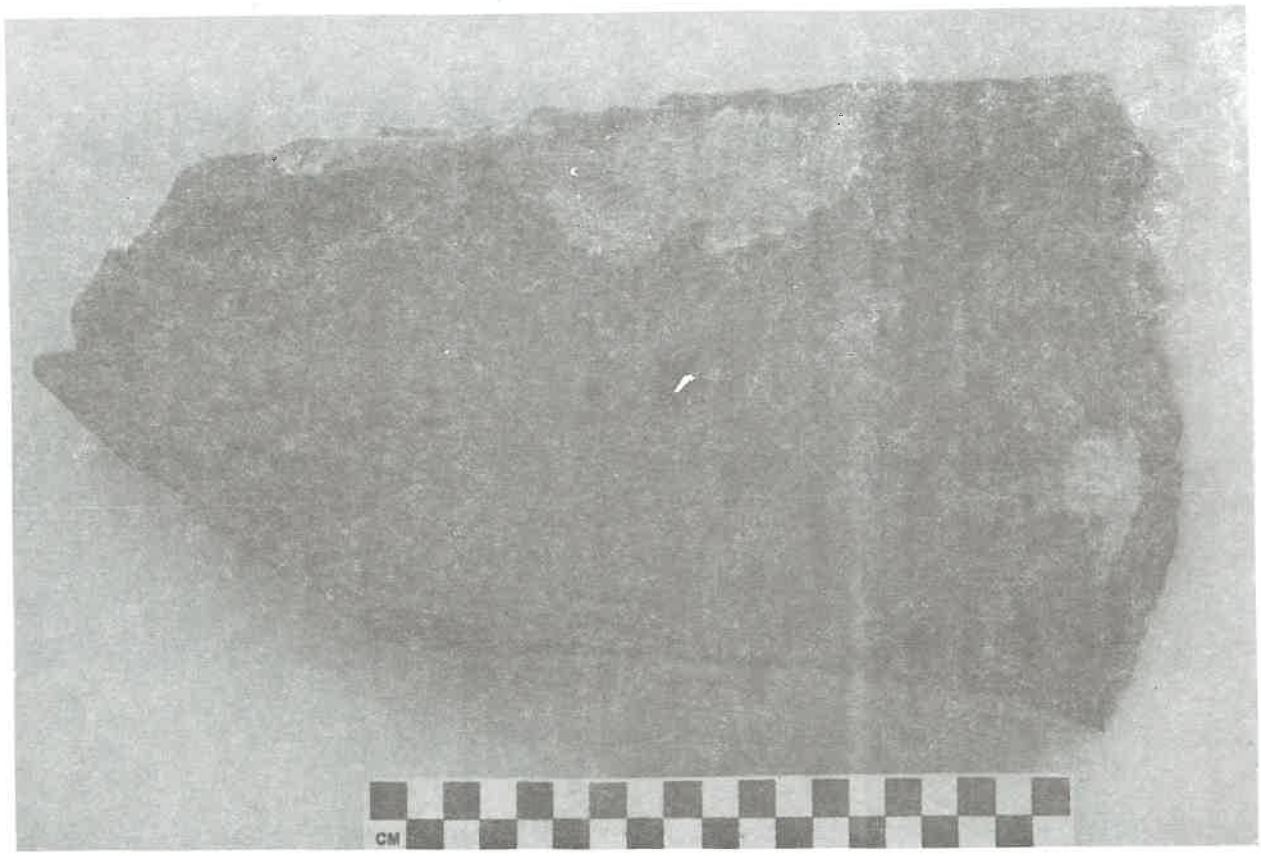

Figure 4: Edge-battered sandstone slab from Pryor Stemmed level, Sommers site.

context but such was not the case. It appears now that because of the vandalism, we have lost what was a good opportunity to recover a steatite artifact in good context.

Pottery: One hundred and forty-four (144) ceramic sherds represent another artifact class that remain to be fully analyzed (Figures 5 and 6). As mentioned earlier, these sherds were found in and near a shallow hearth dated at 940 $\pm$ 70 B.P. (Table 1). The sherds appear to represent a single vessel that may have crumbled while resting in the fire. Sherds found in the hearth were heavily burned. Partial reconstruction was possible but about 70% of the vessel is missing. The sherds found here rested near the edge of the vandalized area. The rest of the pot was apparently collected by the vandals since no pottery was found in their back dirt.

The exterior of the pot is cord-roughened, the walls were nearly straight and curved slightly inward toward the bottom. The neck is possibly slightly curved, and the rim is flat. A strange herring bone pattern (Figure 6) on some body sherds may represent earlier repairs to the pot before it was broken and abandoned.

Features: Unfortunately, the area of the upper zone that probably contained most of the fire pits or hearths was destroyed during vandalism of the site. This was obvious from the large amounts of charcoal and fire fractured rocks present in the backdirt. However, three features in the eastern portion of the shelter are describable. One is a shallow, ash-filled hearth that contained the Woodland pottery. About half this hearth was destroyed by vandalism.

Another feature is a slab-lined pit. The pit remained in entirely good condition in a level stratigraphically below the Woodland hearth.

casual activity that took place at the site. All stone material types found here are available in the Hartville Uplift. In fact, lenses and nodules of chert are present at various places in the limestone that forms the canyon walls. Large chert outcrops are present on a hill side less than one km northwest of the site. Many chert and quartzite sources can be found within a five km radius of the shelter.

Ground, Pecked and Carved Stone Artifacts: Several manos and fragmentary metates were present but so far only one of these artifacts was found in a definitive context. This stone tool is an edge-ground quartzite cobble that rested in a fire hearth in the Pryor Stemmed level (Figure 3). Both edges are smooth and flattened from use and both ends are battered in a way that suggests use as a hammerstone. One side of the stone is obscured by a limestone encrustation that hinders examination. The surface of the other side has been polished, probably from use as a grinding tool. The overall surface of this tool is a reddish color, probably related to heat from the hearth.

Two other artifacts were present in the Pryor Stemmed hearth. One is definitely a small hammerstone. The other is a large flat slab of reddish sandstone (Figure 4). The red color is probably from heat. Surfaces of this stone are heavily encrusted preventing examination for grinding evidence. One end of this stone has been chipped. Polished edges of the chipping suggest use as a chopper or digging tool.

A carved, tubular, steatite pipe was also found in the vandalized backdirt. Steatite artifacts are common on the High Plains but have only been dated in extremely rare instances. The pipe was broken and we hoped that additional fragments would be found in a definitive

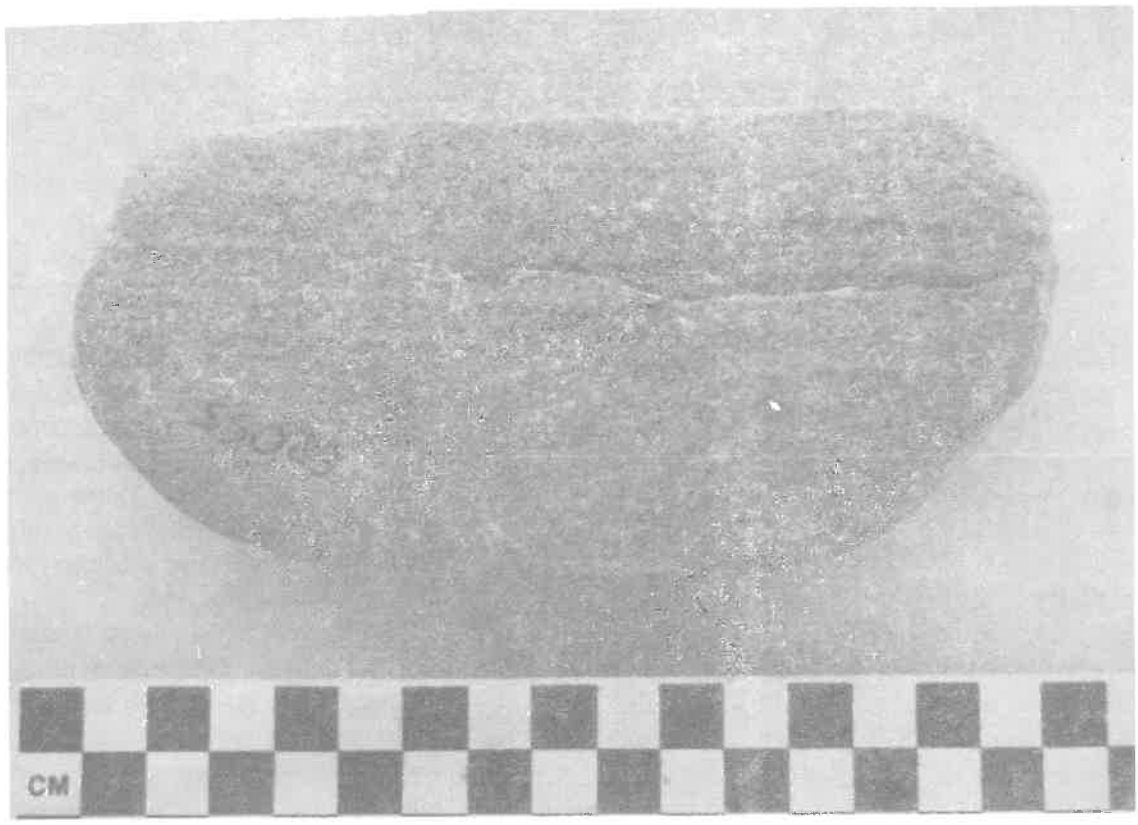

Figure 3: Edge-ground cobble from Pryor Stemmed level, Sommers site.

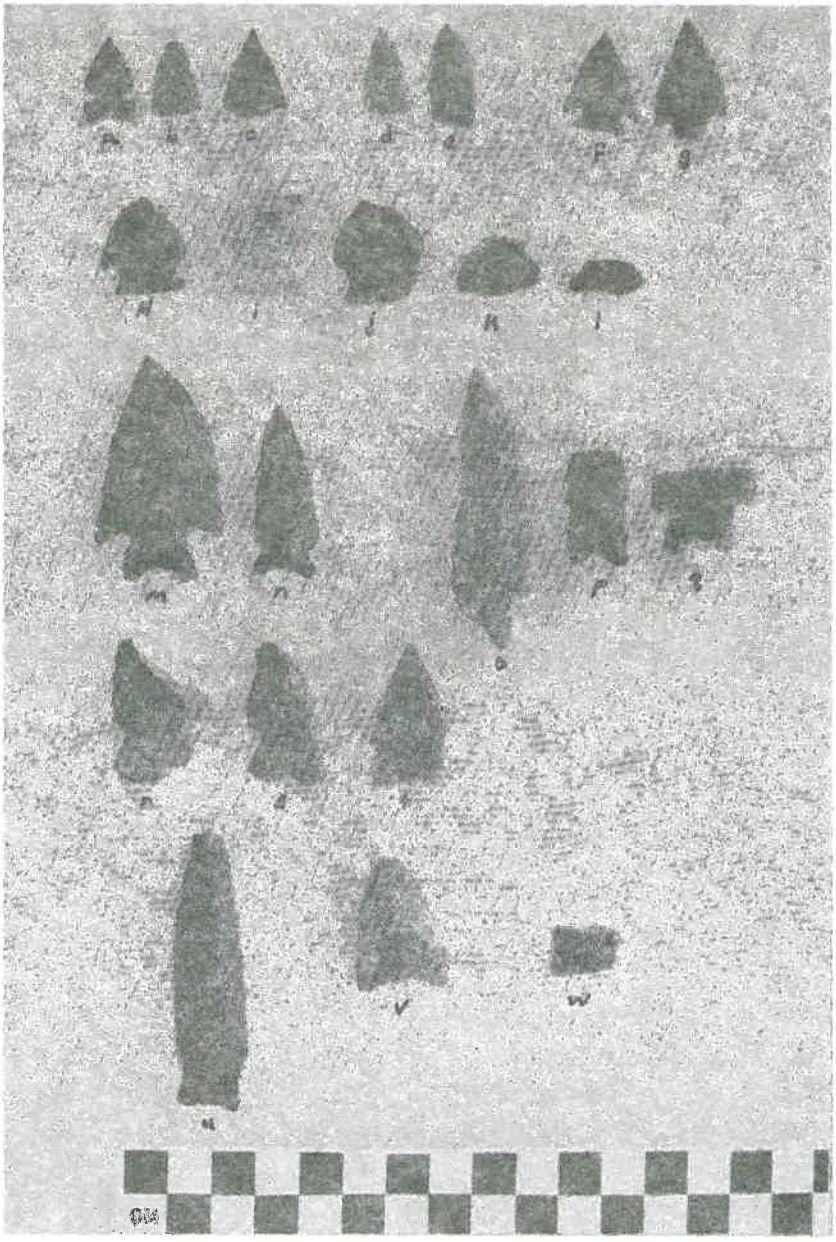

Figure 2: Projectile points from Sommers site.

point retrieved from the vandal's backdirt is probably Late Middle Plains Archaic (Figure 2m). Two other points probably are early Middle Plains Archaic artifacts but were also found in mixed deposits (Figure 2p, 2q). None of these levels have been dated at Sommers. They all contain good charcoal in good context and will be dated as our budget permits. Points similar to the three early Middle Plains Archaic artifacts were dated at Bass-Anderson Cave at around 4,400 B.P.

Several points seem to represent Late Plains Archaic occupations but were found in disturbed matrix (Figure 2h - 2l). One must be careful when assigning temporal positions to these specimens. The range of variation of projectile points from this time period and the early Plains Archaic period often overlap. However, because of the area of the site in which these artifacts were found, they are most likely Late Plains Archaic.

One point was found in unequivocal association with a Woodland hearth (Figure 2g). Woodland pottery was present both in and around the hearth that dated at 940 $\pm$ 70 B.P. (Table 1).

Three small, triangular, side-notched points were present in mixed deposits near the surface of the shelter (Figure 2a, - 2c). Two small, triangular, unnotched points were also found in mixed deposits of the uppermost levels (Figure 2d, 2e). These points undoubtedly date to the most recent occupations, probably just before the Historic period.

Besides the projectile points, a variety of tools and several hundred pieces of debitage were collected from the various levels of occupation. Analyses of these materials are not yet complete. However, from initial observations based on presence of several exhausted cores, many cortex flakes and hammerstones, we are certain that tool manufacturing was more than a

are straight and lightly ground. This level has not been dated but similar points from Bass-Anderson Cave date at 8,900 years B.P.

Only one point represents another Paleo-indian level (Figure 2v). This point is made of a gray quartzite and is relatively thick. The base is missing but grinding is present on both edges near the break indicating that the basal edges were ground. What may be a preform for this point type was found in good association. This level has not been dated but points that may be similar are dated at 8,500 years B.P. at Medicine Lodge Creek and elsewhere (Frison 1978:38).

A Pryor Stemmed (bi-beveled) point was present in one level that also remains to be dated (Figure 2u). This artifact is a long, slender, stemmed point which exhibits steep beveling along the entire length of the alternate edges of each side. The overall shape of this specimen appears asymmetrical because the stem seems to angle-off about 10° from the long axis of the body. It is common for Pryor Stemmed points to look twisted, but here, the asymmetry is partially an illusion caused by one misplaced flake on one edge of the stem. Efforts were obviously made by the manufacturer to straighten the point by removing a series of fine pressure flakes over the aberrant flake scar. These salvage efforts were futile and may be the reason that this point was discarded. Other criteria also seem to suggest that this point was not completely finished.

A recent article in the Wyoming Archeologist erroneously reported this point to be from Bass-Anderson Cave (Davis 1991:1-13). Several bi-beveled points were recovered from Bass-Anderson Cave but were not discussed in that article. The Pryor Stemmed levels at Sommers and Bass-Anderson have not been dated but this point type generally dates at around 8,300 years B.P. (Frison 1978:23-24).

Three side-notched points represent the Early Plains Archaic period (Figure 2r - 2t). These points have been severely burned resulting in heat fractures and spalls and discoloration of the chert from which they were made. These points came from a level that lies right at the contact between the dark colored, rocky, upper depositional zone and the light colored soils of the lower zone. The level exhibited extensive burning that probably took place post-occupation. One small burned area seems to be the remains of a small, shallow hearth and dated at 7,150 ± 80 B.P. We could not learn if the date came from the same level as the points due to interruptions in the deposits from vandals' digging. Also, there was some indication that there was more than one Early Plains Archaic level present.

Field Number	Beta Number	Location	Radiocarbon Years B.P.
P001	41392	upper zone Woodland hearth	940 ± 70
P004	44826	upper zone bed area	1050 ± 70
P007	44827	upper zone slab-lined hearth	1290 ± 50
P003	42424	lower zone hearth 1.30 m B.D.	7150 ± 80
P005	46025	lower zone ?hearth? 2.05 m B.D.	8700 ± 65
P002	41375	lower zone ?hearth?	disinte-grated in lab

Table 1: Radiocarbon dates from Sommers site.

Excavations down through the dark colored, rocky deposits of the upper zone produced three projectile points in a good, stratified sequence. A small, triangular, corner-notched arrow point from 20 cm BD represents the early Late Prehistoric period. A long, slender corner-notched, concave base point from 65 cm BD represents the Late Middle Plains Archaic. Finally, a large, stemmed, indented base specimen from 1.0 cm BD represents the early Middle Plains Archaic (Figure 2f, 2n, 2d, respectively). One

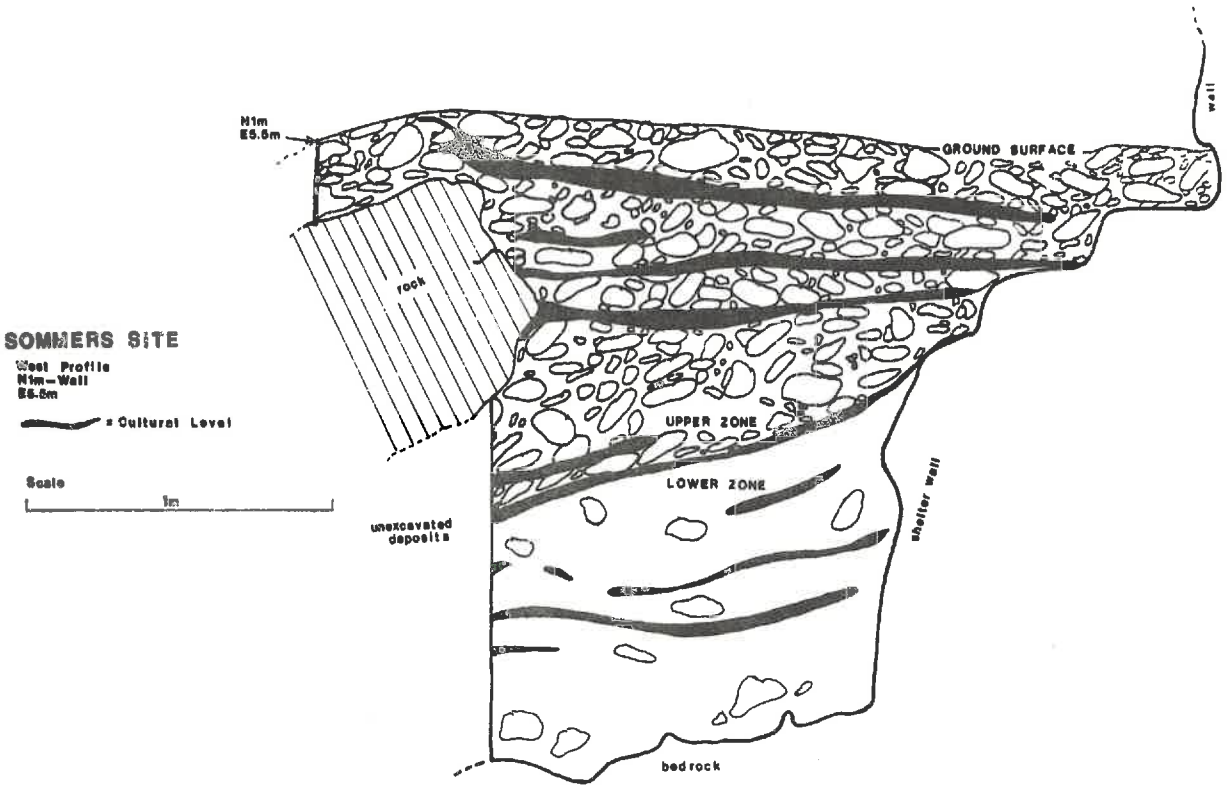

Figure 1: Excavated profile, west wall at East 5.5 m, Sommers site.

brief periods of human occupation. Animal bones are nonexistent in the lower zone except for occasional pieces of badly deteriorated tooth enamel. It is likely that bones were once present here but have completely deteriorated. Radiocarbon dating of the lower levels is very difficult. What appears to be large pieces of good, particulate charcoal disintegrates during initial cleaning in the radiocarbon laboratory. Dry charcoal that originally weighed 12-15 grams turns into a fraction of a gram when washed. The problem seems to be that what appears to be good charcoal has been replaced by minerals and is in reality fossil charcoal. However, we are not sure how the replacement process works or even if mineralization of the samples is the problem. Similar difficulties were encountered in attempting to date soils where high levels of limestone were present at both the nearby Bass-Anderson Cave and at Medicine Lodge Creek in the Big Horn Basin. There seems to be a strong correlation between this dating enigma and the amount of limestone present in the matrix. Six radiocarbon dates have been obtained from the Sommers site (Table 1).

The reader should keep in mind that our crew does not have the services of a geomorphologist. The analysis of the stratigraphy presented above is preliminary and tenuous.

Chipped Stone Artifacts: Projectile points have not been found in all levels but do serve as temporal markers for at least ten different occupations (Figure 2). The oldest cultural level dated so far is 8,700 BP but it has not yielded any diagnostic artifacts. The earliest point is a fragmentary proximal end from a square-based, stemmed point (Figure 2w). This specimen is made from a dark colored chert with a heavy patina covering most of the surface. The edges

representing several cultural levels. In cleaning up the mess, we found that the upper 90 cm of the deposits were blackened from large quantities of ash and charcoal. The vandals had apparently concentrated their efforts in the more obviously culturally rich upper levels. The vandalism had extended below the dark, rocky matrix at only one spot. Apparently the vandals did not find enough in the light colored lower matrix to interest them. Consequently, the lower levels remained relatively undisturbed compared to the upper deposits. We probably lost 90% of the richest portion of the later occupations of the shelter in these upper levels.

We placed a permanent datum point on the western edge of the shelter and established a grid system over the site using the following methods. An arbitrary grid was originally used to delineate the area. Later, this system was tied into the Universal Transverse Mercator grid that placed our datum point at East 12,917.14 m, North 89,176.16 m, and at an elevation of 1,358.67 m AMSL.

We began excavating east and west from the large, vandalized area. Initially, cultural materials were plotted horizontally using tape measures. Elevations were recorded using a long barreled leveling instrument that was used by William Mulloy almost half a century ago. We have since acquired a theodolite and EDM. Recording now follows pretty much the same procedures described in the last issue of the Wyoming Archeologist (Larson 1991).

All matrix from the backdirt piles and from between cultural levels was put through a seven mm mesh dry screen. Matrix directly from the cultural levels is put through either a fine (one mm) mesh dry screen or washed through a fine waterscreen. Soil samples are taken at various levels and will be saved in plastic bags for future reference. Analyses of soils are beyond our present budget.

Stratigraphy: As stated above, a large portion of the upper levels of the deposits in the rockshelter had been destroyed. Unfortunately, the vandalized area also was directly in the center of the shelter where most prehistoric cultural activities took place, most artifacts were concentrated, and the clearest and most representative stratigraphy was located. By straightening up the profile on the west edge of the vandalized area, we were able to salvage details of some of the upper deposits. There is no doubt that much of the best information contained therein has been lost. There was no hope of salvaging any stratigraphic information from the eastern, northern, or southern periphery of the disturbed area.

The shelter soil deposits can easily be divided into two major zones (Figure 1). The upper zone is generally one m thick and consists of dark colored soils packed tightly between large quantities of rock fall. The dark color is a result of charcoal and ash mixed throughout the conglomerate. The extensive amount of fallen rock in the upper zone is an interesting phenomenon and serves as the most obvious distinction between the two zones. Fallen rocks are also found in the lower zone but at the rate of less than 10% of the amount present in the upper zone. It appears that the increase in the rate of rock fall began suddenly between 7,100 and 4,400 years ago when several large rocks or sections fell from the wall and overhang. From that time, rock fall has continued at a fairly uniform rate but in the form of smaller rocks. These range in size from 50 cm in diameter to pebble size, but generally less than 25 cm in diameter. The cause for the sudden change in the pattern of rock fall is not immediately obvious. We are tempted to speculate that it is due to an increase in moisture in post-Altithermal times. Moisture percolating through the pervious limestone walls would expand when frozen in the winter. This would force the rock to break apart in relatively small pieces. Whatever the cause, it is important to mention here that the rock fall protected the lower zone from flood waters. It also is probably responsible for the preservation of the lower deposits.

The soils of the lower zone began to form before our oldest date of 8,700 years ago and continued to accumulate until between 7,100 and 4,400 years ago. Cultural levels in this zone are thin with small activity areas. This suggests

1990) that remains to be excavated. Other Paleoindian sites in the general area include the Agate Basin camp and kill (Frison and Stanford 1982), Scottsbluff Bison Quarry (Schultz and Eiseley 1935:306-319), Betty Greene site (Greene 1967), Bass-Anderson Cave and the Red Cloud bison kill. Bass-Anderson Cave and the Red Cloud kill are sites that are currently under investigation by our archeological crew and reports will be prepared in the future.

Early Plains Archaic or Altithermal Period sites are rare in the area. One component at Hell Gap dated to that era (Frison 1978:45). Bass-Anderson Cave also has produced Early Plains Archaic cultural material (Eisenbarth and Earl 1989).

Middle and Late Plains Archaic and Late Prehistoric sites are abundant but few have been documented. Hell Gap contains components representing these periods that have not been excavated. An eroded fire pit at Hell Gap was salvaged recently by our crew. Associated with the pit were cord-roughened pottery sherds. Ceramic bearing sites are very common here but most remain to be systematically excavated. Other notable sites representing the latter part of the archeological record include Shaw Cave (Jennings 1955), Signal Butte (Strong 1935), Patten Creek (Haynes et al. 1965:39), the Glendo Sites (Mulloy 1965) and Gray Rocks (Zeimens and Tibesar 1979). A good, stratified Late Prehistoric camp and bison kill known as the Fisher Site is currently under investigation by our crew. Also, we have recently investigated a multiple grave near Torrington (the Dicken site) which dates to just over 1,500 years ago. A similar burial site was discovered in the early 1960s near Table Mountain but was destroyed before it could be studied. We are trying to interview as many people as possible that were involved with the Table Mountain site in an attempt to record at least some information.

This area was a hub of activity during Early Historic times and many Historic archeological sites are found in the area (see Zeimens et al. 1987).

Considering the above, it is obvious that this area is archaeologically rich. Unfortunately little research has been accomplished here commensurate with the magnitude and the significance of the resource.

THE SOMMERS SITE

This site is in a scenic, small, wooded, canyon next to a perennial spring. The limestone and sandstone canyon walls rise straight up from the canyon floor and provide good protection from the winds. The floor of the canyon is 80 m wide at this point and lies about 45 m below the canyon rim. The canyon drains a large area from several kilometers to the north and flows into the North Platte River less than 1,000 m southwest of the site. The shelter lies below the north wall and faces almost due south. For most of the length of the canyon, soils are shallow or nonexistent. Large rocks that have fallen from above have protected the soils in and near the shelter from seasonal flood waters. These soils form a terrace in front of the shelter. They are further protected because the shelter lies inside a meander in the canyon. Most flood waters swing naturally far to the south side and away from the shelter. Another shelter on the south and east side of the canyon is much higher than the north site and also contains stratified soils. These soils exhibit several lenses of charcoal but we do not know yet if cultural remains are present. One stratum here is manifest by a thick mat of small bones. Some of which represent a large species of bat (identified by Danny Walker, personal communication, 1991). We have conducted no excavations in this shelter.

Excavation Methods: The vandals had dug a large area about 20 m directly in the center of the deposits and several small holes at various places along the wall of the shelter. It also was obvious they had screened their dirt, collecting many finely flaked, symmetrical stone and bone tools. Our first project at the site was to screen that vandalized backdirt. We found the backdirt to contain many flakes, bones, charcoal and ash, fragments of grinding stones, and large quantities of fire fractured rocks. The vandals had apparently destroyed several fire pits or hearths

work at the site is still in progress.

THE AREA

The Sommers site is located in a geological region known as the Hartville Uplift. The uplift encompasses approximately 2,400 km^2 in east-central Wyoming. The uplift is best characterized as a hilly region that rises some 600 m above the plains and sandhills to the north, south, and east. It is separated from the foothills of the Laramie Range to the west and southwest by the North Platte River. The hills and ridges are sparsely covered with groves of ponderosa pine and junipers mainly in the southern end of the uplift. The northern end has very few trees. Interspersed among the hill tops and ridges are grassy slopes and parks. Many meandering arroyos, most of which ultimately drain into the North Platte River to the south and west, dissect the area. The very northern end of the uplift drains into the Niobrara River that heads near the town of Lusk. On the southeastern edge of the uplift, the hills rise rapidly from the plains and consist mainly of Precambrian granites and schists. Further west and north, the region is marked by large outcrops of limestones, sandstones, and quartzites of Devonian, Pennsylvanian, Permian, and Cretaceous age. Some of these outcrops are capped by Tertiary deposits.

The climate can be classified as semi-arid as the area receives approximately 33 cm of precipitation annually. This average does not accumulate evenly as the climate alternates between wet and dry periods that may be of several years duration. Most of the precipitation comes during the spring of the year as rain or wet, heavy snow. Winter snows are generally light and are often driven by strong winds. Seasonal temperatures are usually moderate for this latitude. They range in extremes from over 38° C (100° F) in the summer to more than -35° C (-50° F) in winter. Winter temperatures are often accentuated by strong winds. The average growing season is 130 days but can vary considerably from year to year.

The area has all the characteristics of a foothills ecological zone. These include an abundance of spring-fed streams, a diversity of faunal and botanical resources, and good sheltered areas compared to the surrounding open plains. Also, and perhaps more significantly to prehistoric human inhabitants, the area contains many outcrops of high quality cherts and quartzites important for the production of stone tools.

ARCHEOLOGY OF THE AREA

Sites are numerous in the Hartville Uplift region. It is difficult to decide whether tipi rings or quarries are the most ubiquitous as there are many hundreds of these two site types throughout the area. The quarry sites often exhibit huge pits that were thought by early white settlers to be "Spanish Diggings," a misnomer that remains the official designated name for several quarry locations today. Best evidence available at this time suggests that the quarries were mined throughout the archeological record of the area from Clovis through Historic times. Tipi rings may date back as far as 8,000 years ago (Irwin-Williams et al. 1973:40-53), but most are of more recent vintage. Open air camps are also common, especially near quarries, springs, streams, and playas. Another common site type is areas of large concentrations of fire pits. Just how these fire pits functioned with regard to prehistoric subsistence systems is poorly understood. However, they are so many in the area they must have played a major role in the lives of past cultural groups. The most common artifact found associated with the pits are milling stones (manos and metates). These suggest the features were related to procurement and processing of vegetable foods. One site type (bison kills) common in adjacent areas, is rare here.

Mammoth bones are present at several locations in the general area. So far, none of these have been found in direct association with cultural remains. The most notable Paleoindian site in the area is Hell Gap (Irwin-Williams et al. 1973). Only a small portion of the site has been excavated and those results remain to be fully analyzed and reported. Not far from Hell Gap is an archaeologically exotic Paleoindian red ochre mine (Frison 1988:23-24; Stafford

THE SOMMERS SITE: A PROGRESS REPORT FROM THE HIGH PLAINS CHAPTER

by
George M. Zeimens, Geri McIver, Harry Earl,
R. Clayton Housh, Dennis Eisenbarth,
Gary Alkire and Dewey Baars

INTRODUCTION

The Sommers site is a stratified rockshelter located in Platte County, Wyoming approximately 7.25 km northwest of the town of Guernsey. Sandra Sommers and Mary Silsby from Glendo led us to the site in 1989 to show us a pictograph. Upon arrival at the sheltered overhang, we discovered that an area approximately 4 m x 5 m had been haphazardly excavated recently by some as yet undetermined party. The vandalized backdirt had been screened but still contained large amounts of debitage, burned rock, charcoal and bone. Examination of the walls of the irregular pit left by the vandals revealed that the site contained several rich, stratified cultural components of unknown age.

Since the rockshelter is in a remote location, it is not possible to monitor activities in the area. We therefore decided to excavate a sample of the cultural deposits before vandals destroyed the entire site. Excavations began in October of 1989 and are still in progress. Work is sporadic and is conducted mainly on weekends. It also must be coordinated with Wyoming Army National Guard activities since we cross their training areas to access the site. Work progresses under the direction of George Zeimens assisted by students from Eastern Wyoming College, members of the High Plains Chapter of the Wyoming Archeological Society, members of the Western Plains Historic Preservation Association, Inc. and other volunteers.

Many sites in this area are lost each year because of land development, natural erosion and vandalism. Our crew is small and our budget is meager, but we do what we can to salvage sites that will otherwise be lost. We simply cannot deal with all the sites that need attention. We must choose to work with those eroding sites where the archeological record stands to lose the most. We do not have the luxury of being able to develop an elaborate research design and to select the sites we work based on well-defined research models or theoretical propositions. If we could, this would be in keeping with what we fully recognize and accept as the sound, professional, scientific paradigm in which the collection of archeological data should be pursued. On the other hand, to idly stand by and watch a site wash down the gully for lack of a good deductive research model is unacceptable. We also feel that it is contrary to both sound scientific logic and good common sense. After all, archeological sites are non-renewable. Once the data they contain have eroded away they are lost forever to the scientific community and to humanity. Our salvage efforts are accomplished to the best of our ability given the limitations recognized above and in keeping with the spirit and philosophy of the founders of the Wyoming Archeological Society. We believe that our efforts will contribute to a better understanding of the prehistoric record of the area.

The following discussions are a preliminary report on our work at the rockshelter. Cursory descriptions of the area, stratigraphy, artifacts, etc., are all that are provided at this time since

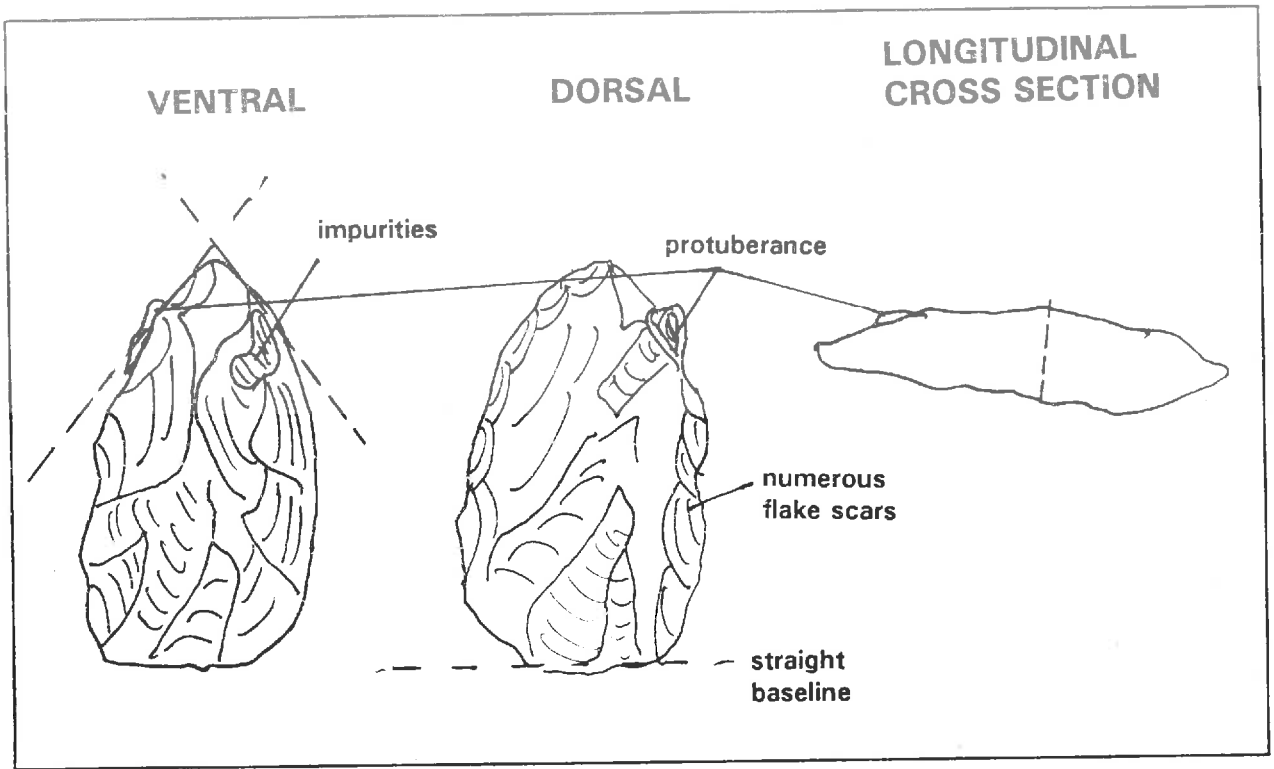

Figure 10: *Biface #0009 from Patrick Cache, Goshen County, Wyoming.*

Artifact #0009 (Figure 11, 10; Table 1): This artifact appears to be a bifacial preform with evidence of extensive flaking to form a lanceolate point shape. Its manufacture may have been hampered by impurities evident on its ventral surface in the upper right quadrant (Figure 10, ventral view). There is also a definite flaw forming a protuberance on the dorsal surface and edge in that surface's upper right quadrant (Figure 10, dorsal view). The base line on the proximal end has been formed nearly straight across the base. Both edges are beveled, bearing many flake scars. The protuberance caused by the impurity may have caused the abandonment of the piece. The piece also might be a work in progress, with some though being devoted to the best way to proceed. The piece's overall outline suggests a very definite projectile point shape. Flakes radiate outward to the edges with gentle slopes of approximately 20° angles.

Garry Alkire
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Torrington, Wyoming

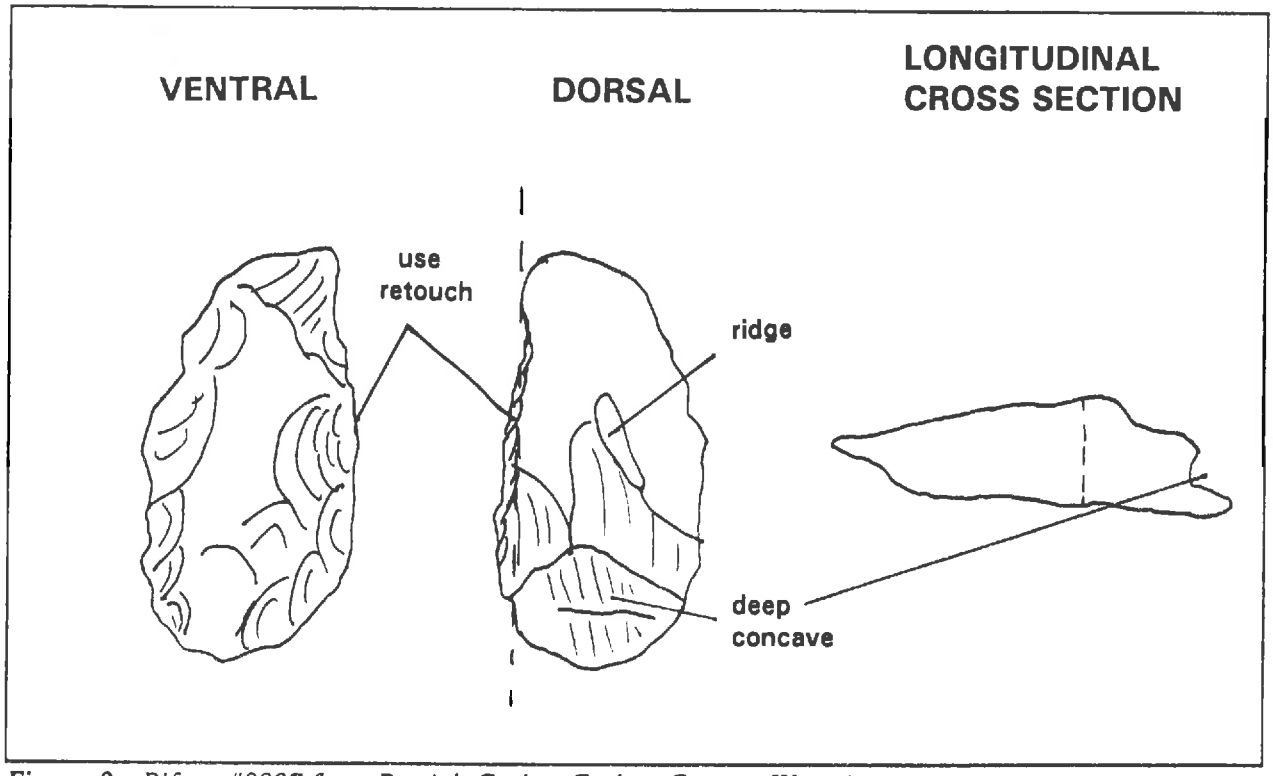

Figure 8: Biface #0007 from Patrick Cache, Goshen County, Wyoming.

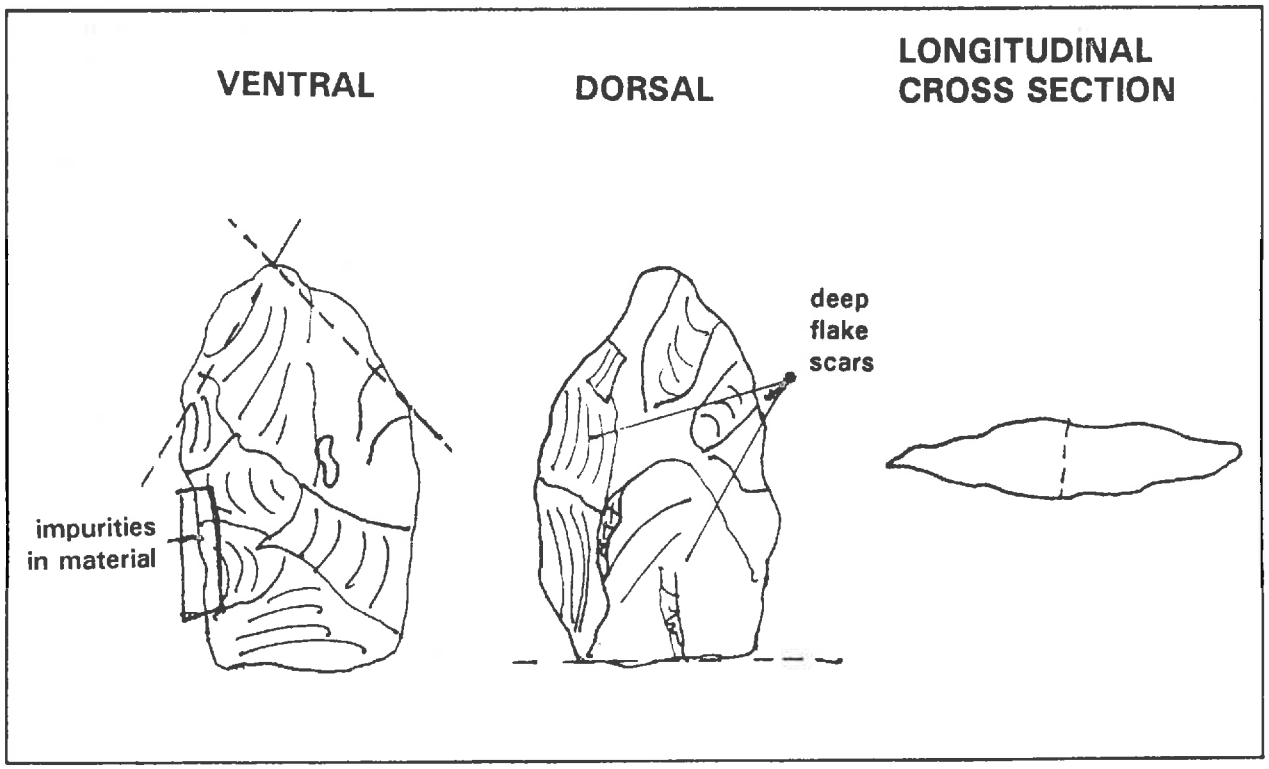

Figure 9: Biface #0008 from Patrick Cache, Goshen County, Wyoming.

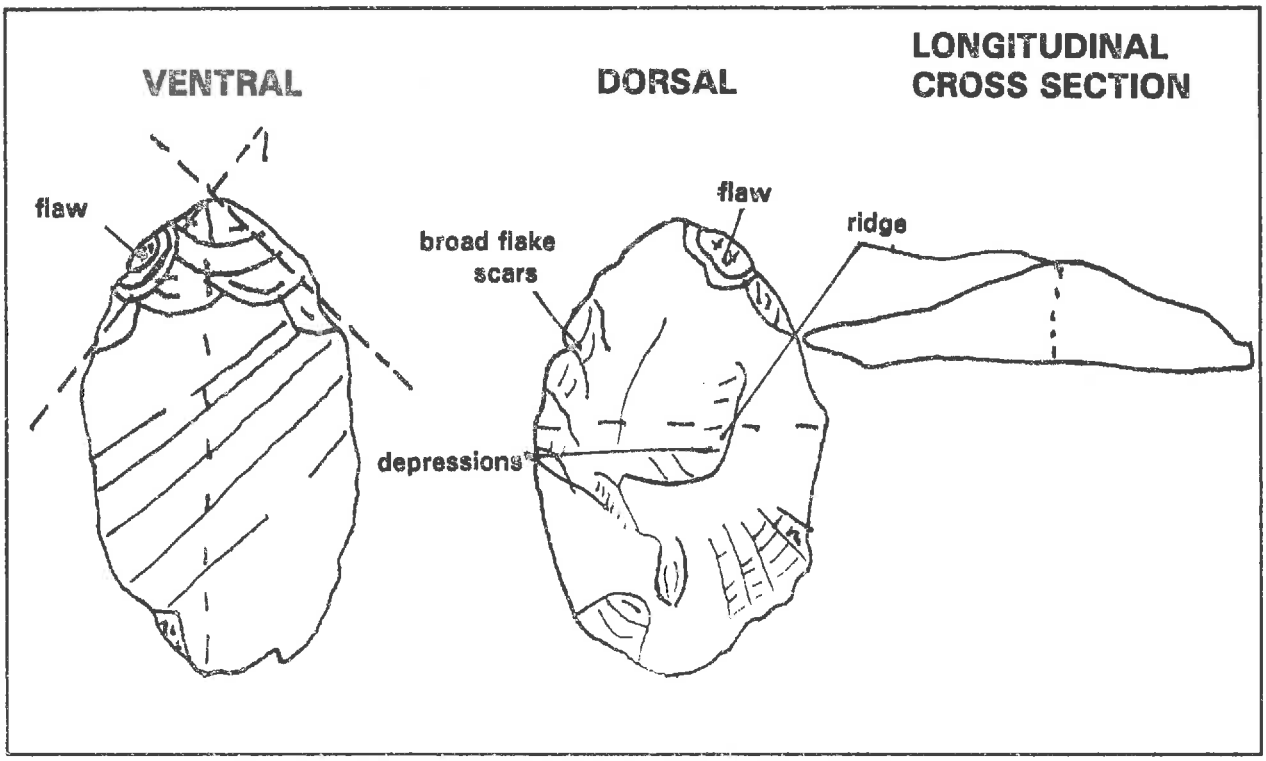

Figure 7: Biface #0006 from Patrick Cache, Goshen County, Wyoming.

stages for a projectile point. However, it was possibly not finished because of the material flaw at its distal end. The piece also shows some evidence of difficulty with the thinning flakes on its dorsal surface. Overall, the material appears somewhat coarse and grainy. The piece has a notch broken out in the area of the material flaw, undoubtedly unintentional.

Artifact #0007 (Figures 1G, 8; Table 1): This is a bifacial preform with a fairly smooth ventral surface showing many flaking scars. The dorsal surface is round, with the median portion being the thickest. The ends taper down to beveled edges. The flaking scars appear much smoother on the dorsal side. The pieces left side (Figure 8, dorsal view) appears deliberately formed into a straight line. This may have been to form a scraping tool. There is evidence of serrations along that same edge as well. There is an extremely large scar at the proximal end of the piece. This caused a deep depression and an abrupt end to the raised portion. The material's color and texture seem uniform throughout the piece. The dorsal surface shows 35-40° angles from its center portion downward to the edges. Overall, the stone has a smooth, almost polished, appearance.

Artifact #0008 (Figure 1H, 9; Table 1): This artifact is a bifacial preform whose shape definitely suggests it was designed as a projectile point. There is a straight base line at the proximal end with a point toward the distal end. Both surfaces of the piece are rounded, with the thickest portions being toward the median. The ventral portion, however, is slightly flatter. Both surfaces show extremely broad flaking scars. The dorsal surface has sides angled down toward the beveled edges at approximately a 30° angle. The ventral surface shows 15-30° angles in all directions to its edges as well. There is evidence of impurities in the material along the left edge (Figure 9, dorsal view). That area shows unintentional notches and irregular fracturing of the edge. Most flake scars terminate at the center of the piece; some being almost one-quarter the size of the artifact.

approximate 30° angle and at approximately 55° to the left. This creates a short, steep edge on the left. One large flake scar toward the proximal region leaves a noticeable depression nearly 10.0 mm wide. The piece's right edge (Figure 5, dorsal view) may show use retouching, but the edge is not formed into a straight line. The material shows an apparent grainy flaw extending in a transverse direction across the entire piece. This is especially evident on the ventral side. This piece may have served as a bifacial tool, and not a projectile point preform. The longitudinal cross section shows a flat ventral surface and a prominent median ridge. That ridge peaks in the central portion of the dorsal surface.

Artifact #0005 (Figures 1E, 6; Table 1): This artifact is formed in the approximate shape of a projectile point. There is a straight baseline on the piece with evident pointing of the distal end. Large flaking scars cover the ventral surface, with one large smooth portion in the center. The dorsal surface shows many large flaking scars, completely covering that surface. The dorsal side also has a slight ridge to the left of its median and several transverse flake scars. There is a material flaw in the tip area, left of its center axis (Figure 6, ventral view). The ventral side shows a prominent, broad flake scar covering almost the entire surface of the proximal end. This has evidently shaped the straight base.

Artifact #0006 (Figures 1F, 7; Table 1): This artifact appears to have a definite triangular shaping or pointing at its distal end. There is also a vague rounding of the proximal end (Figure 7). The ventral surface is smooth and flat, showing definite percussion scars on the distal end. There is also a very prominent material flaw on the leading left edge of the distal end, close to the point. There is one very large depression in the central portion of that surface, with several broad percussion scars. This piece may be in the early preparatory

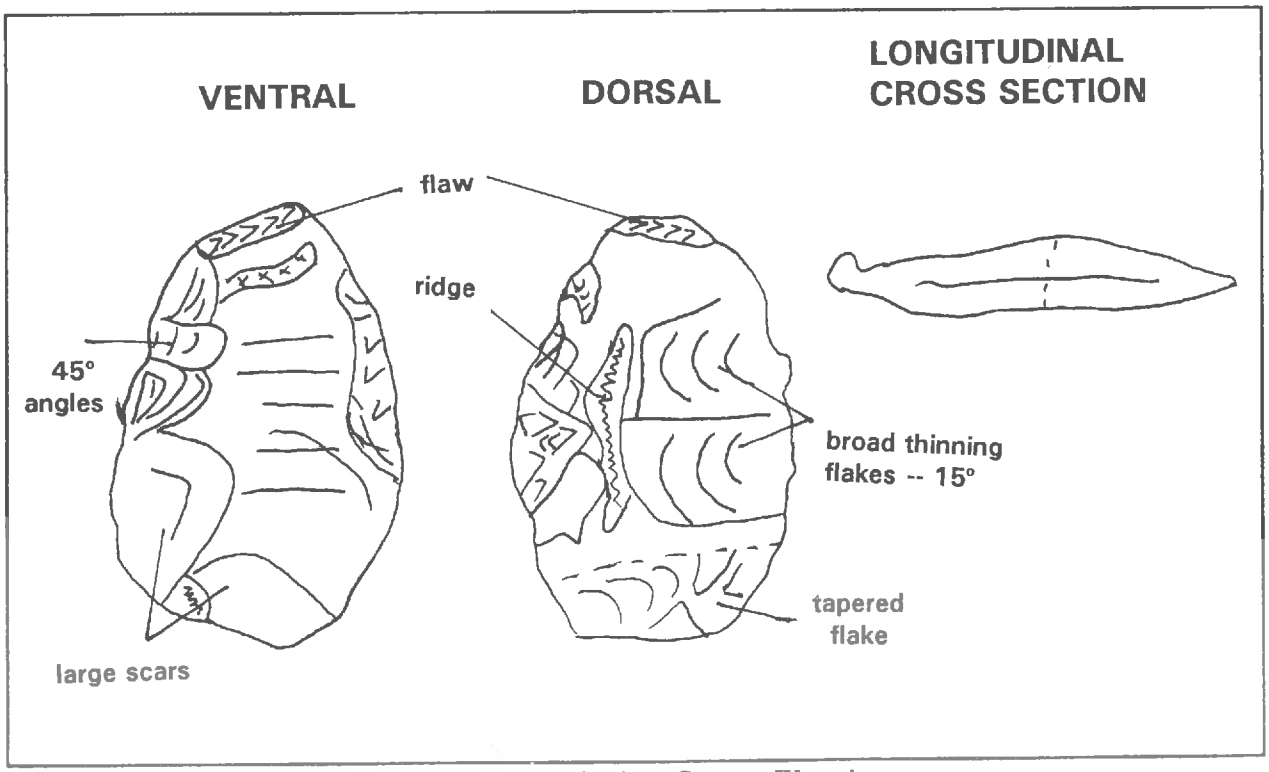

Figure 6: Biface #0005 from Patrick Cache, Goshen County, Wyoming.

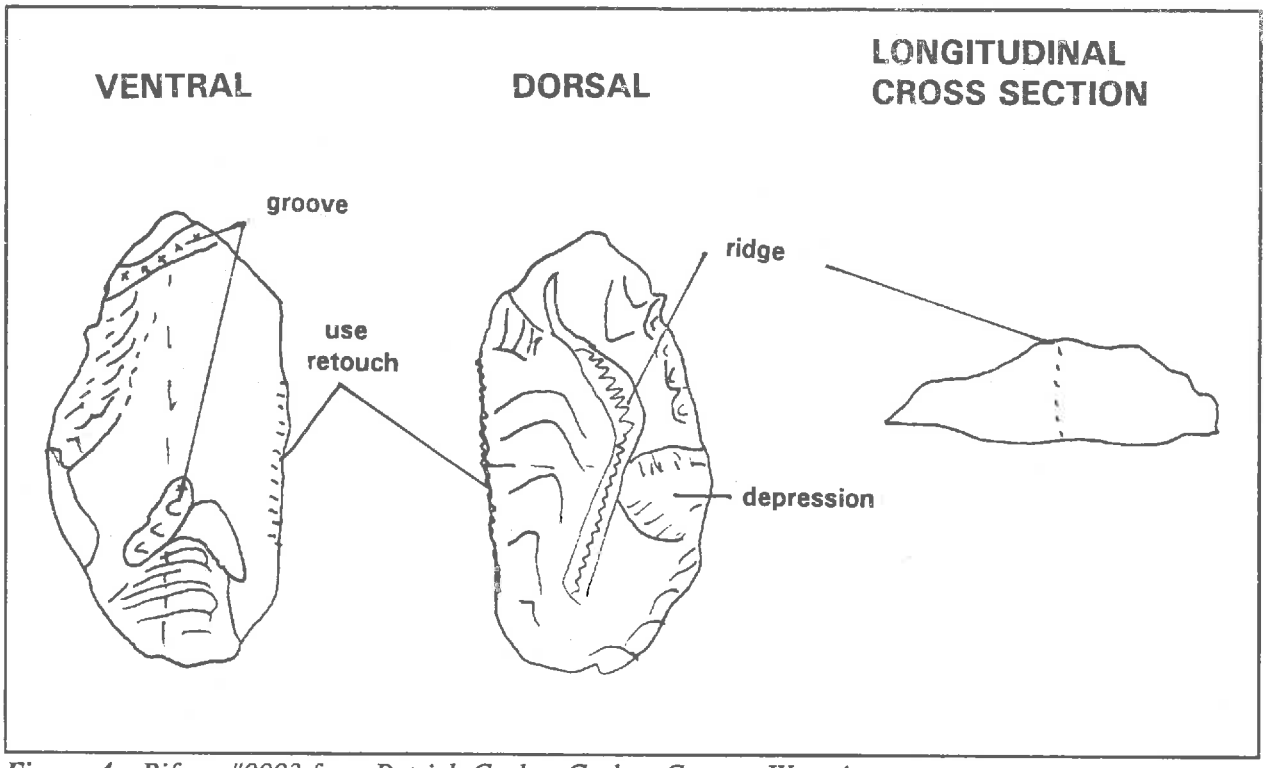

Figure 4: Biface #0003 from Patrick Cache, Goshen County, Wyoming.

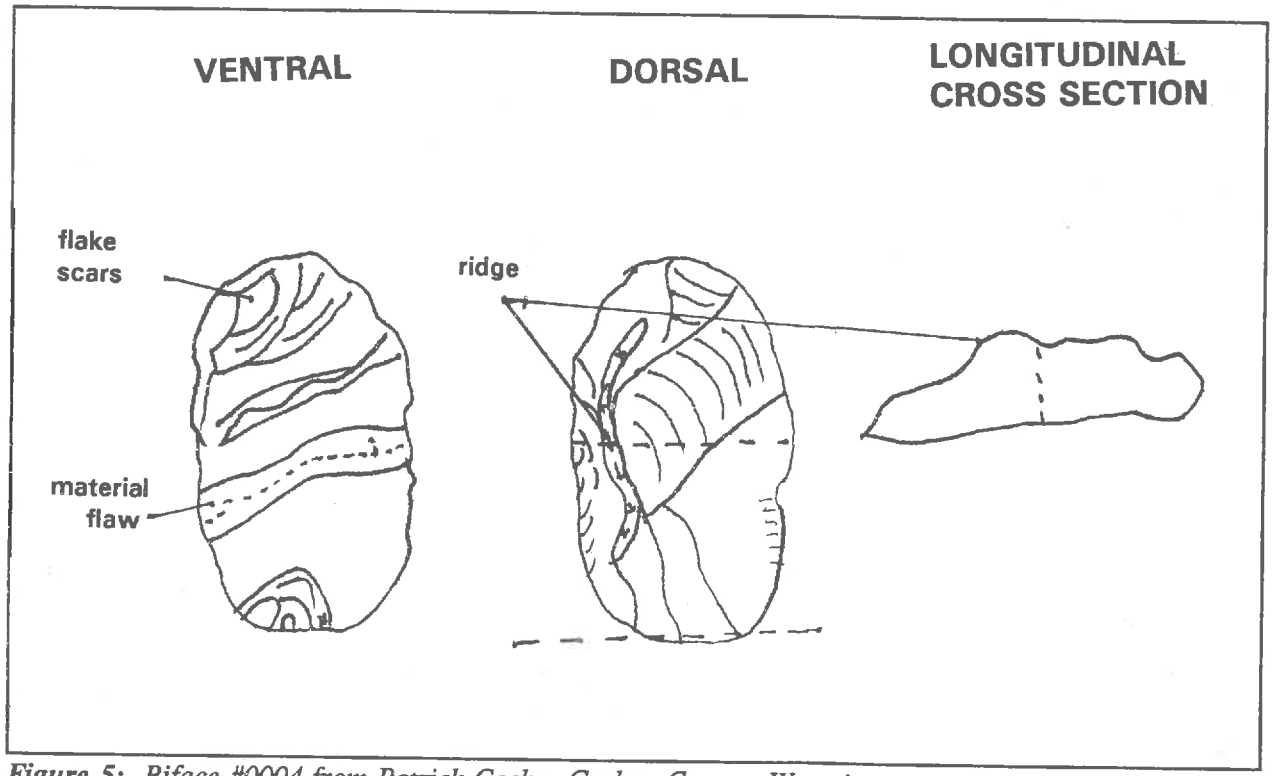

Figure 5: Biface #0004 from Patrick Cache, Goshen County, Wyoming.

Artifact Number	Maximum Length	Maximum Width	Maximum Thickness	Weight	Color	Material	Figure Numbers
0001	64.0 mm	30.0 mm	10.0 mm	24.45 g	gray, with reddish tinge; some dark black speckled areas; white rind	Spanish Diggings type chert	Fig. 1A,2
0002	55.0 mm	31.0 mm	10.0 mm	18.46 g	dark carmel; reddish streaking toward distal end of dorsal side; black spotting proximal end of ventral side	Spanish Diggings type chert	Fig. 1B,3
0003	59.0 mm	29.5 mm	12.0 mm	20.65 g	dark red	Spanish Diggings type chert	Fig. 1C,4
0004	51.0 mm	29.0 mm	11.5 mm	17.25 g	dark red; some thin black striations	Spanish Diggings type chert	Fig. 1D,5
0005	55.0 mm	37.0 mm	12.0 mm	26.95 g	dark red distal end; changing to dark carmel at proximal end; thin black banding on midline	Spanish Diggings type chert	Fig. 1E,6
0006	63.0 mm	37.0 mm	10.0 mm	32.23 g	dark carmel; reddish tinge tinge; some thin black bands; variations in tones of color	Spanish Diggings type chert	Fig. 1F,7
0007	54.0 mm	28.5 mm	12.0 mm	18.00 g	dark red	Spanish Diggings type chert	Fig. 1G,8
0008	50.5 mm	29.0 mm	13.0 mm	18.90 g	dark carmel, some areas darkening to chocolate	Spanish Diggings type chert	Fig. 1H,9
0009	53.0 mm	30.0 mm	10.0 mm	16.47 g	carmel with mottled darker brown spots; impurities much lighter shade; grainy appearance	Spanish Diggings type chert	Fig. 1I,10

Table 1: Measurements, color, material type, and figure references on nine bifaces from the Patrick Cache, Goshen County, Wyoming.

slope downward at approximately 30° to the left and 45° to the right side of the piece. The longitudinal cross section shows the highest point of the dorsal ridge to be the approximate center of the piece. This tapers to the beveled edges. The dorsal surface also shows evidence of many thinning flake scars. Some of these are nearly one-half the length of the piece.

Artifact #0004 (Figures 1D, 5; Table 1): This artifact is more rounded on one end with a flattened baseline. Its ventral surface appears extremely flat. The dorsal surface displays prominent ridging toward the left side. This ridge extends down the long axis (Figure 5, dorsal view). Very wide flaking scars angle downward on the right side of this ridge at an

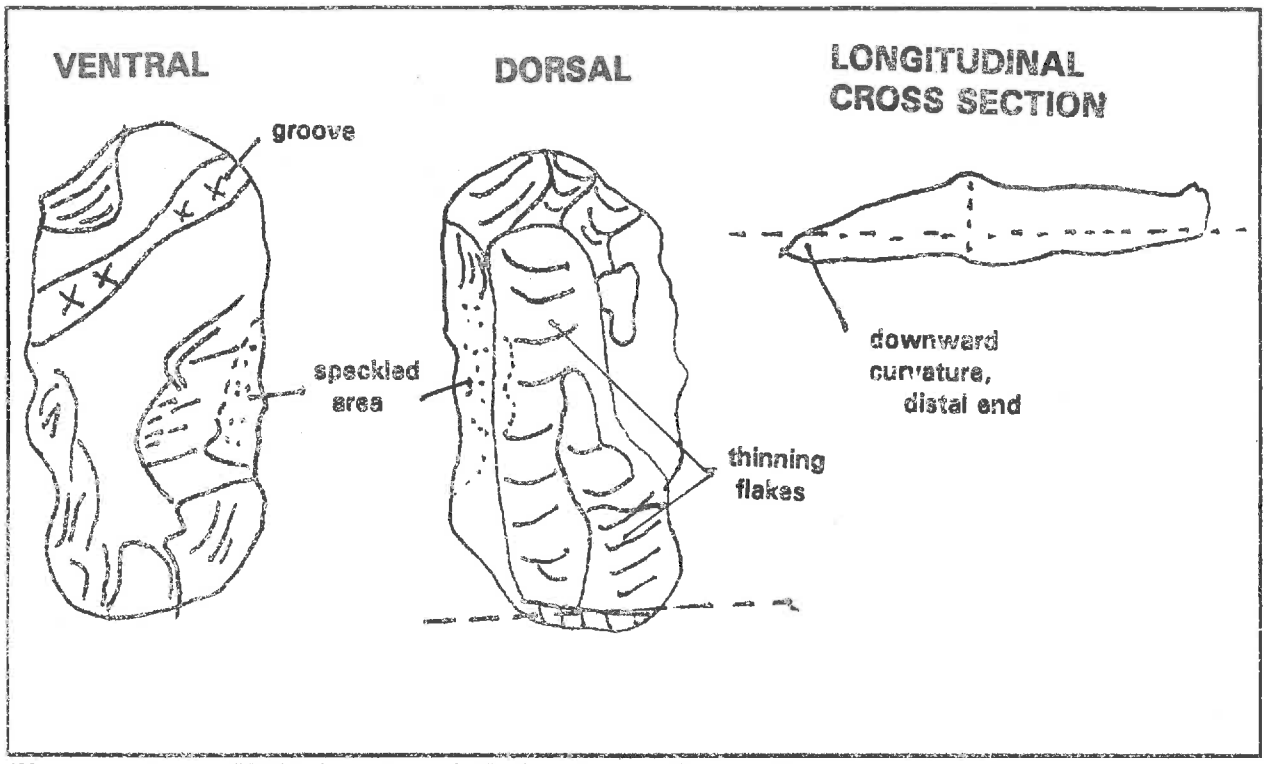

Figure 2: Biface #0001 from Patrick Cache, Goshen County, Wyoming.

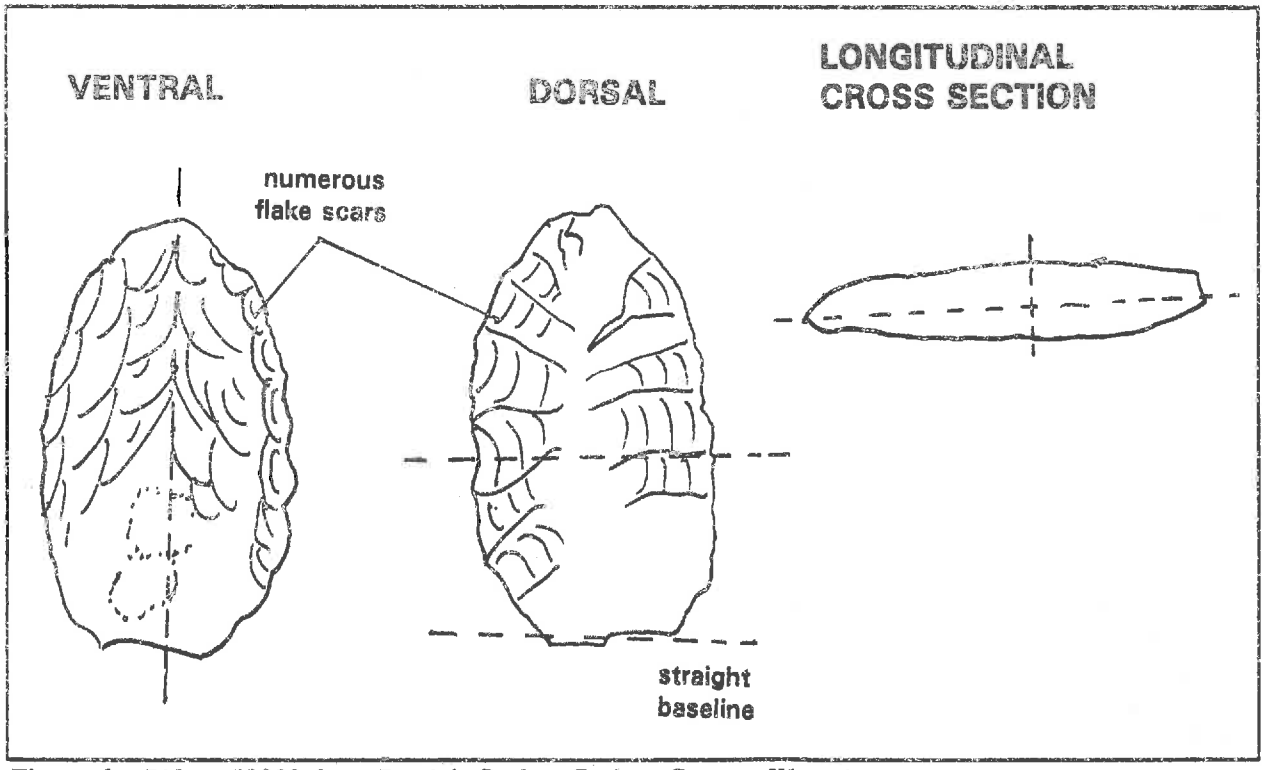

Figure 3: Biface #0002 from Patrick Cache, Goshen County, Wyoming.

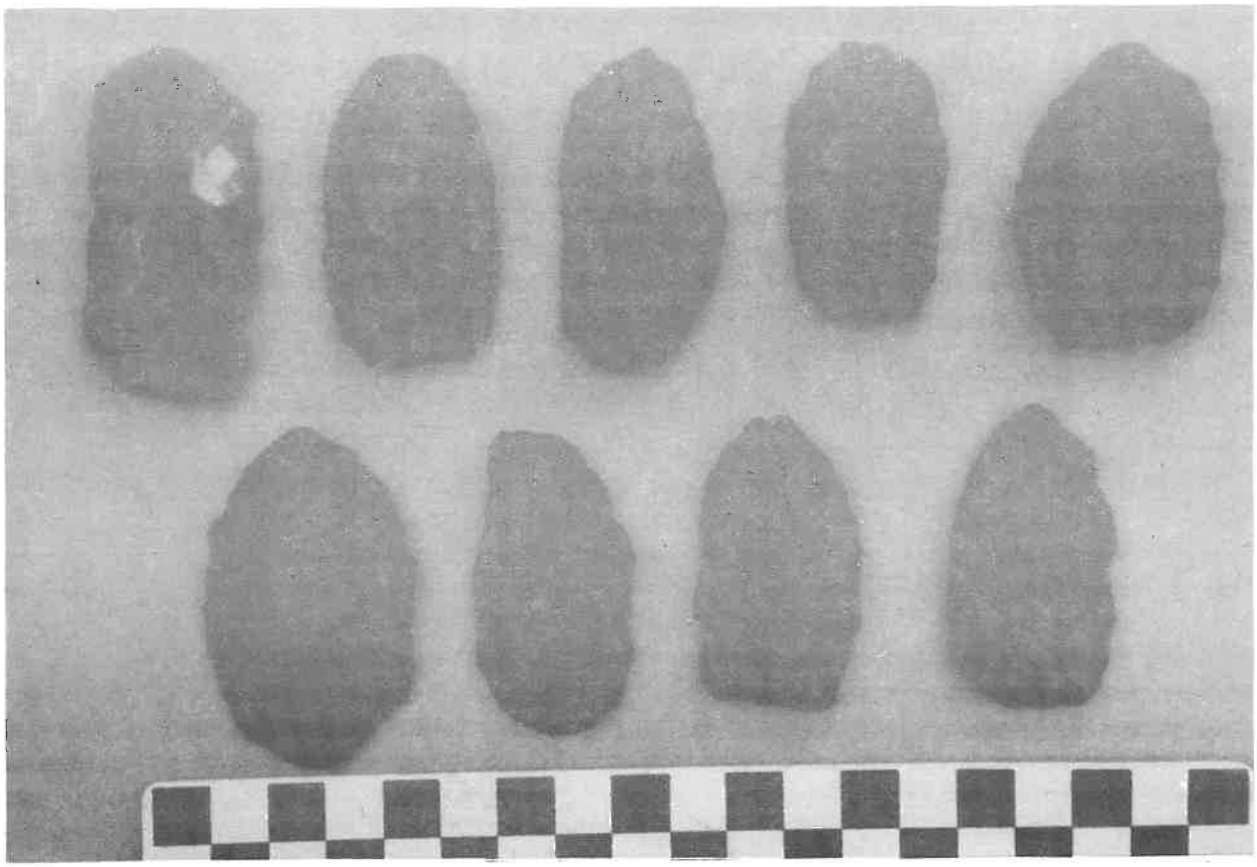

Figure 1: Bifaces from the Patrick Cache, Goshen County, Wyoming.

long axis. There is an area of dark speckled material along its left side (Figure 2, dorsal view). There is also an area of what may be the original cortex on the highest portion of the dorsal surface in the upper right quadrant of the piece. Its ventral side is flat with less prominent flaking scars. The distal end is smooth, but retains evidence of the original bulb of percussion formed when this flake was detached from the core.

Artifact #0002 (Figures 1B, 3; Table 1): This bifacial artifact appears as an approximation of a projectile point shape. The longitudinal cross section view (Figure 3, section view) shows a tapering toward both edges, as well as toward both ends. The flaking appears fairly uniform. Many flake scars, approximately 1-3 mm wide, range over the entire surface. The base appears fairly straight. The dorsal surface has a blunted center ridge. The dorsal side slopes evenly at approximately a 30° angle downward toward the beveled edges. The ventral side is flatter, with the sides sloping approximately 15-20° to the edges.

Artifact #0003 (Figures 1C, 4; Table 1): This artifact appears to be a bifacially prepared side scraping tools. Definite use retouch can be seen along most of the entire left edge (Figure 4, dorsal view). This retouch forms a straight edge with fine serrations along the tool. The ventral surface of the specimen is flat and smooth, suggesting it was a large flake removed from a core. Its dorsal surface has pronounced central ridging slightly crescent shaped and tapering toward the ends. There is no definite straight line base, although the proximal end (Figure 4, lower end) appears slightly rounded. Flaking scars from the central ridge on the dorsal side

THE PATRICK CACHE, GOSHEN COUNTY, WYOMING

by
Gary Alkire

INTRODUCTION

The artifacts discussed here are from a collection owned by John Patrick. They were once part of a much larger cache discovered by Mr. Patrick in 1952. The cache was found eroding from a sand dune near Mr. Patrick's home. The site is near Rawhide Creek, approximately 18 miles north of Lingle, Wyoming. Mr. Patrick remembers that many items in the original collection were much larger than the specimens represented here. They may have been finished or near finished projectile points. Unfortunately, all but the items described below have disappeared through the years.

No further information about exact shaping and size of the finished products, or the debitage resulting from their manufacture, is available. These artifacts may represent a tool cache of works-in-progress whose owner was prevented from returning for them for one reason or another. The cache also may represent the collected works of a small party of manufacturers, accounting for the large number found in the original cache (estimated at 50 by Mr. Patrick).

The observations recorded here are superficial and self-explanatory. They seek to record the artifacts' more obvious physical properties. This is not a scientific analysis *per se*. It is an attempt to record some of the artifacts' attributes as a possible data base for further investigations. This will be especially important if the remainder of the items from the cache are relocated, or new information becomes available.

GENERAL DESCRIPTIONS

The sample discussed here is nine chert bifaces (Figure 1, Table 1). Each shows definite flake scars and bifacial thinning. Each also shows a deliberate ovoid symmetry with one end being slightly pointed and the other end generally straight. This suggests that seven of the specimens may have been projectile point preforms while the other two are probably side scrapers. One specimen shows evidence of previous use, evidence by continuous retouch scarring along one edge. Most have one surface more "flattened" than the other; this will be called the ventral side. The opposing side (usually with prominent doming, ridging, or convexity) is called the dorsal side.

All drawings are labeled as to the surfaces appearing in the top views. The longitudinal cross sections are drawn with the ventral side toward the bottom of the drawing. The ends toward the top of the drawings are called the distal ends. These are usually somewhat pointed. The blunted (sometimes straight) lower ends are called the base or proximal ends. Degrees of sloping toward outer edges are rough approximations of the edge angles made by the flaking process. Many of the artifacts appear to be composed of similar material, perhaps as many as three each originating from two cores. All physical measurements are approximations of the widest or thickest portions of each individual specimen.

THE PATRICK CACHE

Artifact #0001 (Figures 1A, 2; Table 1): The material in this artifact is distinctly different from the other pieces. The length is definitely greater than any of the others. This is especially so in proportion to its width. The dorsal surface is roughly convex. It has pronounced thinning flakes running perpendicular to the length of its

ANNOUNCEMENTS

On September 16, 1991, Wyoming Governor Mike Sullivan presented to Henry Jensen of Lysite, a service award for enduring contributions to Wyoming history and archaeology. Henry is a past-President of both the Wyoming Archaeological Society and the Wyoming State Historical Society. He is shown here receiving a certificate and medal from Governor Sullivan. We all join the Governor in a hearty congratulations to Henry for a job well done!!

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