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T-W-DIAMOND, A STONE RING SITE IN NORTHERN COLORADO

by

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ABSTRACT

The T-W-Diamond Site, 4LR200, is a large teepee ring village on the edge of the High Plains in northern Colorado. Seventeen out of the 47 remaining stone ring areas were excavated or tested by the Colorado State University Archaeological Field School in 1971. Artifacts, fire hearths and midden materials were scarce but indicated the domestic nature of the structures. Stone and ceramic artifacts indicate cultural affiliations with the Late Prehistoric period as reported at Birdshead Cave, and the Piney Creek sites in Wyoming; and at the Agate Bluff Rock Shelters, and the Dipper Gap site in northern Colorado. Carbon-14 dates of A.D. 1020±230 years and A.D. 1170±220 years support the time of the occupation. A third date of A.D. 400±340 seems improbably early. It is hypothesized that the village was occupied seasonally for a short time by a small group of people, perhaps of Shoshonean affiliation, exploiting a mixed-base subsistence economy.

INTRODUCTION

The T-W-Diamond teepee ring site, 5LR200, is on the ranch of J. Evan Roberts about three miles north of the town of Livermore, in Larimer County, Colorado. The name of the site is taken from one of the brands which Mr. Roberts uses in his cattle business. The site is about 23 miles northwest of Fort Collins, and about 22 miles south of the Wyoming border. Evan Roberts has a continuing interest in the prehistory of the area and his efforts in bringing the site to our attention, and granting permission to excavate, are greatly appreciated.

Colorado State University is engaged in a systematic exploration of the archaeology of Northern Colorado. Although sites are numerous and diverse, including for instance the famous Lindenmeier Folsom site, only a few have been scientifically excavated and reported. The need for an organized program of research is critical. Amateur collectors are stripping sites of diagnostic artifacts, especially projectile points and other flaked stone tools. In addition, Colorado has one of the fastest growing populations in the United States, with the attendant disturbance of the landscape caused by housing developments, highways, recreation areas, and intensified food producing activities.

The T-W-Diamond site was selected because, although stone ring sites are relatively common on the western Plains, they are rarely excavated. Their functional identity has been a subject for discussion because of the paucity of material culture in them (Kehoe 1960; Mulloy 1958).

LOCATION

The T-W-Diamond Site is at an elevation of 6220 feet above sea level, on top of a ridge in the lower foothills east of the Laramie Range of the Rocky Mountains. The site is in Section 15, T10N, R70W, at about 45°2' North Latitude and 105°48' West Longitude. The ridge is one of the many uplifted, tilted, sandstone and limestone foothill formations dissected by tributaries of the Cache La Poudre River, which empties into the South Platte River east of Fort Collins. The small intermittent streams in the site area are fed by runoff from storms and occasional springs. A seep is present during the

spring months in the canyon immediately west of the ridge on which the site is located, and there is a large permanent spring in another canyon less than a mile to the east. The permanently flowing North Fork of the Cache La Poudre River is slightly more than three miles southwest of the site. Average rainfall for the weather stations at Fort Collins and LaPorte, some 23 miles to the southeast and 1000 feet lower in elevation, is 15.9 inches.

Within sight of the occupation area, at a distance of less than ten miles to the east, are the gently rolling Great Plains, and to the west the increasingly high ranges of foothills rise ultimately to the continental divide. Three or four days travel on foot, even for a group encumbered with belongings and largely dependent old people and children, would be sufficient to give access to one of several climatically distinctive ecological zones with their different plant and animal resources.

The lower foothills area in the vicinity of the site are covered with short range grass such as Blue Grama, and with such small shrubs as sage, serviceberry, and wild currant. A number of the local species have edible parts or products (see Table 1, from Harrington 1967).

Occasional junipers dot better-watered slopes of ridges and canyon bottoms, and there is an outlying stand of Pinyon Pine a few miles south of the site.

Numerous birds and animals occupy this low foothill zone, some of the larger species being water fowl, antelope, several species of deer and rabbit, coyote, porcupine, mountain lion, bobcat, badger, bear, fox, and prairie dog. Bison, wolf, beaver, and turkey would have been present aboriginally.

EXCAVATION

The immediate site area was intensively surveyed for all cultural materials before excavation began. In addition, the entire top and sides of the ridge were collected throughout the season. The surface of the site itself produced very little: one potsherd, a core, four scrapers, and 14 flakes. Were it not for the stone rings, the ridge would have been difficult to recognize as a site. The scarcity of materials probably reflects both the paucity of artifacts in the site and the activities of amateur collectors. The ridge as a whole produced a slightly larger collection reflecting the significantly greater area involved. This collection included proportionately greater numbers of projectile points, bifacially flaked blades, and scrapers compared to the number of flakes. It is hypothesized that the higher proportion of tools to flakes indicates hunting, butchering and collecting activities (rather than tool manufacturing) of many

TABLE 1
Plants with edible parts or products
found near the T-W-Diamond Site

Species	Common Name	Parts Utilized
Allium cernuum	Wild Onion	bulb
Amelanchier		
alnifolia	Serviceberry	berries
Atriplex patula	Saltbrush	seeds, greens
Cirsium spp.	Thistle	roots, stems, greens
Cymopterus spp.	Wild Celery	roots, early stems
Lewisia rediviva	Bitteroot	root
Opuntia spp.	Pricklypear	pulp
Oryzopsis		
hymenoides	Indian Rice Grass	seeds
Prunus americana	American or Plum	fruit
Prunus virginiana	Chokecherry	fruit - berries
Psoralea esculenta	Indian Breadroot	root
Rhus trilobata	Squawbush	fruit - berries
<i>Ribes</i> spp.	Gooseberry	fruit - berries
Ribes Aureum	Squaw currant	fruit - berries
Rubus strigosus	Red Raspberry	fruit - berries
Sambucus spp.	Elderberry	fruit - berries
Yucca baccata	Yucca or Spanish Bayonet	seeds

peoples over a prolonged period of time. The diverse materials, morphology, and flaking techniques support this conclusion, and it is presumed that few, if any, of these specimens are from the occupation of the T-W-Diamond site itself.

Excavation was focused on stone rings and the immediately surrounding areas. More extensive stripping of the area between rings was attempted but the results were so meager (the average consisting of a single flake per square meter with no indications of midden deposits, outside hearths, roasting pits, or burials) that the effort was abandoned so as to recover the most information with the limited time at our disposal.

Rings were selected for excavation because of their preservation, their association with "relatively abundant" (more than two) flakes on the surface, and their position on the site. It was considered desirable to dig rings in different portions of the site in order to investigate possible differences in function, contents, temporal placement, and possible cultural affiliations. Some rings were selected because of small clusters of rocks near their centers which were thought to be fireplaces. This hypothesis was confirmed in some rings by finding of tiny bits of charcoal under some of the rocks, and observing that the surfaces of some of them bore the angular edges associated with heat fracture.

Bedrock was from one to 18 inches below the

surface. Early in the season all rings were excavated to bedrock. After it became apparent that artifacts and other cultural debris ceased at a maximum depth of six inches below the bottoms of the hearth and ring stones, excavation stopped at this level. All excavated earth was passed through 1/4 inch mesh screen, a time consuming process which yielded about half of the artifact sample.

Locating recognizable floors was a problem throughout the season. There was no differential hardness, coloring, composition, or concentration of interior features or artifacts at any level inside the rings. Most of the rocks forming the rings and the hearth areas were, however, of a uniform depth. In addition, many of the cultural materials were on or near this level. It is probable that the stone rings and fireplaces were placed directly on the ground surface at the time of construction.

ARCHITECTURE

Forty-seven teepee rings can still be seen on the site, distributed irregularly along the grassy parts of the ridge (Fig. 1). The stone outlines were composed of small rocks from the underlying limestone bedrock. There were clusters of rings without apparent patterns, but none of the rings overlapped or touched another ring (Fig. 2).

There may have been other rings aboriginally. Mountain mahogany and other shrubs were growing where the shallow topsoil had eroded off of the rock-strewn bedrock, and architectural features could not be recognized. Surface artifacts were about as common in such areas as in the grass covered remainder of the ridge where the rings were present.

The stone rings were scattered without apparent order for more than a quarter of a mile along the ridge top. Forty-seven of them were mapped and 17 were excavated or tested.

The stones were of the same limestone bedrock that underlay the site. Individual specimens ranged from about fist-sized to boulders of 20-30 pounds. None were too heavy for one individual to carry. Diameters of the rings varied between about 14 and 19 feet, with most of them between 16 and 18 feet. It appeared that the makers intended them to be circular, although occasional rocks were out of position, probably having been kicked by cattle or other animals. There were no recognizable entry areas.

Many rings had a concentration of relatively larger stones on the northwest side. This is the predominant wind direction in the area at the present time. Frison (1967:26) reports a similar configuration at site 48J0311 north of Buffalo, Wyoming. The exposed ridge at T-W-Diamond receives tremendous gusts of wind today, and it is speculated that it might have been covered more extensively with juniper or other sheltering trees during the occupation. There are better sheltered areas in the adjacent canyons if more protection had been desired when the structures were built.

Hearths were the only internal featurs found in the rings, being present in at least seven of the rings excavated. In most cases they were identified by centrally located clusters of small heat-fractured rocks. A few flecks and small pieces of charcoal were under or beside these rocks as well as under and beside the stones in the rings. In a few rings there were no hearth stones but there was an area of reddish discoloration of the soil and a few flecks of charcoal. In still other rings there were no indications of a hearth area at all. No pits, hardened soil, ash, or charcoal lenses were noted in any feature. The fires must have been small and short-lived. It is hypothesized that the wind blew hearth areas clean soon after the protective superstructure was removed.

Artifacts were predominantly inside the rings at or near the level of the lower surfaces of the stones. Very few specimens were below the level of the ring stones. In five excavated structures, there were pieces of unshaped red sandstone with a size range like that of the limestone rocks used in the ring outlines. They exhibited no signs of heat fracture or use. Since the bedrock is limestone, they must have been carried into the rings from elsewhere. Their function is unknown.

In summary, floors exhibited no recognizable differences in hardness, color, or contents from the rest of the fill. The ring and hearth stones were at about the same level within each ring, probably that of the surface on which the structure was built. There were some artifact concentrations at about the same depth, and this level could be called a "floor" with some degree of confidence. The rings are interpreted as family shelters occupied for a short period of time. Whether they were of hides or brush or both cannot be determined from the evidence. The scarcity of artifacts, the lack of midden deposits and the badly defined hearths all support a short occupation. It is possible that the rings represent a single camp, a hypothesis supported by the completeness of existing rings and by the fact that they do not touch or overlap one another. On the other hand, their number (47) and the spread in the Carbon-14 dates, from A.D. 400±340 to 1170±220, may reflect repeated visits by a small group.



Figure 1. The distribution of stone rings at the T-W-Diamond Site. The alignment follows the highest portion of the ridge. There is a permanent spring in the canyon at the east edge of the map. Adapted from the U.S.G.S. Livermore, Colorado quadrangle.



Figure 2. View along the top of the ridge at the north end of the site. Three rings are indicated by persons standing in them. Note the location of the rings in the short grassy areas. Brushy areas reflect greater top soil erosion and these factors may have obscured rings which were once present elsewhere on the ridge. Steamboat Rock is visible to the left, on the horizon.

ARTIFACTS

The artifacts from T-W-Diamond consisted of 140 potsherds, one ground stone pipe fragment, 53 flaked stone tools, three cores, and 1055 flakes (of which less than 30 were apparently utilized). No bone tools were found although there were occasional scraps of bone in the fill.

Pottery

The ceramic sample consists of 139 sherds from one ring, Feature 11 (Fig. 7), and one sherd from the surface at the opposite end of the site. The surface sherd is too small to be informative, but generally fits the description of the sherds from feature 11.

The 139 sherds are thought to represent a single flat-bottomed vessel, having a slightly restricted neck of unknown height and a plain rim. The sherds are characteristically small and brittle, grey to brown in color, with small amounts of grit temper. The surface exhibited some sort of regular indentations which were nearly obliterated by smoothing or polishing before firing. The lip was flat, and the rim was straight or slightly outcurving. Rim sherds were 5 to 6 mm. thick; body sherds were 8 mm. thick. The vessel is thought to be of Shoshonean affiliation but so little of it was recovered that this identification is only a tentative hypothesis at best.

Chipped stone artifacts

Except for one flake of obsidian and a ground steatite pipe fragment, materials are of variously colored chalcedony and quartzite, all of them available within a few miles of the site.

PROJECTILE POINTS

Of the 30 projectile points and fragments found in and on the site, only 14 have diagnostic morphology. The others are tip and midsection fragments consistent in size, material, and flaking technique with the other specimens. All specimens are overall pressure flaked on both surfaces with some retouch along edges. About half of the points described as triangular have straight edges from the shoulder to the tip; the rest have slightly convex edges.

A. Triangular shape, no stem, no notches (8 specimens) (Fig. 8j-q). Seven have straight bases; one is slightly concave. The tips of all are missing. Remaining maximum length is 13 mm. Maximum width is 11-20 mm. Maximum thickness, 2-4 mm.



Figure 3. Feature 2, an excavated stone ring. Small rocks in the center of the ring indicate a hearth area. Note the concentration of ring rocks on the northwest side, presumably the direction of the strongest winds.

B. Triangular shape, no stem, side notches (4 specimens) (Fig. 8 *b-h*). Three have straight bases; one has a concave base. Only one of them retains the tip. Maximum length is 13 mm. Maximum width, 10-16 mm. Maximum thickness, 2-5 mm.

C. Triangular shape, no stem, side notches and basal notch, and a slightly concave base (1 specimen) (Fig. 8 *i*). The tip is missing. Remaining maximum width, 14 mm. Remaining maximum thickness, 3 mm.

D. Triangular shape with slightly convex sides, expanding stem, and corner notches (1 specimen) (Fig. 8 *a*). The tip is missing. Remaining maximum width, 13 mm. Remaining maximum thickness, 4 mm. The flaking is of rougher quality than that on the other specimens. The differences in shape and manufacture may reflect different cultural origins despite similarity in size and material.

SCRAPERS

The seven scrapers and scraper fragments are divided into two groups: those which are bifacially worked and those which are unifacially worked. The materials and manufacturing techniques are like those described for the projectile points.

A. Bifacially flaked scrapers (6 specimens) (Fig. 9

a, c, d, f). These are oval to irregular in shape and are biconvex in cross section. Typically, part of both surfaces consists of the unaltered surface of the flake on which the tool was made. Some surfaces exhibit flaking and some edges were sharpened by pressure flaking. Maximum lengths, 27-44 mm. Maximum widths, 14-27 mm. Maximum thicknesses, 5-21 mm.

B. Unifacially flaked scraper (1 specimen) (Fig. 9 *e*). This tool is triangular in cross section, with irregular pressure flaking along the edges and around the remaining tip. One end is missing. Maximum remaining length, 45 mm. Maximum width, 30 mm. Maximum thickness, 7 mm.

BIFACE

This specimen is oval in shape, biconvex in cross section, and is bifacially pressure flaked all over both sides and around all edges (Fig. 9 g). Reconstructed size indicates a length of about 97 mm., a width of 38 mm., and a maximum thickness of 9 mm.

SPOKESHAVE

This tool was made on a small, largely unworked flake, triangular in cross section, and irregular in

166





outline. It has a concave working edge on part of one edge made by pressure flaking from one side (Fig. 8 *c*). Length, 13 mm.; width, 12 mm.; thickness, 2 mm.

UTILIZED FLAKES

Some flakes exhibit irregular notching and flaking through use on at least one edge. These are interpreted as intentional scars reflecting use of unsharpened, unshaped edges (28 specimens). Lengths range from 16-44 mm. The shape, cross sections, and evidence of use exhibit no apparent patterning. The single flake of obsidian was in this category (Fig. 8 *b*).

UNUTILIZED FLAKES

These specimens appear to be unutilized flakes driven from cores like those described below.

CORES

These three specimens are oval to rectangular in



Figure 5. Plan and section of Feature 4. The disturbed nature of ring and hearth stones was typical of most features excavated. Note the concentration of ring rocks on the northwest side; the centrally located, smaller hearth stones; and the scarcity of ring rocks on the southeast side. Dashed line indicates approximate floor level.

outline, and biconvex or plano-convex in cross section. Flakes scars cover both surfaces of biconvex specimens. The plano-convex core has a clearly defined striking platform and some flaking through use on the edges. Two specimens are quartzite; one is petrified wood. Maximum length, 42-52 mm. Maximum width, 27-35 mm. Maximum thickness, 17-23 mm. (Fig. 9 *h-i*).

Ground Stone

The single ground stone item is part of a steatite pipe. The exterior is polished and the interior exhibits parallel striations resulting from drilling. The lip is thinned by grinding. The stone is black, with many tiny shiny mica intrusions scattered through it. Dimensions of the fragment indicate an estimated maximum diameter of 15-16 mm., and a bore of 9-10 mm. Wall thickness ranges from 1.5 mm. at the lip to 3 mm. on the body (Fig. 8 *d*).



Figure 6. Plan and section of Feature 10. The concentration of ring rocks on the northwest side is less obvious in this feature. Note the cluster of smaller hearth rocks and the approximated floor position paralleling the gently sloping ground surface.

DISCUSSION

The distribution of tools is given in Table 2. The paucity of the sample almost certainly reflects the short occupancy of the site and the nomadic lives of its inhabitants. Nearly all of the projectile points are broken, and other tools are roughly made and scarce. The broken pipe and pottery vessel probably reflect individual personal incidents at the campsite. Features which had hearths and charcoal also had a greater number of waste flakes — as though occupation in these areas was longer or more intensive.

DATING

All charcoal was collected, but most of it consisted of tiny, scattered fragments, and most samples were too small to date. Three samples were, however, dated by the Laboratory of Isotope Chemistry, Department of Geosciences, University of Arizona, Tucson:

Feature 2, Floor 15 cm. below surface A.D. 1020 ± 230 (A-1273)

Feature 10, Floor		
15 cm. below surface	A.D. 1170±220	(A-1274)
Feature 11, Floor		
15 cm. below surface	A.D.400±340	(A-1272)

The range in these dates is greater than was anticipated by the nature of the rings and the artifact sample. However, the two later dates are within one standard deviation of each other, and when two standard deviations are considered, even the earliest date is not improbably out of range. The site is interpreted to have been occupied in the 11th or 12th centuries A.D.

DISCUSSION AND COMPARISON

The paucity of material culture, a situation typical of most stone ring sites, makes comparative studies somewhat tenuous. An exhaustive study of "tipi ring" sites has been made by Thomas Kehoe (1960). The T-W-Diamond site is representative of domestic rings in northern Colorado, and dates somewhat earlier than many of the presently described sites.



Figure 7. Potsherds from the T-W-Diamond Site. Rim sherds, *a-e.* Smoothed neck sherds, *f-g.* Flat bottom, *i*, Body sherds, *j-m.* Note smoothed punctations or depressions on sherds *j-m.* Lenth of *I*, 72 mm.

168

TABLE 2 Summary table of artifact locations.

						Prove	nience	s (By F	eature)										
Artifacts	-	7	e	4	2	9	7	œ	6	10	11	12	13	32	35	38	39	*	Total
Pottery				.							139	.		.				-	140
Projectile Points		-	ю			-	-	വ		9	2	2		٢	-			•	30
Scrapers	•	4	3	-	-	9	7	2	۲	2	-	,		-		•	,	4	21
Biface				.•	•		,								•		,		-
Cores		-			•	-		,					,				,	-	ы
Spokeshaves	•				•			-			,		,				,		-
Utilized Flakes		4	-	10	•		•	4		2	-	-		т				2	28
Waste Flakes	5	93	60	218	43	55	45	46	4	321	28	48	т	34	2		œ	14	1027
Pipes								•				-						•	-
Hearths		×	•	×	•	ر .		ć		×	×	×		×			×		7
Charcoal		×	×	×		×	×	×	×	×	×	×		×		•		,	11
Sandstone Objects		×	×	,	×	×		×	'n										4
Bone		×	×	×						×	×	×		×					٢
Diameter of Feature (in feet)	×	16.5	18.0	16.0	×	18.0	16.0	14.6	14.5	17.5	16.5	18.7	16.5	17.5	16.0	16.3	17.5	16.6 av	ė

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 * These artifacts were not found associated with any feature .



Figure 8. Projectile points, spokeshave, and pipe from the T-W-Diamond Site. *a*, Triangular point with corner notches. *b*, Utilized flake, the only piece of obsidian from the site. *c*, Spokeshave. *d*, Pipe fragment. *e*-*h*, Triangular points with side notches and no stem. *i*, Triangular point with side notches and basal notch. *j*-*q*, Triangular points with no stem or notches. Maximum width of *m*, 20 mm.

This report contributes temporal depth and geographic range to the need for more research on archaeological "tipi ring" localities.

This paper was presented in preliminary form at the Annual Meeting of the Society for American Archaeology at Miami, Florida, in 1972. At that time, prior to obtaining the C14 dates, cultural affiliations were suspected to be with sites of the Dismal River aspect, or Plains Apache. However, T-W-Diamond is like the Dismal River Aspect (as described by Gunnerson 1960) only in having triangular and side notched projectile points, and by being within its area of distribution. The Dismal River aspect includes many attributes including architecture, roasting pits, snub-nosed scrapers, and a specific kind of pottery - all of which are totally absent at T-W-Diamond. Furthermore, dates from dendrochronology, C14, and historic contact material place it at about A.D. 1700. The dates for T-W-Diamond are much earlier. Considering the previous lack of

association of Dismal River with "tipi rings," a more likely cultural affiliation is the more generalized Late Prehistoric Period (as defined for the western Plains by Mulloy 1958, and as summarized by Wedel 1961).

The projectile points from T-W-Diamond are the most diagnostic artifacts. The combination of relatively small, unnotched, side-notched, and sideand basally-notched projectile points regularly occur in sites of the Late Prehistoric Period. Wedel (1961:255-256) associates this group with the advent of the bow and arrow, possibly at about A.D. 500. The other flaked stone tools at T-W-Diamond could be associated with almost any period. Mulloy's list of traits limited to the Late Prehistoric period includes tubular pipes (Mulloy 1958:151-152). Other diagnostic traits such as shaft smoothers, grinding stones, and bone and antler tools were absent at T-W-Diamond.

Other sites of apparent cultural affiliations with the Late Prehistoric Period as listed by Mulloy (1958) include the Hagen site, on the Yellowstone River near Glendive, Montana, where earth lodges and presumably teepees are interpreted to be late prehistoric Crow; and the Ash Coulee site, also on the Yellowstone River in Montana, where only hearths were found. The Dalton area rock shelters, between the North and South Platte Rivers in western Nebraska, appear to have been occupied during this time, as was Birdshead Cave in the Wind River Basin of Wyoming, and Ludlow Cave in northwestern South Dakota. Near the headwaters of the Yellowstone River are also two bison traps with projectile points affiliated with the Late Prehistoric period.

Notable among more recently excavated sites are the Piney Creek sites near Buffalo, Wyoming (Frison 1967). One of them, 48JO311, is a stone ring campsite in the grass and scrub covered foothills east of the Big Horn Mountains. Architectural details and the chipped stone tools there are essentially the same as those at T-W-Diamond. The C14 dates are A.D. 1580 \pm 100 and 1610 \pm 100. The 245 potsherds are interpreted as having Mandan-Hidatsa affiliations. The closely associated 48JO312, a buffalo jump, was utilized by the same people.

The uppermost level of the Kobold buffalo jump in southern Montana contained projectile points typical of those of the Late Prehistoric Period, as well as fragments of stone pipes (Frison 1970). The ceramics are considered to be of the Mandan-Hidatsa tradition, probably Crow.

The Agate Bluff rock shelters, at the edge of the Plains near the Wyoming border in north central Colorado also contained materials of the period under discussion (Irwin and Irwin 1957). There are

170

no carbon-14 dates, but the flaked stone tools are like those in the Piney Creek site and at T-W-Diamond. The shelters contain pottery identifiable as Upper Republican.

J. J. Wood's survey and testing program in Weld and Logan Counties in northeastern Colorado located several sites having chipped stone tools similar to those diagnostic of the Late Prehistoric Period, with C14 dates falling within the range of those at T-W-Diamond, and Upper Republican ceramics (Wood 1967).

The uppermost layer of the Dipper Gap site, in the same area as Wood's sites, contains projectile points of the same period (Metcalf 1973). Surveys conducted along the South Platte River near Denver (Withers 1954); on Boxelder Creek near Wellington (Morris and Metcalf 1973); in the Rawah Wilderness Area in northwestern Larimer county (Metcalf and Morris n.d.), and in the alpine areas of Boulder County (Benedict 1973), indicate that Late Prehistoric groups were exploiting the tundra areas, foothills, and high plains in northern Colorado.

If projectile points and associated flaked stone tools serve to link the northwestern Plains, ceramics is a category that seems to divide it into eastern and western segments. Alice Kehoe (1959) has discussed this problem in detail, dividing the ceramics of the area into a Shoshonean tradition found adjacent to the Rocky Mountains, probably having affiliations with the western slope of the Rockies and the Plateau; the Pisamiks tradition found in northern Montana and Canada; and the Mandan tradition found on the Yellowstone and Missouri Rivers.

The sherds from the T-W-Diamond site, as well as those from most of the sites discussed above, are characteristically rare, small, badly preserved, and often undiagnostic. They are, however, usually present in sites of this period. Sherds from some of the sites on the Yellowstone River, the Kobold site, and the Piney Creek sites seem to belong to the Mandan tradition. They are likely to have elaborated rims, to be cord-marked and sometimes incised, and to have round or conical bottoms. Sherds from T-W-Diamond, Birdshead Cave, the Magic Mountain site, and some of the Platte River sites near Denver seem to be Shoshonean, with smoothed, sometimes cord-marked or punctate surfaces, plain rims, and sometimes flat bottoms. This may reflect no more than the proximity of the easternmost groups to the ceramic traditions of the lower Missouri River and the greater Mississippi valley area, and a corresponding closeness of the western group with people west of the Rocky Mountains.

It must be remembered that at some sites, and



Figure 9. Scrapers, biface and cores from the T-W-Diamond site. Bifacially flaked scrapers, *a, c, d, f*. Unifacially flaked scraper, *e*. Knife, *g*. Cores, *b, h, i*. Length of i is 52 mm.

T-W-Diamond is one of these, the ceramic sample may represent only a single vessel, and it may have been obtained by trade, found in a cache, or otherwise acquired in a fashion which would not necessarily directly reflect cultural preferences or habit.

The Late Prehistoric period in the Northwestern Plains, as represented at the T-W-Diamond site, may be summarized as representing scattered groups of people maintaining a nomadic existence in a land too arid to provide more than peripheral agricultural foods. They exploited a mixed base subsistence economy, with intensive hunting, gathering and collecting of diversified products available on a seasonal basis in the several ecological zones available to them. As discussed in Irwin and Irwin (1957:29), cultural affiliations are generally to the east but the geographical location has diluted the more elaborate cultural inventory found in the sedentary agricultural villages in Kansas, Nebraska and the Dakotas, leaving only transportable essentials, and remains of temporary shelters and hearths.

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