ANTHROPOLOGICAL RECORDS
20:4

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II. EASTGATE CAVE

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BERKELEY AND LOS ANGELES
1961

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UNIVERSITY OF CALIFORNIA PUBLICATIONS

ANTHROPOLOGICAL RECORDS

Editors (Berkeley): J. H. Rowe, D. H. Hymes, R. F. Murphy

Volume 20, No. 4, pp. 119-150, plate 25, 10 figures in text, 1 map

Submitted by editors June 8, 1961
Issued November 15, 1961
Price, $1.00

University of California Press
Berkeley and Los Angeles
California

Cambridge University Press
London, England

Manufactured in the United States of America

PREFACE

The two reports presented here detail our findings in a small rock shelter and a nearby cave in eastern Churchill County, Nevada.

The archaeological field party consisted of the four authors. The summer of 1958 was spent surveying for open and cave sites in western and central Nevada. Surface materials were collected, a large number of open and closed sites were located, numerous petroglyph sites were recorded, and test excavations were made in various sites.

Although we knew something about the archaeology of western Nevada in 1958, the available information dealt mainly with particular areas, and for many of the intermontane valleys in this part of the state there was no information whatsoever on record. Our reconnaissance was made with the aim of determining something of the nature and distribution of sites and what the opportunities might be for future excavation. We learned that the majority of sites consist of a surface scattering of camping debris, and that archaeological sites with deep trash deposits are very rare.

One of the few campsites which appeared to offer any promise of a substantial thickness of deposit was the rock shelter fill (partly removed by road building) at Eastgate, which in the University of California Archaeological Survey records is designated as site 26-Ch-119. While engaged in excavating here we did some work in the nearby closed site, Eastgate Cave (site 26-Ch-36).

Archaeological reports now in preparation on the large open site at Humboldt Lake (site 26-Ch-1) and on the rock shelter along the lower course of the South Fork of the Humboldt River (site 26-El-11) will amplify the conclusions drawn in the present reports.

This report is one of a series aimed at making available the results of research carried out under the direction of R. F. Heizer with support of the National Science Foundation (Grants G-3917, G-7013).

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THE ARCHAEOLOGY OF WAGON JACK SHELTER

BY

ROBERT F. HEIZER and M. A. BAUMHOFF

INTRODUCTION

About halfway between Fallon and Austin in central Nevada is Edwards Creek Valley, bordered on the west by the Clan Alpine Range and on the east by the Desatoya Range. Highway U. S. 50 crosses Edwards Creek Valley near its southern end, entering the valley from the west through a gap in the Clan Alpine Mountains called Westgate, passing between two buttes on the valley floor at Middlegate, and exiting into the Desatoya Mountains through Eastgate (or Gibraltar Gate, as it was called in 1859 by Capt. J. H. Simpson). Although Westgate and Middlegate are perhaps not sufficiently spectacular to merit their special appellations, Eastgate is a magnificent gap with vertical walls rising hundreds of feet in the air and a floor which, as Simpson said, "is about 50 feet wide and of champaign character."

Near the west mouth of the gap, in the rock some 40 feet above the valley floor, there is a small cave (Eastgate Cave, excavated in June, 1958 and reported on separately), and on the valley floor itself and up against the wall of the canyon is a small rock shelter with about 3 feet of midden deposit. The rock shelter was also excavated in June, 1958, and is the subject of the present report. We call it Wagon Jack Shelter after a Shoshone Indian who used to be the leader of the rabbit drives in Smith Creek Valley, the next valley east (Steward, 1938, p. 105), and who is said to have camped here while working at the old ranch at Eastgate about 1900.

Edwards Creek Valley is a typical central Nevada valley. Its scant precipitation (less than 10 inches per year) supports only sagebrush as a year-round ground cover, although a variety of grasses grow there in wet seasons. The elevation of the valley averages only about 5,000 feet above sea level, but the mountains on either side rise to heights of 11,247 feet (Clan Alpine) and 9,972 feet (Desatoyas). The greater elevation is associated with heavier precipitation, and consequently the vegetation is much more abundant and luxuriant in the mountains, especially in the Desatoyas. The lower slopes of the mountains have quantities of juniper; at higher elevation there are numerous piñons as well. Water is nowhere abundant here, but there are occasional springs even in the valley, and on the higher slopes the springs feed small perennial streams which, in prehistoric times, flowed out to sink in the dry valley but which are today husbanded for agricultural purposes. Simpson (1876, p. 106) speaks of such a stream encountered in 1859 after a 40 mile march from Carson Lake: "Ten miles from Middle Gate reach, near base of Se-day-e Mountain, a small running brook of icy-cold, pure water, which I call Cold Spring, and which after running a few hundred yards, sinks. A more refreshing drink than I obtained from this brook after the parched, wearisome travel of last night I believe I never had." Near these small streams, brush and grass grow in abundance—such areas must have been important sources of both plant and animal food in aboriginal times.

The aboriginal inhabitants of Edwards Creek Valley are usually reckoned as Northern Paiute or Paviotso. Simpson says (1876, p. 80), "On our return we ascertained that the Pe-er-re-ah range [the Toiyabe Mountains, 30 miles east of the Desatoyas], which we crossed on the 28th, is the boundary between the Sho-sho-nee Diggers (or what has been called, as I think erroneously, the Pah-utes) and the Pi-utes." Alexander S. Taylor (California Farmer, June 26, 1863) wrote, "The aboriginees of the Reese River country consist of the Shoshone nation, divided into many subordinate tribes, each having a distinctive name and occupying a tract of country varying from 20 to 50 miles square. Their country is bordered on the west by the Pi-Utes, the Edward's Creek Mountains, some 20 miles west of Reese River, being the dividing line. On the east it extends to Ruby Valley, where it joins on the territory of the Goshoots, the Bannocks being their neighbors on the northeast." Steward (1938, p. 100), however, gives the Desatoyas as the Paiute-Shoshone boundary but says that "a good many Paiute lived in Ione Valley where they had intermarried and some Shoshone had settled with the Edwards Creek Paiute." We may conclude, then, that the Edwards Creek Valley people were mainly Northern Paiute speakers. The question, in any case, is not crucial to the archaeology, since the culture of each group was about the same, especially along their mutual boundary.

The historic peoples of the region lived in typical Great Basin fashion, wandering seasonally to areas yielding harvests of wild seed crops and game, and settling during the winter at a village which would ordinarily be occupied year after year. Steward (1938, p. 103) lists two such villages in Edwards Creek Valley.

The first is "Wanahunupi (wana, net or string) on a creek on the eastern side of the valley." The creek referred to here is probably Cold Spring Creek, mentioned by Simpson in the passage quoted above. This creek was visited by the writers in June, 1958 and the considerable flow then in evidence indicated that the stream would have provided a water supply sufficient for a winter village. The Pony Express built a station near the stream in 1860—the remains of its stone buildings are still very much in evidence. Higher in the mountains, on the banks of the same stream, there is evidence of a pine-nut camp used by Indians in the present century.

The second village is "Acamudzi'i, near a little mountain southeast of Alpine." This may have been at Middlegate—the middle gate itself is between small mountains or buttes and there is a spring nearby which would have provided water for a winter village. Middlegate was evidently valuable in certain seasons for its

seed crops. Simpson notes (1876, p. 106) that on June 30, 1859, "There are several families of Pi-utes at this Middle Gate, collecting grass seeds, which they separate from the husks by first rubbing the heads lightly under stones and then winnow, by throwing it up in the wind. Afterward they convert it into flour by rubbing it by hand between stones."

Middlegate was also known to have been used as a hunting area. Simpson (1876, p. 83) says, "On reaching our camping-place, which I call the Middle Gate, saw a naked Indian stretched out on the rocks at an angle of about 20 degrees. He was so much of the color of the rocks as to escape our notice for some time. On being aroused he looked a little astonished to see so many armed men about him, but soon felt assured of safety by their kind treatment. He seemed particularly pleased when he saw the long string of wagons coming in, and laughed outright for joy. I counted twenty-seven rats and one lizard lying about him, which he had killed for food. He had with him his appliances for making fire. They consisted simply of a piece of hard greasewood, about 2 feet long, and of the size or smaller than your little finger in cross-section. This was rounded at the butt. Then a second flat piece of the same kind of wood, 6 inches long by 1 broad and 1/2 thick. This second piece had a number of semispherical cavities on one of its faces. With this piece laid on the ground, the cavities uppermost, he placed the other stick between the palms of his hands, and with one end of the latter in a cavity, and holding the stick in a vertical position, he would roll it rapidly forward and back till the friction would cause the tinder, which he had placed against the foot of the stick in the cavity, to ignite. In this way I saw him produce fire in a few seconds."

No ethnographic winter village is reported to have been near Eastgate at the location of Wagon Jack Shelter. Steward obtained the Northern Paiute name for Eastgate (Düt:sofe'[a]) and presumably in so doing would have learned of any village his informant might have known. The rather considerable accumulation of midden at Wagon Jack Shelter indicates that the site was at one time occupied with regularity, although possibly not in the historic or protohistoric periods. Aside from very recent beer bottles and tin cans in the surface layers, no evidence of historic Indian occupation was found in the excavations.

The first white men were in Edwards Creek Valley at least by the 1850's and possibly earlier. Simpson's visit in 1859 is the earliest of which there is a circumstantial published account, but he indicates that others had been there before him. Simpson says (1876, p. 78), "The valley in which we are encamped, as well as its creek, I call after Mr. Reese, our guide, who, with two other men, discovered it some years since in their peregrinations between Salt Lake City and Carson Valley . . . . Mr. Reese is now, for the first time, on ground he has been once over, but confesses it has been so long ago it does not appear familiar to him." Reese had thus been over the ground between Reese River and Carson Valley, including Edwards Creek Valley. He had been one of the founders of the Mormon community of Genoa, Nevada, and on his way back to Salt Lake City in 1854 had gone through the territory in question. Angel (1881, p. 37) says, "From the files of that paper [the Mountain Democrat] it appears that in 1854 Colonel Reese, accompanied by a Sergeant and three men, pioneered a new, farther south, and shorter route, from Salt Lake to Carson Valley, than had heretofore been travelled." This was to have been a mail route. The mail had previously come from Camp Floyd, south of the Great Salt Lake, eastward to Ruby Valley, thence northwest on the Hastings cutoff down the valley of the South Fork of the Humboldt to the main Humboldt near Elko, and from there followed the California trail to Carson. It appears that the Reese party went east from the Carson Valley on the route of the present U. S. Highway 50 as far as the Reese River, and from there went north to Battle Mountain on the Humboldt (if they had not swung to the north Reese would not have been on unfamiliar ground when he was guiding Simpson between Ruby Valley and Austin). Upon returning to Salt Lake City, Reese and his party appear to have suggested the more southerly route as better suited for carrying mail, and the War Department responded by sending a party of the Topographical Engineers, under Simpson, with orders to make a systematic survey of the new route. Simpson's party proceeded west from Camp Floyd to Ruby Valley and then turned southwest to intercept the Reese River near the present city of Austin. From there it proceeded west to Carson Valley over the route discovered by Reese.

Simpson's expedition had thus established a new route between Salt Lake City and Carson Valley which was much shorter than the more northerly Humboldt River route. In 1859 the firm of Russell, Majors and Waddell decided to establish a fast mail service between St. Joseph, Missouri, and Sacramento, California, carrying the mail on horseback along a chain of remounting posts. It was only natural for them to choose Simpson's new route for their Pony Express. The Sacramento Union of March 23, 1860 says, "It is the intention of the agent to run the express from Carson Valley along the route surveyed last summer by Captain Simpson" (quoted from Chapman, 1932, pp. 112-113). The Pony Express began in April, 1860 and continued in operation until October, 1861 when it was discontinued on completion of the Overland Telegraph line. Since the horses on the Pony Express were run at high speed, it was necessary to have a relay station every 10 or 15 miles, and there were three such stations in Edwards Creek Valley. Howard Egan was superintendent of the division west of Salt Lake City and his list (Egan, 1917, p. 198) gives the three stations as Edwards Creek (at the north end of the valley), Cold Springs (10 miles north of the present U. S. Highway 50), and Middlegate.

From the very beginning the Pony Express, including its stations in Edwards Creek Valley, was in great difficulties. In May, 1860, the Northern Paiute Indians gathered at Pyramid Lake to consider possible courses of action in the face of rapid and extensive white encroachment of their lands. Although the Indian leaders favored an attempt at peaceful solution, a significant minority was in favor of immediate hostilities, and the issue was settled on May 7, 1860 when a small Indian war party attacked and burned a Pony Express station, killing its inhabitants. This act provoked a large scale attack on the encamped Indians by the miners in the Washoe diggings under the leadership of Major Ormsby. The white attack was routed by the Indians who inflicted forty-six casualties, one of which was Major Ormsby. Thereupon the whites recruited an even larger force, including a large body of militia from California and a detachment of United States troops. The whites this time managed to defeat the Indiams but did not inflict serious losses; the principal result was that the Indians

were scattered over wide areas of Nevada. The Pyramid Lake War is described by Sarah Winnemucca Hopkins (1883, Chap. 3).

The Indians now began a series of small attacks on isolated outposts and the lonely Pony Espress stations were among their favorite targets. The Edwards Creek Valley stations were attacked along with many others. Chapman (1932, p. 210) says of one such that "Hamilton, the California rider who was first out of Sacramento, took the stock from Smith's Creek, where the keeper had been killed, and camped the next night at Cold Springs. He was accompanied by C. H. Ruffin and others of the Pony Express. While on guard at night, Hamilton and Ruffin were fired on. The party lost no time in saddling up, and managed to escape, with the Pony Express stock they had gathered." As a result of these depredations the Pony Express took measures to fortify their stations. The Sacramento Union of July 2, 1860 says, "It is understood that the company will place five men at each station and will build stone houses and corrals where the materials can be had and, when it cannot, will use adobe" (quoted from Chapman, p. 208). There is no doubt that this activity is responsible for the stone ruins that still remain at Cold Springs.

By 1861 wagon mail was passing over the route as a division of the Butterfield Overland Mail. After the cessation of the Pony Express there was no longer a need for the stations to be placed every 10 miles along the route and two of the three stations in Edwards Creek Valley were abandoned. The remaining station is identified as Middlegate by Conkling and Conkling (1947, Vol. III, map), but it is likely that Cold Springs, with its prominent structural remains, was the actual location.

In 1862 gold was discovered in Austin, and in the following years many thousands of people poured through Edwards Creek Valley on their way to the diggings. In 1865 alone the Overland Mail Company carried 5,840 passengers between Virginia City and Austin (Angel, 1881, p. 476). The route continued as the principal commercial artery of Austin until 1880 when the Nevada Central Railroad was completed, connecting Austin with the Battle Mountain station of the Central Pacific. Since that time the only activity in Edwards Creek Valley has centered around the two or three ranches raising cattle there.

THE SITE

U. S. Highway 50 runs due east through Edwards Creek Valley and passes a group of ranch buildings and a service station on the north side of the road as it leaves the valley through Eastgate. About 50 yards west of the service station the road bridges a deep gully. The gully now carries the water of Willow Creek, which has been diverted through Eastgate in the present century, but it has probably always carried a small stream fed by a spring about a mile east (Simpson called this stream Gibralter Creek). On the south side of the stream near the bridge, a cliff arises vertically forming a part of the rock barrier penetrated by Eastgate and, at its foot, flat or gently sloping ground extends 60 feet or so into the valley. The flat ground here was made up of what once may have been a sizable deposit of occupation debris; only a strip 10 feet wide, lying up against the foot of the cliff, remains today. The construction of the highway at the edge of the valley may have removed the northern edge of the site, and the area south of the highway has been leveled for use as a picnic ground, leaving only the 10-foot remnant. This remnant we designate Wagon Jack Shelter, and it is recorded as site 26-Ch-119 in the files of the University of California Archaeological Survey (Berkeley).

On a survey and reconnaissance through this part of Nevada in 1958, we had come to Eastgate and stopped there to look at Eastgate Cave, which had been earlier recorded (in 1937) by a University of California field party. We investigated the surface of Wagon Jack Shelter but found no evidence of aboriginal occupation. Thinking that such an ideal spot as this could hardly have been uninhabited by early occupants of the region, we dug a narrow trench extending out from the foot of the cliff (pit T-1, fig. 1). A few inches beneath the surface we encountered a midden deposit rich in animal bone, chipped stone, and artifacts and concluded that a more extensive test excavation should be carried out. We then dug the remainder of the area shown in figure 1. Excavation was by 10-inch levels except in pit T-1 where the top 20 inches were excavated as a unit. All excavated material was sieved through a quarter inch screen.

The midden deposit at Wagon Jack Shelter is covered with a layer that is sterile of cultural materials except for beer bottles and tin cans left in the last few decades. This uppermost layer is evidently slope wash carried down from the rise on the east (fig. 1). The slope wash varies in thickness, reaching a depth of nearly 10 inches on the eastern edge of pit T-7 but a depth of only an inch or two on the western edge of pit T-2.

Beneath the slope-wash layer is the main midden deposit, consisting of dark brown soil mixed with animal bone, chipped stone, artifacts, charcoal, and angular rock, the last evidently representing rock fall from the cliff face. The midden deposit varies irregularly between 2 and 3 feet in thickness. Underlying the ashy midden deposit is a layer of yellow stream silt and, on the eastern edge of the site, gravelly slope wash. This lower layer contained bone food refuse and a few flint chips, but very few artifacts. Within this lower layer in pit T-1 and extending east in pits T-4 and T-5 was a thin layer of fine black silt, perhaps dating from a season of high water when that part of the site was flooded. Beneath the lower midden deposit is the sterile subsoil of the site, made up of heavily weathered boulders.

AGE OF WAGON JACK SHELTER DEPOSIT

A charcoal sample from the lowest levels of the deposit is in process of being dated by the radiocarbon method. A wood charcoal sample from a hearth at the depth of 72 inches below the surface at South Fork Shelter, Elko

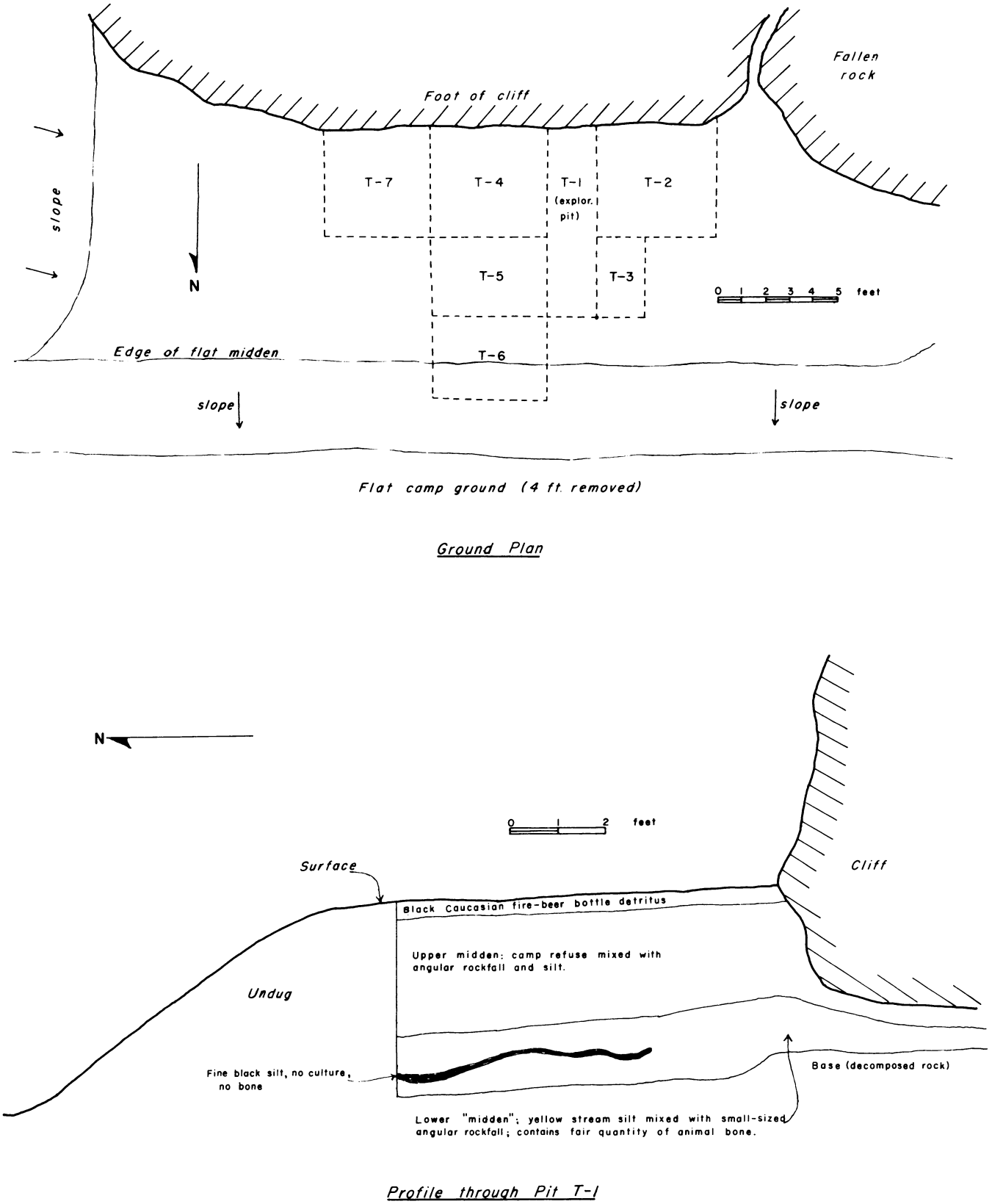

Figure 1. Ground plan and profile of Wagon Jack Shelter deposits.

County (site E1-11) (sample L. J. 212) has recently been dated at the La Jolla Radiocarbon Laboratory as 3320 ± 100 years old (1359 ± 100 B.C.). We express our appreciation to Dr. H. Suess and Dr. C. Hubbs for making this age determination. Total depth of deposit at South Fork Shelter (site E1-11) is 106 inches, and the earliest occupation may therefore date back nearly five thousand years ago. The E1-11 radiocarbon date suggests that the Wagon Jack Shelter deposit may have been first occupied about 1,500 years ago (i.e., ca. 500 A.D.).

At the eastern edge of the deposit the slope wash in pit T-7, which has accumulated within the last hundred years, is 6 inches in thickness. The underlying refuse deposit is 26 inches thick. If the same rate of accumulation had prevailed in the past, uninterruptedly since the first occupation of this portion of the site, the deposit would have been accumulating from about 1350 A.D.

ARTIFACTS RECOVERED

Projectile Points

There is no doubt that, for purposes of delineating Great Basin Culture history, the most significant group of specimens recovered from Wagon Jack Shelter consists of the projectile points. These artifacts have sufficient variation and are distinctive enough in forms that it is feasible to develop stratigraphic relationships. Projectile points ultimately, we believe, will provide evidence for culture spread and population movements. In the present paper our aim is purely descriptive and stratigraphic; no widespread comparisons will be undertaken.

For present purposes the projectile points have been analyzed into thirteen types. The determination of types was performed on a strictly intuitive basis—we simply laid out all the points, gathering similar specimens into groups. In such typological analyses one often misses distinctions which later turn out to be significant. In order to permit correction of such errors of omission or commission by later students, we include a line drawing of each specimen (figs. 2-5). Weight, material, and provenience of each specimen will be found in the legends to the figures.

Before we proceed to describe types of projectile points, a word should be said about materials. The majority of the specimens are cherts of various kinds, mostly chalcedony. There is also a small amount of silicified volcanic material, such as silicified tuff, but since in appearance and chipping properties this material grades into the chert series, it has not been systematically segregated. A few of the specimens were made of obsidian, a material no doubt traded over longer distances than was the chert, which occurs locally, hence the relative frequency of obsidian may be of some importance. We tabulate herewith the frequency of chert projectile points compared with that of obsidian projectile points, taking into account both whole specimens and unidentifiable fragments. Altogether there are 130 pieces from the shelter (79 identifiable points and 51 fragments), of which the following tabulation shows 117. The other 13 pieces come from the 0-20 inch level of pit T-1 where we have no greater refinement depth control.

Material	Levels				Total
	0-10 (in.)	10-20 (in.)	20-30 (in.)	30-40 (in.)	
Obsidian	7	7	3	-	17
Chert	26	45	25	4	100

As we shall see, the stratigraphy of projectile points indicates that some parts of the site deposit are clearly earlier than others. A more realistic analysis of projectile point materials than the tabulation shown above gives frequency of obsidian and chert in the later levels compared with frequency of the same materials in the earlier levels. Such a table is given below. The totals differ from those of the preceding tabulation since levels for which the dating is ambiguous have been omitted.

Material	Later levels	Earlier levels	Total
Obsidian	11	4	15
Chert	58	43	101

A chi-square test on these data yields a value of 1.22. This value is significant only at a .3 level and indicates that the evidence does not warrant the acceptance of the hypothesis that there was greater use of obsidian in later than in earlier times.

We turn now to the description of projectile point types.[1] Dimensions of the types are summarized in table 1 (p. 129).

Rose Spring Corner-Notched (fig. 2, a-g). These points are small and usually well made. They are characterized by stems which are parallel-sided or slightly expanding and which are often slightly rounded at the base. The shoulders of these points are often horizontal rather than sloping, as are those of the Eastgate Expanding-Stem points described below. Of seven specimens of this type, six are varicolored chert and one is obsidian.

The form of these points is only slightly different from the form of the Eastgate Expanding-Stem points. The dimensions of the two types are nearly the same (see table 1) and they also have similar occurrences within the site. The similarity makes it likely that the two forms are simply variations of a single distinct type. They are retained here as separate types for descriptive purposes only.

Eastgate Expanding-Stem (fig. 2, h-v). This point is light in weight but occasionally attains considerable length. The shoulders slope downward to such an extent that some of these points might be described as

[1]Types are named on the basis of the site where they occur in large numbers and for a distinctive characteristic. Thus, Rose Spring Corner-Notched indicates a form named for the Rose Spring site (Inyo County, California) which is characteristically corner-notched. We have taken this step to avoid using a number or letter designation which may cause confusion.

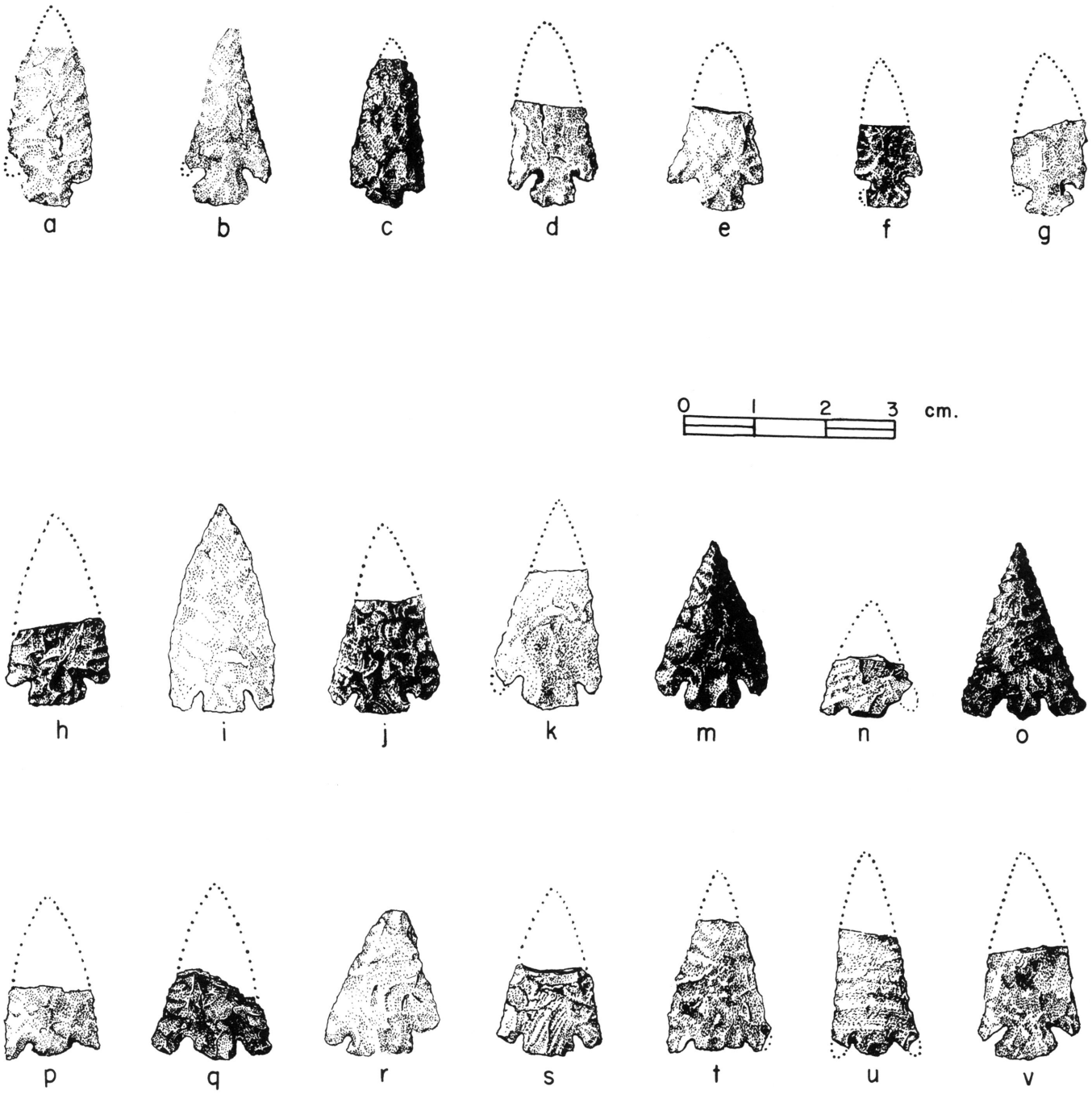

Figure 2, a-g: Rose Spring Corner-Notched type points. a. W-87: pit T-5; depth, 0-10 in.; weight, 1.6 grms.; material, white chert. b. W-316: pit T-4; depth, 10-20 in.; weight, 1.4 grms.; material, white chert. c. W-250: pit T-1; depth, 0-20 in.; weight, 1.2 grms.; material, blue chert. d. W-106: pit T-6; depth, 0-10 in.; weight, 1.2 grms.; material, cream chert. e. W-302: pit T-6; depth, 20-30 in.; weight, 1.2 grms.; material, gray chert. f. W-98: pit T-5; depth, 0-10 in.; weight, 0.6 grms.; material, obsidian. g. W-78: pit T-4; depth, 0-10 in.; weight, 1.1 grms.; material, white chert. h-v: Eastgate Expanding-Stem type points. h. W-108: pit T-6; depth, 0-10 in.; weight, 1.5 grms.; material, red chert. i. W-104: pit T-6; depth, 0-10 in.; weight, 2.3 grms.; material, translucent chert. j. W-221: pit T-5; depth, 10-20 in.; weight, 1.7 grms.; material, black chert. k. W-322: pit T-4; depth, 10-20 in.; weight, 1.8 grms.; material, translucent chert. m. W-58: pit T-2; depth, 10-20 in.; weight, 1.3 grms.; material, obsidian. n. W-101: pit T-5; depth, 0-10 in.; weight, unknown; material, red chert. o. W-321: pit T-4; depth, 10-20 in.; weight, 1.1 grms.; material, black chert. p. W-324: pit T-4; depth, 10-20 in.; weight, unknown; material, yellow chert. q. W-77: pit T-4; depth, 0-10 in.; weight, unknown; material, red chert. r. W-318: pit T-4; depth, 10-20 in.; weight, 1.5 grms.; material, white chert. s. W-57: pit T-2; depth, 10-20 in.; weight, 1.2 grms.; material, yellow chert. t. W-319: pit T-4; depth, 10-20 in.; weight, 1.4 grms.; material, white chert. u. W-245: pit T-1; depth, 0-20 in.; weight, 1.2 grms.; material, silicified tuff. v. W-105: pit T-6; depth, 0-10 in.; weight, 1.7 grms.; material, pink chert.

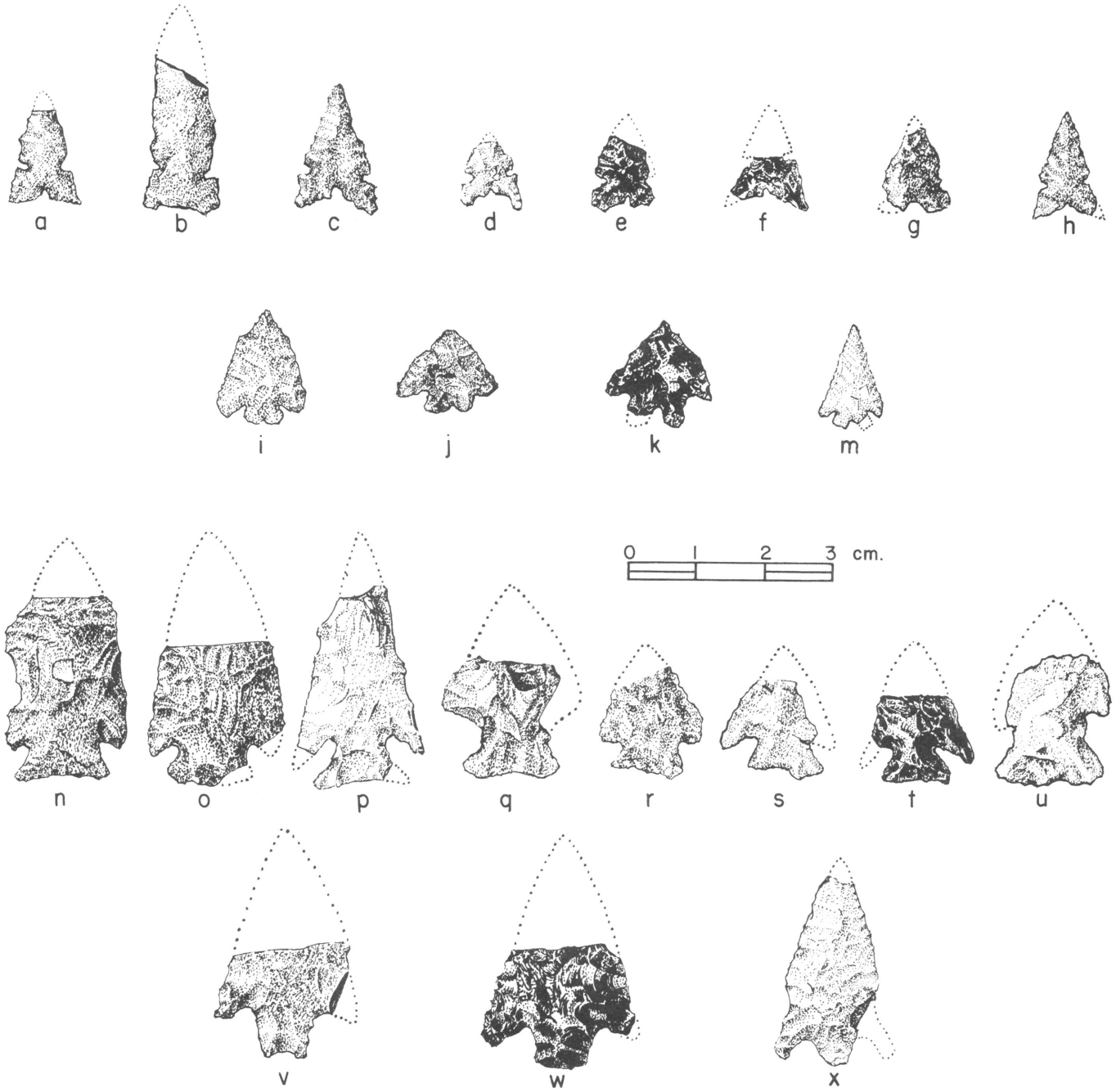

Figure 3, a-h: Desert Side-Notched type points. a. W-25: pit T-3; depth, 10-20 in.; weight, 0.3 grms.; material, white chert. b. W-91: pit T-5; depth, 0-10 in.; weight, unknown; material, white chert. c. W-314: pit T-4; depth 10-20 in.; weight, 0.7 grms.; material, white chert. d. W-311: pit T-4; depth, 10-20 in.; weight, 0.1 grms.; material, silicified tuff. e. W-127: pit T-2; depth, 0-10 in.; weight, unknown; material, obsidian. f. W-257: pit T-1; depth, 0-20 in.; weight, 0.1 grms.; material, obsidian. g. W-244: pit T-1; depth, 0-20 in.; weight, 0.4 grms.; material, white chert. h. W-313: pit T-4; depth, 10-20 in.; weight, 0.1 grms.; material, white chert. i-m: Eastgate Split-Stem type points. i. W-315: pit T-4; depth, 10-20 in.; weight, 0.6 grms.; material, white chert. j. W-312: pit T-4; depth, 10-20 in.; weight, 0.6 grms.; material, tan chert. k. W-59: pit T-2; depth, 10-20 in.; weight, 0.9 grms.; material, obsidian. m. W-216: pit T-5; depth, 10-20 in.; weight, 0.2 grms.; material, white chert. n-u: Elko Corner-Notched type points. n. W-189: pit T-4; depth, 20-30 in.; weight, 5.5 grms.; material, green chert. o. W-164: pit T-7; depth, 10-20 in.; weight, 5.0 grms.; material, red chert. p. W-383: pit T-1; depth, 20-30 in.; weight, 3.8 grms.; material, white chert. q. W-379: pit T-1; depth, 20-30 in.; weight, unknown; material, translucent chert. r. W-240: pit T-1; depth, 30-40 in.; weight, 1.8 grms.; material, translucent chert. s. W-45: pit T-2; depth, 10-20 in.; weight, 1.2 grms.; material, white chert. t. W-187: pit T-4; depth, 20-30 in.; weight, 0.9 grms.; material, obsidian. u. W-167: pit T-7; depth, 10-20 in.; weight, unknown; material, white chert. v-x: Elko Contracting-Stem type points. v. W-382: pit T-1; depth, 20-30 in.; weight, unknown; material, red chert. w. W-255: pit T-1; depth, 0-20 in.; weight, 4.0 grms.; material, obsidian. x. W-346: pit T-5; depth, 20-30 in.; weight, 2.6 grms.; material, white chert.

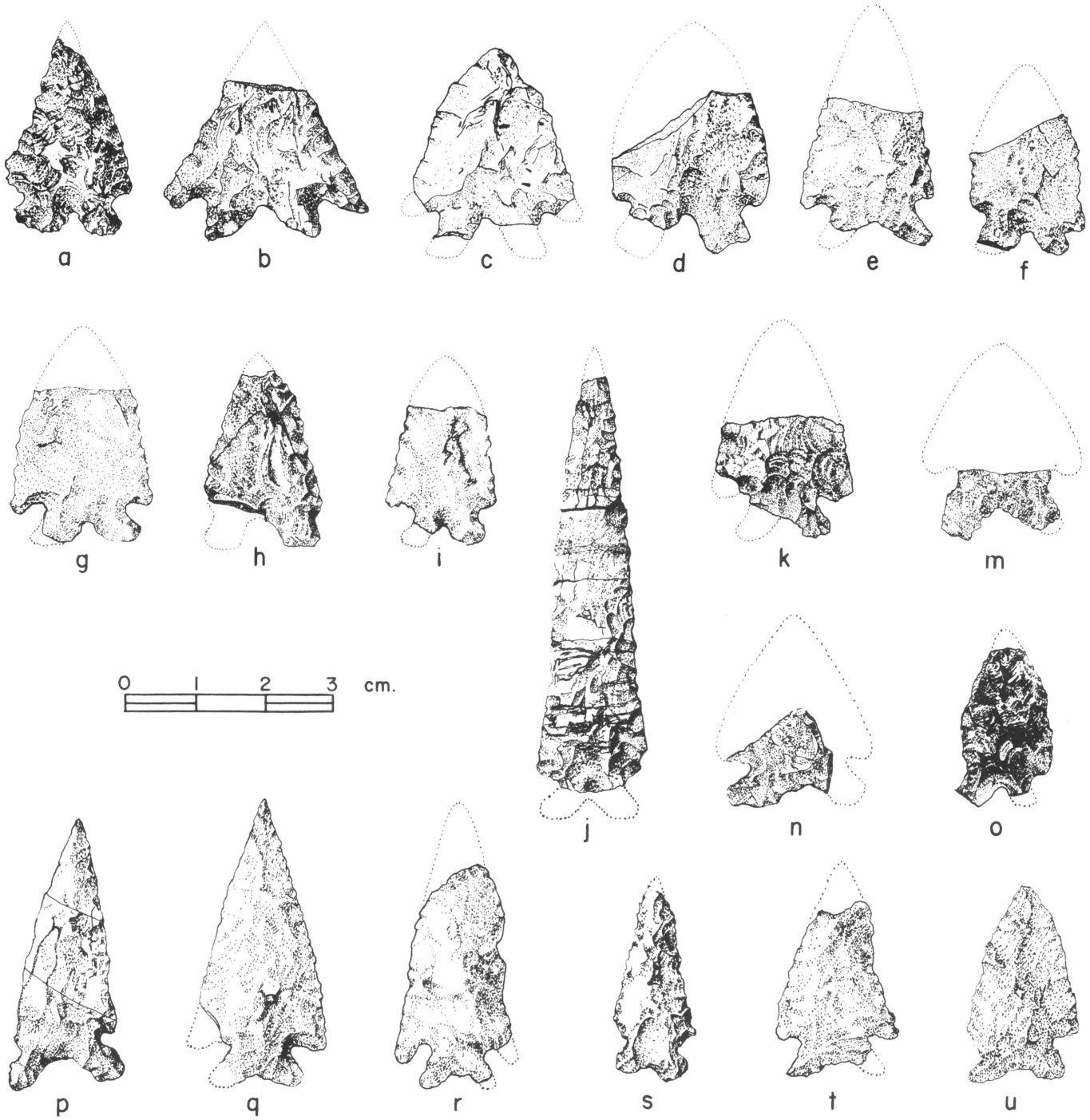

Figure 4. Elko Eared type points. a. W-256: pit T-1; depth, 0-20 in.; weight, 3.7 grms.; material, black chert. b. W-188: pit T-4; depth, 20-30 in.; weight, 5.3 grms.; material, purple chert. c. W-180: pit T-4; depth, 20-30 in.; weight, 4.3 grms.; material, white chert. d. W-9: pit T-7; depth, 20-30 in.; weight, 5.4 grms.; material, tan chert. e. W-129: pit T-2; depth, 0-10 in.; weight, 3.4 grms.; material, cream chert. f. W-166: pit T-7; depth, 10-20 in.; weight, 3.8 grms.; material, white chert. g. W-322: pit T-4; depth, 10-20 in.; weight, 4.1 grms.; material, tan chert. h. W-215: pit T-5; depth, 10-20 in.; weight, 3.4 grms.; material, tan chert. i. W-166: pit T-7; depth, 10-20 in.; weight, 3.8 grms.; material, white chert. j. W-344: pit T-5; depth, 20-30 in.; weight, 8.8 grms.; material, pink banded chert. k. W-299: pit T-6; depth, 20-30 in.; weight, unknown; material, tan chert. m. W-381: pit T-1; depth, 20-30 in.; weight, unknown; material, brown chert. n. W-22: pit T-3; depth, 10-20 in.; weight, unknown; material, tan chert. o. W-186: pit T-4; depth, 20-30 in.; weight, 2.7 grms.; material, obsidian. p. W-151: pit T-7; depth, 30-40 in.; weight, 3.7 grms.; material, silicified tuff. q. W-192: pit T-4; depth, 20-30 in.; weight, 4.7 grms.; material, cream chert. r. W-179: pit T-4; depth, 20-30 in.; weight, 4.5 grms.; material, white chert. s. W-44: pit T-2; depth, 10-20 in.; weight, 2.0 grms.; material, white chert. t. W-165: pit T-7; depth, 10-20 in.; weight, 3.4 grms.; material, white chert. u. W-345: pit T-5; depth, 20-30 in.; weight, 2.8 grms.; material, white chert.

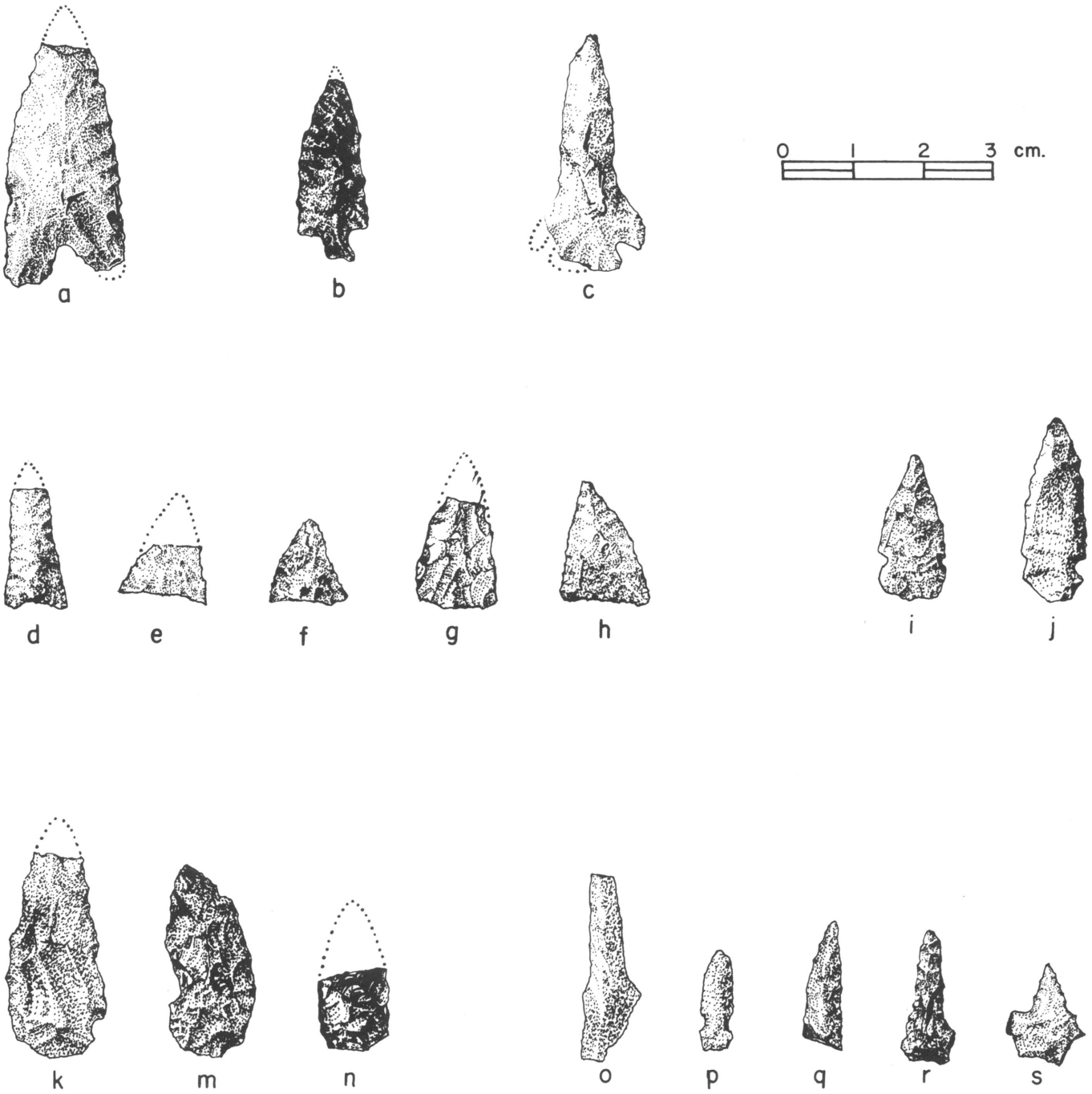

Figure 5, a. Humboldt Concave-Base A type point. W-300: pit T-6; depth, 20-30 in.; weight, 5.4 grms.; material, gray chert. b. Rose Spring Contracting-Stem type point. W-169: pit T-7; depth, 10-20 in.; weight, 1.7 grms.; material, obsidian. c. Unnamed type: Narrow-blade point. W-249: pit T-1; depth, 0-20 in.; weight, 2.4 grms.; material, silicified tuff. d-h: Cottonwood Triangular type points. d. W-247: pit T-1; depth, 0-20 in.; weight, 0.4 grms.; material, tan chert. e. W-385: pit T-1; depth, 20-30 in.; weight, 0.3 grms.; material, white chert. f. W-253: pit T-1; depth, 0-20 in.; weight, 0.4 grms.; material, tan chert. g. W-115: pit T-6; depth, 0-10 in.; weight, 1.2 grms.; material, white chert. h. W-76: pit T-4; depth, 0-10 in.; weight, 0.6 grms.; material, brown chert. i-j: Unnamed type: Leaf-shaped, notched points. i. W-343: pit T-5; depth, 20-30 in.; weight, 0.8 grms.; material, brown chert. j. W-317: pit T-4; depth, 10-20 in.; weight, 1.2 grms.; material, cream chert. k-n: Unnamed type: Leaf-shaped points. k. W-195: pit T-4; depth, 20-30 in.; weight, 4.5 grms.; material, white chert. m. W-362: pit T-6; depth, 10-20 in.; weight, 2.5 grms.; material, tan chert. n. no location; weight, unknown; material, obsidian. o-s: Drills. o. W-400: no location; material, white chert. p. W-178: pit T-4; depth, 20-30 in.; material, white chert. q. W-310: pit T-4; depth, 10-20 in.; material, tan chert. r. W-177: pit T-4; depth, 20-30 in.; material, tan chert. s. W-251: pit T-1; depth, 0-20 in.; material, white chert.

barbed. The stems are straight based and usually slightly expanding, although in some specimens the stems are nearly square. Of fourteen specimens in this category, thirteen are of varicolored chert and one is of obsidian.

As noted above in the discussion of the Rose Spring Corner-Notched point, it is improbable that the Rose Spring Corner-Notched and Eastgate Expanding-Stem types are wholly distinct but rather are more likely to prove to be variations of a single basic form.

Desert Side-Notched (fig. 3, a-h). This projectile is one of the most widespread types in North America, extending from coast to coast and from the Columbia Plateau into Mexico. It has always been found to be a very late point, never earlier than about 900 to 1000 A.D. One of the present authors has recently made an intensive study of this type of point within the state of California (Baumhoff and Byrne, 1959). In this study it was concluded that the Desert Side-Notched point could be characterized by its small size, triangular shape, and small side notches near the base. It was further noted that Desert Side-Notched points may be divided into subtypes which are meaningful in culture-historical terms. The subtypes are defined on the basis of length, base form (concave, V-shaped, notched), and material.

The small, side-notched specimens from Wagon Jack Shelter are clearly of the Desert Side-Notched type and may be further classified as being of the notched base subtype (called the Sierra subtype in California). Only one of the specimens does not have a notched base and that piece (fig. 4, b) seems to be unfinished. There are eight Desert Side-Notched points in the collection from Wagon Jack Shelter: two of obsidian, one of silicified volcanic material, and five of chert. Two other specimens were recovered from the site (from pit T-2, 0-10 in. depth) but they were lost in transit.

Eastgate Split-Stem (fig. 3, i-m). These are very small points with straight or sloping shoulders. They have expanding stems notched at the base, giving them a bifurcate or split appearance. If the stem were not notched, the points would be classed with the Eastgate Expanding-Stem points, although they tend to be more squat in appearance (they have a smaller length-width ratio). The split stem on these points, however, makes them appear to be a much smaller variety of the Elko Eared point and it may be that there is also a relationship in that direction. One possibility, for example, is that the Elko Eared point was in use at the time the bow and arrow was first introduced in this region and that the basic form of this point was retained but the size was reduced so that it could be used as an arrow point.

Of the four Eastgate Split-Stem points, one is obsidian and three are chert.

We now come to some of the larger projectile points in the collection from Wagon Jack Shelter. Whereas the average weight of the Rose Spring Corner-Notched, Eastgate Expanding-Stem, Desert Side-Notched, and Eastgate Split-Stem types is 1.5 grams or less, the average for Elko Corner-Notched, Elko Contracting-Stem, and Elko Eared types is more than 3.0 grams. As will be seen, the heavier points are stratigraphically inferior to the lighter points.

Elko Corner-Notched (fig. 3, n-u). These points are, on the average, both long and heavy. They are basically triangular in form with sloping shoulders and stems which widen toward the basal end. Alternatively, one could say that these are triangular points with deep, parabolic corner notches. Of eight specimens, one is obsidian, one white quartzite, and six varicolored chert.

It is likely that the Elko Corner-Notched point is a variation of the Elko Eared series. Compare, for example, figure 4, p with figure 5, q. In addition to a similarity in form, the two types show close correspondence in average dimensions and in stratigraphic occurrence. The separation is mainly for descriptive purposes, although we believe that the Elko Eared and Elko Corner-Notched forms do occur in different time relations at the South Fork Shelter site in Elko County.

Elko Contracting-Stem (fig. 3, v-x). These points, like Elko Corner-Notched points, are triangular and have sloping shoulders, but the stems are narrow and taper toward the base. There is one obsidian specimen of this type and two chert pieces.

Elko Eared (fig. 4). These are the largest projectile points recovered from Wagon Jack Shelter. They vary in form between two extremes. At one extreme they are simply a large triangular point with two large nubs or ears projecting diagonally from the base. At the other extreme these points are stemmed, corner-notched, and with the base of the stem sufficiently concave to give it an eared appearance. It is the latter extreme that grades into the Elko Corner-Notched type noted above.

There are twenty specimens of this type, of which one is obsidian, one silicified volcanic material, and eighteen are varicolored chert.

Humboldt Concave-Base A (fig. 5, a). Only one specimen of this type was found at Wagon Jack Shelter. It is made of silicified volcanic material.

Rose Spring Contracting-Stem (fig. 5, b). A single specimen of this type was recovered. It differs from Elko Contracting-Stem points in being smaller and having horizontal rather than sloping shoulders. The specimen is obsidian. Although it was recovered at a depth of 10-20 inches, it appears to have suffered from surface exposure at one time; the obsidian has been considerably dulled by weathering.

Cottonwood Triangular (fig. 5, d-h). These rather nondescript artifacts are simply small, irregular triangles. All five specimens are of chert.

Unnamed type: Narrow blade point (fig. 5, c). There is only a single specimen of this type. Specimens like this have been found at Humboldt Lake, but there they seem to have been used as drills. The present specimen shows no evidence of having been used as a drill, and has therefore been classed with the projectile points. The one piece is made of white silicified volcanic material.

Unnamed type: Leaf-shaped, side-notched points (fig. 5, i, j). Two projectile points were recovered from Wagon Jack Shelter which were leaf-shaped with small side notches near the basal end. Both pieces are of chert.

Unnamed type: Leaf-shaped points (fig. 5, k-n). Three simple leaf-shaped points were recovered from the excavations at Wagon Jack Shelter. Two of these are of chert and one of obsidian.

TABLE 1

Projectile Points from Wagon Jack Shelter

Type	Length			Width			Weight			Total
	max. (mm.)	min. (mm.)	avg. (mm.)	max. (mm.)	min. (mm.)	avg. (mm.)	max. (mm.)	min. (mm.)	avg. (mm.)	
Rose Spring Corner-Notched	33	24	29.0	17	12	14.7	1.4	0.6	1.19	7
Eastgate Expanding-Stem	38	24	30.2	22	17	19.1	2.3	1.1	1.52	14
Desert Side-Notched	24	14	18.8	15	11	12.9	0.7	0.1	0.28	10
Eastgate Split-Stem	21	15	18.5	20	12	16.5	0.9	0.2	0.58	4
Elko Corner-Notched	48	24	30.0	26	19	22.8	5.5	0.9	3.08	8
Elko Contracting-Stem	38	34	36.7	30	28	29.0	4.0	2.6	3.23	3
Elko Eared	82	32	40.5	37	15	24.5	8.8	2.0	4.02	20
Humboldt Concave-Base A	50	50	50.0	22	22	22.0	5.4	5.4	5.40	1
Rose Spring Contracting-Stem	33	33	33.0	12	12	12.0	1.7	1.7	1.70	1
Cottonwood Triangular	28	15	21.2	16	11	14.0	1.2	0.3	0.58	5
Unnamed types										
Narrow blade point	44	44	44.0	21	21	21.0	2.4	2.4	2.40	1
Leaf-shaped side-notched points	33	26	29.5	12	12	12.0	1.2	0.8	1.00	2
Leaf-shaped points	43	35	39.0	18	13	16.0	4.5	2.5	3.50	3

Stratigraphic Relationships of Projectile Points

The total area covered by the excavations at Wagon Jack Shelter is only 110 square feet, and it was expected that the cultural sequence would be about the same in one pit as it was in another. This was, however, not the case. In pit T-7, for example, the uppermost 10 inches of deposit consisted of sterile rockfall, hence none of the latest midden was found there. With this in mind, we present two tabulations of the stratigraphic occurrence of projectile points at Wagon Jack Shelter. Table 2 gives occurrence of named types of projectile points by level and indicates some marked differences in the stratigraphic distribution of the several types.

TABLE 2

Occurrence of Projectile Points by Level

(Specimens from Levels 1 and 2 of pit T-1 are not included)

Type	Levels				Total
	0-10 in.	10-20 in.	20-30 in.	30-40 in.	
Rose Spring Corner-Notched	4	1	1	-	6
Eastgate Expanding-Stem	5	8	-	-	13
Desert Side-Notched	4	4	-	-	8
Eastgate Split-Stem	-	4	-	-	4
Elko Corner-Notched	-	3	4	1	8
Elko Contracting-Stem	-	-	2	-	2
Elko Eared	1	7	10	1	19
Humboldt Concave-Base A	-	-	1	-	1
Rose Spring Contracting-Stem	-	1	-	-	1
Cottonwood Triangular	2	-	1	-	3
Totals	16	28	19	2	65

In order to analyze the stratigraphy with greater precision, we give the second tabulation (table 3) which shows occurrence of projectile points by both pit and level. In order to determine the stratigraphic relationships in each pit separately, we have adopted the following procedure. We observe the co-occurrence of each pair of point types in each of the seven pits. Let the observation of one specimen of each of two types in a single pit constitute a trial. For example, let us observe the co-occurrence of Rose Spring Corner-Notched and Elko Corner-Notched. There are a total of 8 trials, 4 in pit T-1 and 4 in pit T-4. In each trial the Rose Spring Corner-Notched point is stratigraphically above the Elko Corner-Notched point.

If the two point types date from the same period, we presume that the probability of a Rose-Spring Corner-Notched point being stratigraphically above an Elko Corner-Notched point is equal to the probability of the reverse relationship, a Rose Spring Corner-Notched point being stratigraphically below an Elko

TABLE 3

Occurrence of Projectile Points by Pit and Level

(Level 1: 0-10 in.; Level 2: 10-20 in.; Level 3: 20-30 in.; Level 4: 30-40 in.)

Type	Pit and Level						
	T-1	T-2	T-3	T-4	T-5	T-6	T-7
	1-2[a] 3 4	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3 4
Rose Spring Corner-Notched	1 - -	- - -	- - -	1 1 -	2 - -	1 - 1	- - - -
Eastgate Expanding-Stem	1 - -	- 2 -	- - -	1 5 -	1 1 -	3 - -	- - - -
Desert Side-Notched	2 - -	3 - -	- 1 -	- 3 -	1 - -	- - -	- - - -
Eastgate Split-Stem	- - -	- 1 -	- - -	- 2 -	- 1 -	- - -	- - - -
Elko Corner-Notched	- 2 1	- 1 -	- - -	- - 2	- - -	- - -	- 2 - -
Elko Contracting-Stem	1 1 -	- - -	- - -	- - -	- - 1	- - -	- - - -
Elko Eared	1 1 -	1 1 -	- 1 -	- 1 5	- 1 2	- - 1	- 3 1 1
Humboldt Concave-Base A	- - -	- - -	- - -	- - -	- - -	- - 1	- - - -
Rose Spring Contracting-Stem	- - -	- - -	- - -	- - -	- - -	- - -	- 1 - -
Cottonwood Triangular	2 1 -	- - -	- - -	1 - -	- - -	1 - -	- - - -

[a]Specimens from Level 1 of pit T-1 cannot be distinguished from specimens found in Level 2 of pit T-1.

Corner-Notched point. We may state this more concisely as follows:

$$\Pr\left[\frac{\text{Rose Spring Corner-Notched}}{\text{Elko Corner-Notched}}\right] = \Pr\left[\frac{\text{Elko Corner-Notched}}{\text{Rose Spring Corner-Notched}}\right]$$

There is only one difficulty—that encountered when points of the two types are found in the same level in the same pit. Thus, in comparing Rose Spring Corner-Notched with Eastgate Expanding-Stem points, we find one specimen of each type in level 1 of pit T-4. Let us decide which of the two specimens is stratigraphically superior on a random basis, say by flipping a fair coin. Now the hypothesis above may be stated as follows:

$$\Pr\left[\frac{\text{Rose Spring Corner-Notched}}{\text{Elko Corner-Notched}}\right] = \Pr\left[\frac{\text{Elko Corner-Notched}}{\text{Rose Spring Corner-Notched}}\right] = \tfrac{1}{2}$$

Under the hypothesis as it is now stated, the trials are simply Bernoulli trials or observations on a binomial random variable with .5 probability of success. In the example given above, we found that on all seven trials the Rose Spring Corner-Notched point was found to be stratigraphically above the Elko Corner-Notched point; under the hypothesis, the probability of such an extreme distribution (7 out of 7 or 0 out of 7) is .016. If we choose a .02 level of significance, then we would consider the observed distribution sufficient grounds for rejecting the hypothesis above and conclude that the Rose Spring Corner-Notched points date from a later period than do the Elko Corner-Notched points.

Similar observations have been made on all pairs of projectile point types in the collection. The results are shown in table 4. The figures given there are probabilities, under the hypothesis of chronological equivalence of: (1) the observed distributions or; (2) distributions even further removed from those expected to occur. These probabilities are marked plus or minus depending on whether the evidence indicates that the type on the left is stratigraphically above or below the type at the top. Probabilities significant at the .02 level are underlined.

The comparisons performed indicate that there are two groups of projectile points with clear stratigraphic relationships and a residue for which the relationships are ambiguous. The groups of projectile points clearly limited to the upper levels of the deposit include those of the following types: Rose Spring Corner-Notched, Eastgate Expanding-Stem, Desert Side-Notched, and Cottonwood Triangular. The types unambiguously deeper are the Elko Corner-Notched and Elko Eared. The situation regarding the remaining types—Eastgate Split-Stem and Elko Contracting-Stem—is less clear (probably because each type is represented by only a small sample). For each type, however, there is one statistically significant relationship between it and another type. Thus the Eastgate Split-Stem points are definitely stratigraphically later than the Elko Eared points. Since Elko Eared are relatively deep, the Eastgate Split-Stem type evidently belongs to the later group. Again, the Elko Contracting-Stem points are definitely deeper than the Cottonwood Triangular points and, since the latter are part of the late group, the former must be of the early group. Accordingly all eight types may be assigned to one of two groups.

Projectile Point Types

Stratigraphically superior	Stratigraphically inferior
Rose Spring Corner-Notched	Elko Corner Notched
Eastgate Expanding-Stem	Elko Contracting-Stem
Desert Side-Notched	Elko Eared
Eastgate Split-Stem	
Cottonwood Triangular	

The only question remaining is whether there are any stratigraphic differences within the two groups as well as between them. The answer seems to be clearly negative. No type within either of the groups has a stratigraphic distribution significantly different from that of any other type within its group. Had we been able to observe precisely the vertical placement of each point in the deposit, we might be able to suggest time differences within the upper- and lower-level groups.

TABLE 4

Stratigraphic Matrix

(Figures are probabilities of observed distribution under the hypothesis of chronological equivalence. For those marked plus, the evidence indicates that the types listed at the left are stratigraphically superior, the reverse for those marked minus. Statistically significant figures are underlined.)

Types	Rose Spring Corner-Notched	Eastgate Expanding-Stem	Desert Side-Notched	Eastgate Split-Stem	Elko Corner-Notched	Elko Contracting-Stem	Elko Eared	Cottonwood Triangular
Rose Spring Corner-Notched		+ .68	+ .76	+ .06	+ .016	+ .12	+ .01	− .12
Eastgate Expanding-Stem	− .68		+ .85	− .80	+ .00	+ .13	+ .00	− .78
Desert Side-Notched	− .76	− .85		+ .11	+ .00	+ .38	+ .00	+ .51
Eastgate Split-Stem	− .06	+ .80	− .11		+ .38	+ 1.00	+ .01	− .50
Elko Corner-Notched	− .016	− .00	− .00	− .38		− 1.00	− .68	− .02
Elko Contracting-Stem	− .12	− .13	− .38	− 1.00	− 1.00		− .38	− .01
Elko Eared	− .01	− .00	− .00	− .01	+ .68	+ .38		− .00
Cottonwood Triangular	+ .016	+ .78	− .51	+ .50	+ .02	+ .01	+ .00	

Knives

The most common artifacts recovered in the excavation of Wagon Jack Shelter were objects which are best classified as knives. Nearly all the 163 specimens recovered were fragmentary, but from the few we could reconstruct it is evident that the complete knife was approximately leaf-shaped with base varying from round to nearly straight (see fig. 6). The size of these objects is quite variable, from about 4 to 7 cm. in length and from 2.5 to 4 cm. in width. It is impossible to give averages for these dimensions because of the fragmentary nature of most specimens. We attempt to show the variation in form in figure 6.

The material from which these knives are made is mostly chert, with only a few specimens of silicified volcanic rock. The chert is variable in color, but mostly runs to whites, dull reds, and browns.

No evidence of hafting remains on any of the specimens but we feel justified in referring to these objects as knives, rather than as blades or scrapers, because they are identical in size and shape to the hafted knives known from the dry caves of the lower Humboldt Valley (Heizer and Krieger, 1956, pl. 15).

We have been unable to divide the knives in the collection from Wagon Jack Shelter into a reasonable series of types and are therefore unable to posit any sequence of these objects. It would be of interest, however, to determine whether any change of frequency of knives can be detected through time. To examine this question, we counted the knives recovered in levels where late projectile points predominate and compared the figure obtained with the number of knives recovered in levels where earlier projectile points predominate (see section on projectile points). The results obtained are given below. The volume of midden was calculated from the following data. Later Levels: T-1, 0-20 in.; T-2, 0-10 in.; T-4, 0-20 in.; T-5, 0-20 in.; T-6, 0-10 in. Earlier Levels: T-1, 20-36 in.; T-4, 20-30 in.; T-5, 20-30 in.; T-6, 20-30 in.; T-7, 10-34 in.

	No. of knives	Vol. of midden (cu. ft.)	Knives per cu. ft. of midden
Later levels	62	120	.52
Earlier levels	67	105	.64

Thus we see that knives occur with only slightly greater frequency in the earlier levels than in the later levels. This small difference is probably insignificant since the later levels have a shallow deposit of historic detritus on the surface (see fig. 1). If allowance is made for this latest deposit, the different levels would have nearly the same frequency of knives. All evidence suggests that knives were being made and used at about the same rate throughout the period represented by the deposit at Wagon Jack Shelter.

Corner-Notched Blades

Four chipped stone pieces recovered from Wagon Jack Shelter, classed together because of their great similarity, we call corner-notched blades (fig. 7, a-d). These are leaf-shaped specimens, one of obsidian and three of chert, about 5 cm. long and varying from 2 to 3 cm. in width. Their defining characteristic is a definite and deliberate notch flaked into one corner of the base.

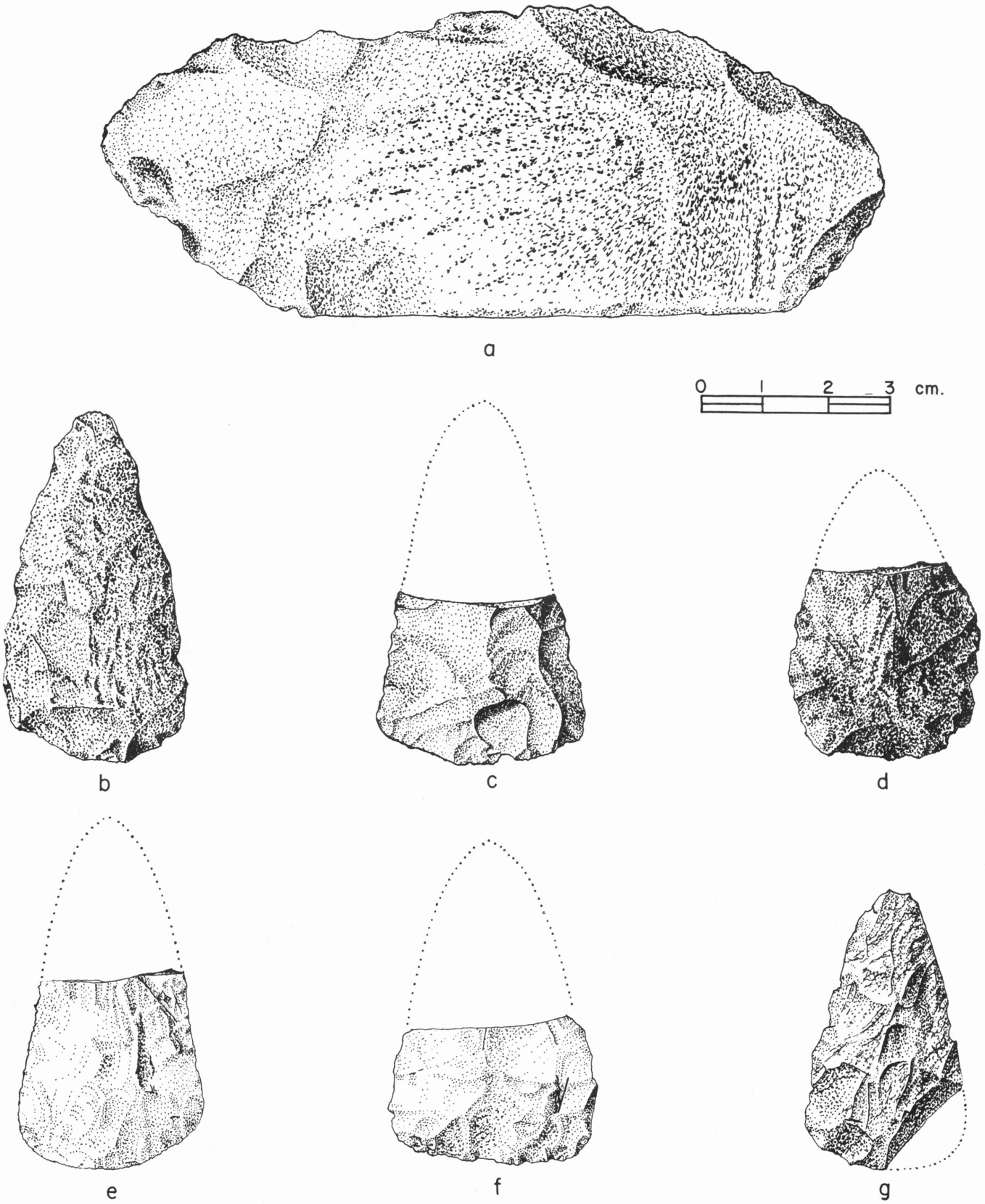

Figure 6. Knives.

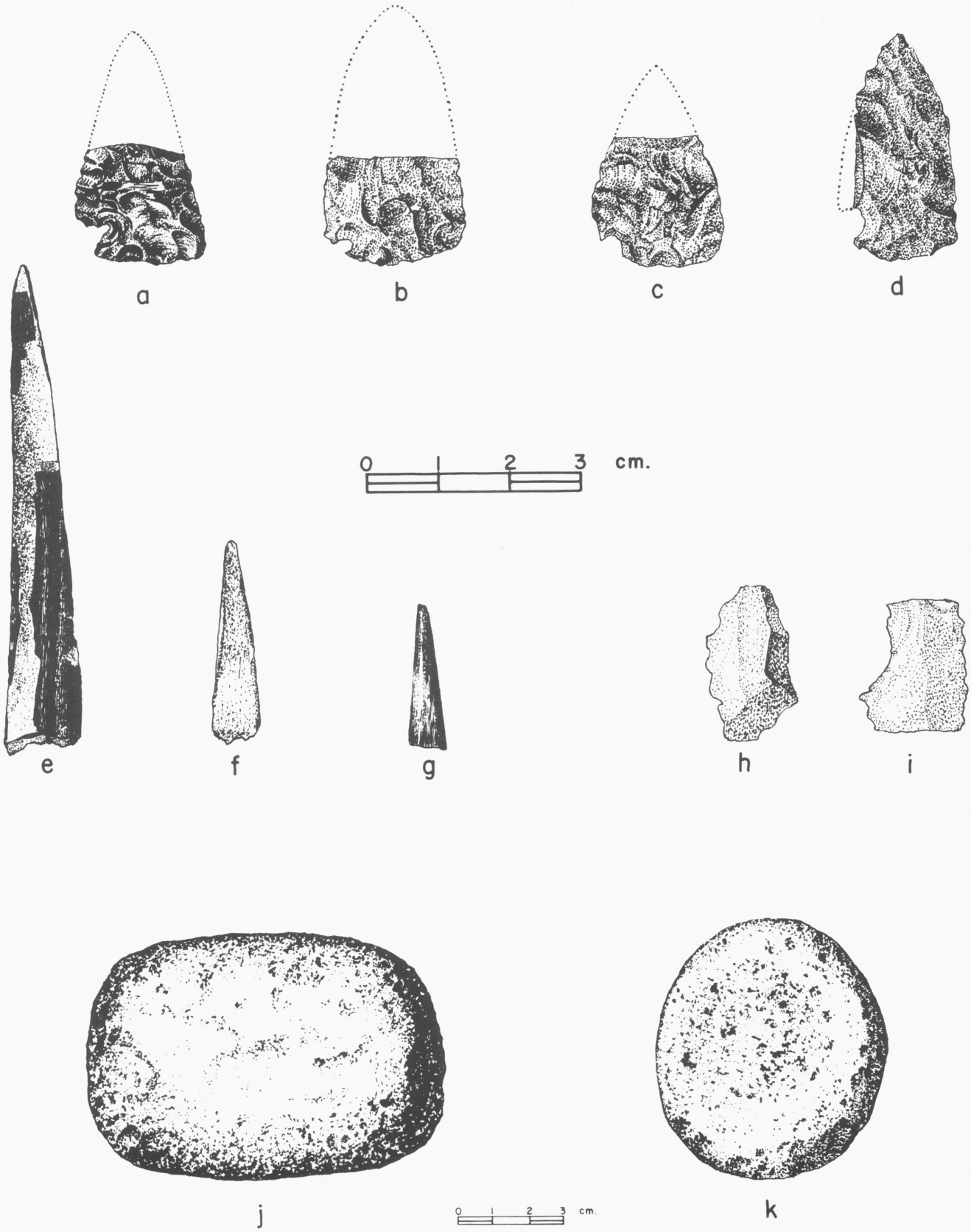

Figure 7. a-d: Corner-notched blades. e-g: Bone awl tips. h, i: Flake scrapers. j, k: Manos.

Artifacts of this type are noted from the Hagen Site, Montana (Mulloy, 1942, p. 46, fig. 24, items 17-22). A possible lateral hafting and use as knives is postulated (ibid., fig. 24, item 26). South and central Idaho have also yielded specimens of this type (Swanson et al., 1959, pp. 30, 78).

The provenience of the four pieces is as follows: T-1, 20-30 in.; T-1, 30-40 in.; T-5, 20-30 in.; T-6, 20-30 in. It will be noted that these are levels in which Elko Eared and Elko Expanding-Stem types are the predominant projectile points, and that the corner-notched blades must therefore be assigned to the early part of the sequence at Wagon Jack Shelter.

Drills

Five specimens were recovered from Wagon Jack Shelter which are best classified as drills. All five specimens are illustrated in Figure 5, o-s, and are described individually as follows:

Figure 5, o: material, white chert; unmodified flake base; stem well shaped with oval cross-section; provenience unknown.

Figure 5, p: material, white chert; side-notched base; stem well shaped with oval cross-section; only slight evidence of use as drill; provenience, pit T-4, 20-30 inches.

Figure 5, q: material, tan chert; stem fragment only but well worked with oval cross-section; provenience, pit T-4, 0-10 inches.

Figure 5, r: material, brown chert; unmodified flake base; stem well worked with diamond cross-section; provenience, pit T-4, 20-30 inches.

Figure 5, s: material, white chert; unmodified on one side but with pressure flakes all over other side; provenience, pit T-1, 0-20 inches.

Scrapers

A total of seventy-two scrapers were collected from the excavations at Wagon Jack Shelter. These pieces are simply flakes of chert (sixty-one pieces) or of obsidian (twelve pieces) used along one or more edges but showing no evidence of having been deliberately shaped (fig. 7, h, i). These specimens vary from fingernail size to pieces 2 or 3 inches in diameter. The rate of recovery for scrapers is 2.5 per 10 cubic feet in the earlier levels and about 3.5 per 10 cubic feet in the later levels (see section on knives). This evidence suggests, but does not prove, that the use of these flake scrapers enjoyed increasing popularity in later times.

Ground Stone

Three manos and one metate fragment were recovered from the excavations at Wagon Jack Shelter. The presence of these pieces indicates that they were the implements used in grinding seeds, especially pine nuts, a staple food of the inhabitants. It is rather surprising that so few of these implements were recovered from a site which had evidently been used over a considerable period and in an area where it is common to find several of them in a casual inspection of a surface.

One mano was simply a small, unshaped cobble of scoriated basalt, ground smooth by use on one face. It was found in pit T-6 in the 0-10 inch level.

The second mano, shown in figure 7, j, is of white granite. It is subrectangular in outline and also through both sections. It is 12.5 cm. long, 8.5 cm. wide, and 4.5 cm. thick. It was found in pit T-6 in the 20-30 inch level (6 in. below the stone semicircle; see fig. 8, p. 137).

The third mano, shown in figure 7, k, is of gray granite and has a red stain on it, as if it had been used to grind ochre. It is round in outline and oval through both sections. It measures 9.1 cm. in length, 8.0 cm. in width, and 4.8 cm. in thickness. It was found in pit T-4 in the 20-30 inch level.

The single metate fragment recovered from Wagon Jack Shelter was found in pit T-2 in the 10-20 inch level. The specimen recovered represents only about a quarter of the whole metate. It is a piece of fine-grained sandstone, about 1-1/4 inches thick at the edge. It is ground on both surfaces and its edge is carefully smoothed. The metate originally was probably rectangular in outline with dimensions of about 14 by 11 inches.

Bone Implements

Only three bone implements were recovered from the excavations at Wagon Jack Shelter. All of these pieces, shown in figure 7, e-g, are evidently awl tips, probably used in making coiled basketry or in piercing skins. These awls are simply sharpened and polished pieces of large mammal bones, probably deer or antelope. The provenience of the awl tips is as follows: pit T-1, 30-40 in.; pit T-1, 20-30 in.; pit T-1, 20-30 in. These occurrences are in the earlier levels of the site.

FAUNAL REMAINS

A total of 1,415 identifiable bird and mammal bones was recovered from excavations at Wagon Jack Shelter. These have been identified and their provenience by level is given in table 5. The early levels are those in which projectile points of the earlier types predominate; the later levels have predominantly late-type projectile points (see section on knives above). The category "Unidentified Artiodactyla" includes bones of either deer, antelope, or mountain sheep for which specific identification could not be made. The bulk of the specimens in this category are fragments of long bones.

It will be observed that the greater part of the bone recovered is attributable to artiodactyls—deer, antelope or mountain sheep. The only other bones recovered in any considerable quantity were those of jack rabbits or birds (the birds were not further identified because of the lack of a suitable type collection). Since bones of the jack rabbit occur in about the same frequency in earlier and later portions of the site (1.4 bones per cu. ft. of midden in earlier portions as against 1.5 bones per 10 cu. ft. in later portions), the evidence suggests that the utilization of this lagomorph did not change over the period of occupation of the site. It will be noted that a relatively large number of jack rabbit bones was recovered from the undated levels. This is because the undated levels (levels in which neither earlier nor later projectile points predominate) are in large part levels which are underneath the overhanging rock (see fig. 1). The part of the site underneath the overhand had at one time been a partly open

TABLE 5

Provenience of Bird and Mammal Bones by Level and Species

Species	Early levels	Late levels	Undated levels	Total
Canis latrans (coyote)	--	1	--	1
Marmota flaviventer (marmot)	--	1	1	2
Citellus sp. (ground squirrel)	1	-	1	2
Lepus sp. (jack rabbit)	15	18	31	64
Sylvilagus sp. (cottontail)	1	5	1	7
Odocoileus hemionus (mule deer)	4	9	1	14
Antilocapra americana (prong-horned antelope)	1	6	4	11
Ovis canadensis (mountain sheep)	39	45	46	130
Unidentified Artiodactyla	429	459	239	1,127
Unidentified Bird	26	10	21	57
Totals	516	554	345	1,415

alcove and was then no doubt a haven for pack rats, animals which transport small bones in large numbers.

The bird bone shows a definite decrease in frequency in the later levels of the site (2.5 per 10 cu. ft. of midden in the earlier levels as against 0.8 per 10 cu. ft. of midden in the later levels). This fact is rather surprising when one considers the probable hunting techniques available. It will be recalled that the earlier and later levels are defined on the basis of preponderance of earlier or later projectile points. The earlier projectile points are those of the Elko series—Elko Corner-Notched, Elko Contracting-Stem, and Elko Eared—and the average weights of these points are 3.1, 3.2, and 4.0 grams, respectively. Contrasting with these are the later points—Rose Spring Corner-Notched, Eastgate Expanding-Stem, Desert Side-Notched, Eastgate Split-Stem, and Cottonwood Triangular, with weight averages of 1.2, 1.5, 0.3, and 0.6 grams, respectively. The very pronounced difference in the weights of the points of these two series suggests that the later ones were used as arrow points, while the earlier ones were used as spear points. But it is in the later period when the bow and arrow, a more effective bird hunting weapon than the spear, was apparently available that the quantity of bird bone decreases. If we can rely on the evidence (the sample of bird bone is, after all, quite small), we must infer that locally the abundance of birds in the earlier period was greater than in the later period.

The cause of the decreasing abundance is not clear. It may have been that the climate was becoming increasingly dry during the period in question, and the change in climate was accompanied by a changed vegetation less capable of supporting a large bird population. Since the sample is small and the site not accurately dated, it is perhaps best not to speculate further on this point. In any case our interpretation of the evidence referring to hunting implements suggests that bird hunting was not done with projectile weapons but depended instead upon other means, perhaps nets and traps.

The major part of the bone collected at Wagon Jack Shelter was that of deer, antelope, and mountain sheep. If we take these artiodactyls as a group, the amount of their bone is very similar in the early and late levels (4.5 pieces per cu. ft. of midden in the earlier levels and 4.4 pieces per cu. ft. in the later levels). It would be preferable, of course, to deal with numbers of animals rather than with numbers of bones but if we take the minimum numbers of animals represented (see White, 1953), then the sample is too small to be useful—deer, 1; antelope, 3; mountain sheep, 4. Therefore it is necessary to deal with individual bones. A detailed tabulation of the bones of artiodactyls is given in table 6. The bones shown under "Skull" are mostly teeth but there are also a few mandibles and other skull parts. Under "Forequarters" are included scapulae and identifiable parts of fore limbs. Similarly "Hindquarters" includes pelves and hind limbs. Under "Other" we include cannon bones, metapodials, and a single vertebra. The category "Artiodactyla" includes specimens which could be identified as to bone element but could not be identified as to species. The bulk of the specimens in this last category are cannon bones and molar teeth; it is difficult to distinguish antelope from deer with these elements, but less difficult to distinguish mountain sheep from either of the other two species. Presumably most of these elements without species identification are either deer or antelope.

Table 6 indicates that mountain sheep was utilized to a greater extent than either of the other two species of Artiodactyla, in fact more than the other two combined. If we combine the bone for which species identification could not be made with the bone of deer and antelope, and compare this with the bone of mountain sheep, we obtain the following:

Species	Early levels	Late levels	Undated levels
Mountain sheep	39	45	46
Other Artiodactyla	27	31	17

TABLE 6

Bones of Artiodactyla by Species, Body Section, and Level

Species and Level	Skull	Forequarters	Hindquarters	Other	Total
Odocoileus					
Early	4	-	-	-	4
Late	6	3	-	-	9
Undated	1	-	-	-	1
Total	11	3	-	-	14
Antilocapra					
Early	1	-	-	-	1
Late	5	-	-	1	6
Undated	3	-	1	-	4
Total	9	-	1	1	11
Ovis					
Early	31	-	3	5	39
Late	40	1	3	1	45
Undated	42	-	3	1	46
Total	113	1	9	7	130
Artiodactyla* (Ident.)					
Early	10	-	2	10	22
Late	9	1	-	6	16
Undated	-	1	2	9	12
Total	19	2	4	25	50
Grand total	152	6	14	33	205

*Bones in this category are identifiable as to element but not species.

This shows that if numbers of bones can be taken as a measure of the number of individual groups, the mountain sheep must have been used more than the other species in all periods. It also shows that the relative utilization was about the same in the early period as it was in the later period. Antelopes, and to a lesser extent deer, are best caught through cooperative hunts involving drives and traps. Mountain sheep, on the other hand, must be hunted individually, and one would have thought that the acquisition of the bow and arrow would have yielded a decided advantage in this activity and that they would have had a relatively greater utilization after its introduction than before. The figures indicate this was not so; the relative utilization of the several species of mountain sheep continued at about the same levels.

We can make only a few points regarding butchering technique of the inhabitants of Wagon Jack Shelter. Some specimens of skull parts, metapodials, and pelves were recovered from the excavations, so it is clear that in at least some instances the entire animal was carried back to the living site. However, a count of the elements which would have been discarded if the butchering had been performed at the kill site reveals that these make up only a small proportion of the total bone. The greatest part of the bone has been categorized as unidentifiable Artiodactyla (table 5) and is made up almost entirely of fragments of long bone. If we tabulate the frequencies of parts which would have been retained when butchering was performed at the kill site and compare them with the frequencies of parts which would have been retained only if the entire animal was carried home, we obtain the following:

Bone fragments	Early levels	Late levels	Undated levels
Cranial parts, scapulae, pelves, vertebrae, hoof parts	50	66	54
Long bones, cannon bones	423	453	227

This table indicates that there are seven or eight times as many pieces of long bone or cannon bone as there are of other parts in the dated levels. Of course, several long bone fragments may be parts of a single limb bone but the same is probably true, to some extent, of the other parts as well. Even if the figures are moderately biased by this fact, still the bulk of the bones seems to derive from the legs and we may therefore suggest that on some occasions, at least, the butchering was performed at the kill site and only the most usable parts (i.e., haunches) of the animals were carried home. There seems to be no difference in this pattern between early and late levels.

STRUCTURAL REMAINS

Evidence of what may have been the remains of a house was exposed in pits T-5 and T-6 at a depth of 21 inches. The evidence consisted of nine large boulders lined up in the shape of a crescent. The line of boulders may have been continued east, completing a semicircular plan (this section was not excavated), but it did not continue to the south (fig. 8). Assuming that the stone foundation continued arcing to the east, the house or structure would have had an open side or doorway facing the cliff and would have been enclosed by poles and brush on the other sides. It would have been about 6 feet in length and 3 or 4 feet in width. The probable construction was similar to that of the Northern Paiute to the west (Heizer, 1960).

Such a plan would have been very efficient at its location. The narrowness of Eastgate is such that a very strong wind comes through it nearly every day; it is bitterly cold in winter when the temperature drops to 0 degrees or lower. A home like the one indicated, however, would have given the inhabitants optimum protection from the wind regardless of the direction from which it was coming.

We are able to place the house structure accurately within the chronological framework of our sequence of projectile points. Three projectile points were recovered from the fill of the house, one of them Elko Contracting-Stem type and the other two Elko Eared points. Both types are early in the site, hence the house must have dated from the early period.

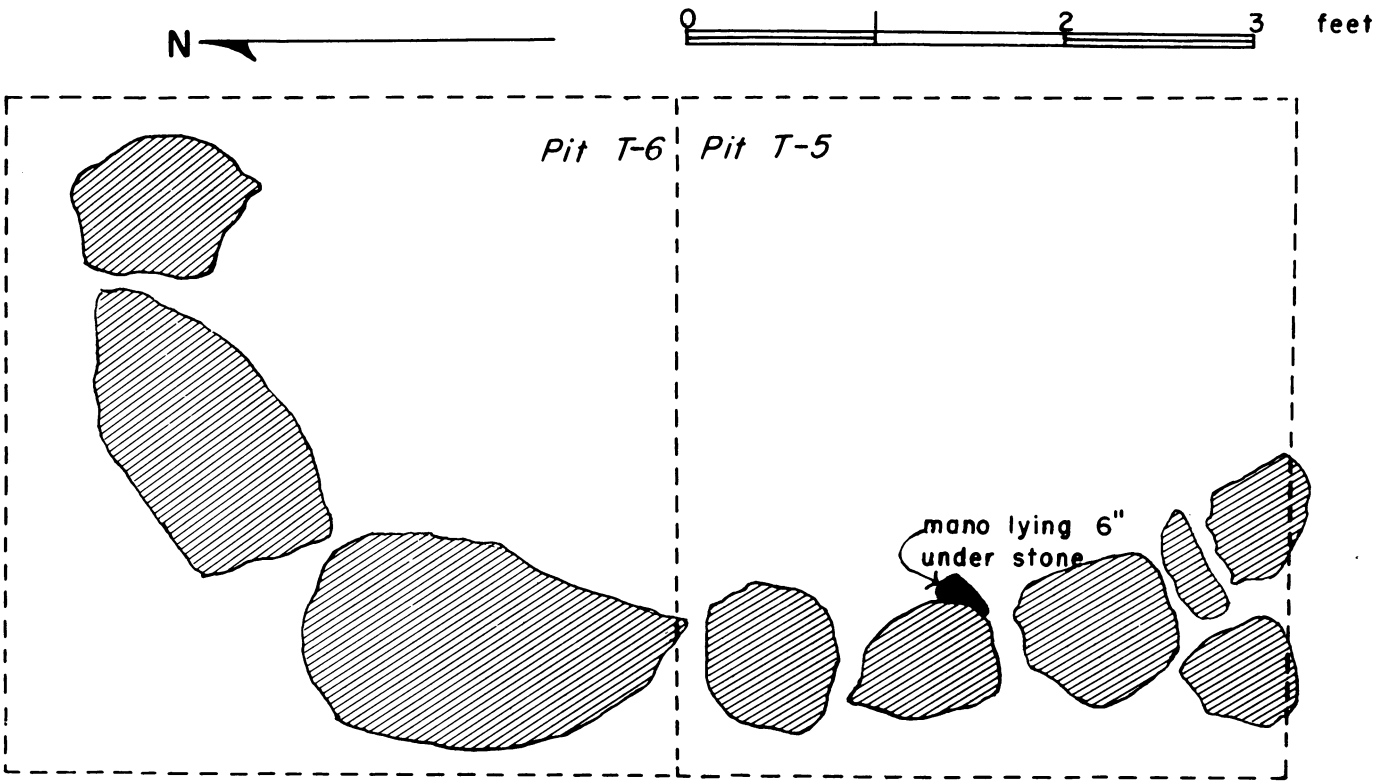

Figure 8. Stone "house" foundation.

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THE ARCHAEOLOGY OF EASTGATE CAVE

BY

ALBERT B. ELSASSER and E. R. PRINCE

INTRODUCTION

Eastgate Cave (site 26-Ch-36) is in the same volcanic formation as Wagon Jack Shelter (26-Ch-119). The cave lies about 200 yards southwest of Wagon Jack Shelter and is about 100 feet higher in elevation. Eastgate Cave was first recorded in 1937 by a University of California field party, but was not excavated at that time. However, it was evident in 1958, at the time of the excavation reported upon here, that numerous disturbances, probably by amateur relic-hunters, had been made in the dry soil deposit toward the inner end of the cave.

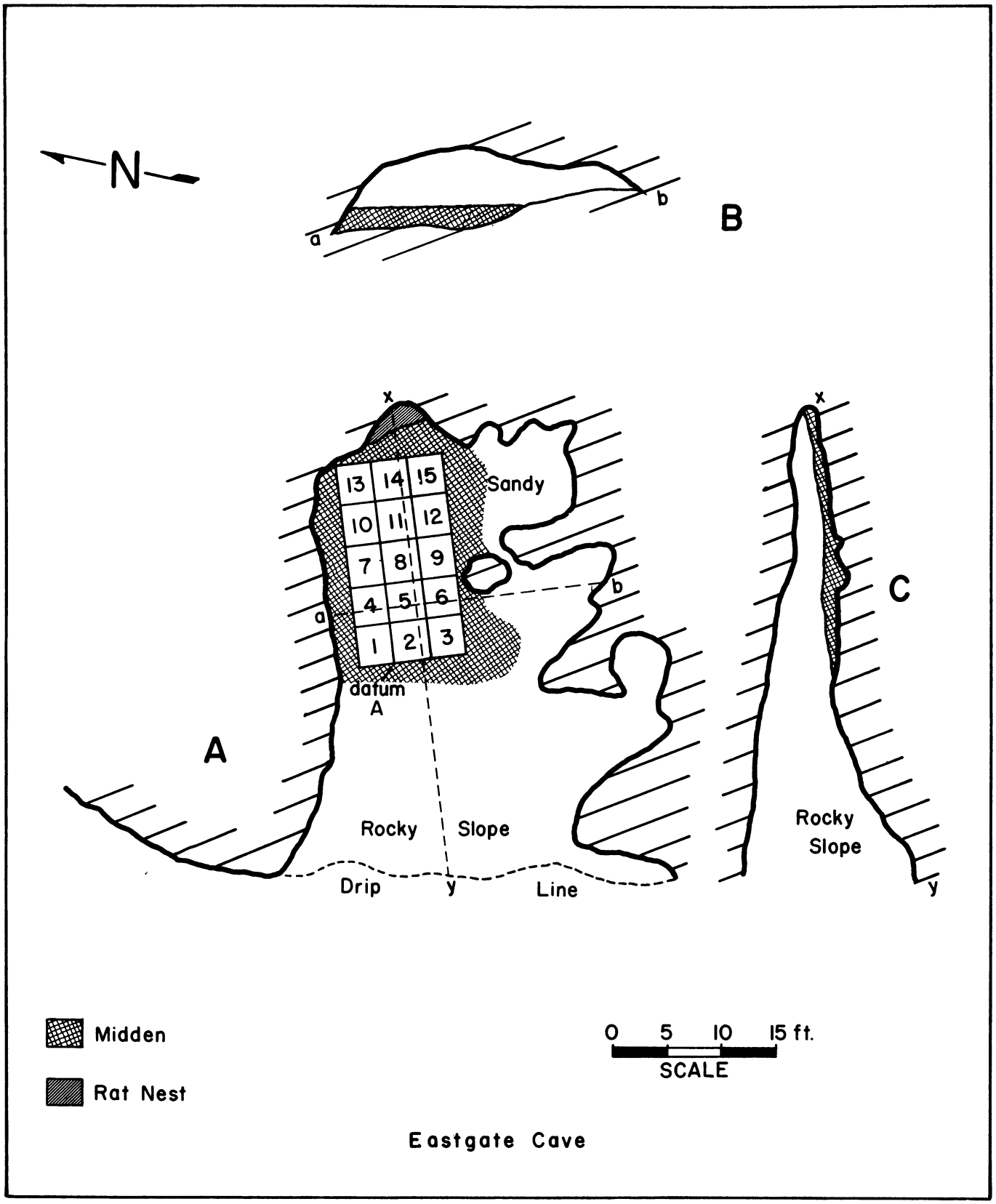
Artifacts recovered in 1958 from the cave suggest that, like Wagon Jack Shelter, it was probably not used in historic or protohistoric times. If the cave was occupied at all during the same period of time as was Wagon Jack Shelter, it emphatically was not utilized for everyday living, but rather as a cache spot. Apart from a "shaman's kit" and what appears to be a deliberately buried bundle of probably unused animal-snare parts, the yield of artifacts from the cave was relatively small and scattered. Furthermore, the low roof and generally small size of the cave within the limits of the drip line, and the sloping floor as well (map 1), would not afford comfortable living quarters for more than a few persons at a time. If the cave were used in the winter time, its westerly facing mouth would not permit much sunshine to enter any but its outer portions, and that for only a brief part of the day.

The cave cannot be said to be particularly difficult of access from the level below, although a small, roughly fissured but almost vertical cliff (pl. 25, a) about 15 to 20 feet high may have been a deterrent to the regular use of the cave in aboriginal times.

The rough walls and ceiling of Eastgate Cave and the extremely broken, angular quality of the basaltic breccia formation in which it is formed point to a relatively early, sudden geological origin rather than to long continued carving processes by wind or water in the cavity. Although there is a fairly sharp slope trending approximately from east to west, that is, from the inner to the outer ends of the cave, it is clear that any nearly level portions, such as the area of soil deposit where artifacts were found and the small, low alcove immediately adjoining it on the south side (map 1), have been repositories of dust and sand which evidently have blown into the cave from outside or, secondarily, may have been abraded from the walls or ceilings. The sandy-floored alcove is a permanent twilight zone, and this allows the entire cavity to be classified as a true cave rather than as a deep rock shelter.

THE DEPOSIT AND ITS EXCAVATION IN 1958

If the judgment is correct that Eastgate Cave was used primarily as a place for the caching of objects by persons who visited this particular region only at specific and possibly short periods during the year, it becomes necessary to explain the depth and extent of the deposit which was examined during the 1958 excavation. As shown on Map 1, the artifact-bearing deposit was confined to the inner one-half of the floor of the cave. The adjoining alcove and the rocky slope in the outer one-half, as well as the slope and partly grass-covered ledge in front of the cave (pl. 25, a), contained no evidence whatever of human habitation. The soil deposit itself occupied a space about 30 feet long by 15 feet wide; its greatest depth, confined to the central portion, was about 30 inches. The soil was extremely loose and dry and, above the yellow sand and angular unwashed gravel floor, consisted of the usual detritus which is found in dry caves throughout the Great Basin: dust, sand, gravel fragments, larger rock fragments fallen from the roof, rat and bat guano, assorted twigs and grass culms, presumably from the immediate surroundings, and quantities of dried bone material, some of it with dried sinew or skin fragments still adhering to it. At the rear of the cave was an apparently active pack rat's nest, characterized by a tangled concentration of twigs and many bones. Throughout the deposit the same sort of nest material was present, though scattered, suggesting either the remains of former nests or simply the kind of disorder which may have accompanied the building of the main nest near the back wall. The destructive effects of pack rats upon possibly layered culture deposits in a dry cave in Nevada have been discussed by Heizer and Krieger (1956, p. 10) in the report on the archaeology of Humboldt Cave. At Eastgate Cave, with its relatively sparse deposit, it would be idle to discuss stratigraphy in view of the obvious disturbances by both man and pack rats. It is believed, furthermore, that the great majority of mammal bones, representing mostly deer, rodents, and lagomorphs, were not taken into the cave by man for food but either are the remains of animals which actually perished in the cave or, even more likely, are bones introduced by the pack rats as nest-building material. It has not been thought necessary to identify the species represented by the bones, since they do not appear to be connected with any of the activities of man in the cave.



Map 1. Plan and Cross-section of Eastgate Cave.

TABLE 1

Artifacts Recovered from Eastgate Cave

Description	Pit No.	Depth (in.)
"Shaman's bundle"[a] (Feature 2)	4	17
Cache of hinged-stick snares (Feature 3)	12	7
Basketry fragments, Child's skin moccasin, Bored antler base, Snare peg (Feature 1)	3	26
Worked antler fragment, Mano	8	6-12
Obsidian projectile point, Basketry fragment, Hide thong[b]	2	0- 6
Porphyry knife	10	6-12
Haliotis pendant	6	6-12
Snare pegs	1, 2	0- 6

[a]Contents itemized in description in text below.
[b]Found in remains of small rat's nest.

In the 1958 excavation practically all the soil deposit was examined, either with trowels or by screening that portion of the deposit impinging on the overhanging north wall of the cave. The wall was carefully investigated for possible caches, but no artifacts were found there. One may guess that earlier collectors concentrated their efforts along this edge to the virtual exclusion of the center portion of the deposit.

In order to achieve some means of control in recording the location of artifacts, a grid system was projected over the significant part of the deposit and, following this, five sections, 3 by 4 feet on their sides, were excavated. As stated above, the depth of the deposit was irregular—only in pits 4 and 5 (map 1) was the maximum depth of 34 inches reached. All material, except that associated with the features listed below, from all the numbered sections (map 1), was removed in 6 inch levels so far as was possible and was put through a rocker screen of one-half inch mesh. The rest of the deposit was either screened or examined carefully with trowels.

Data pertaining to the find locations of the various artifacts recovered are given in table 1.

DESCRIPTION OF ARTIFACTS

"Shaman's Bundle"

Feature 2 consisted of a twined bag with side opening (see Heizer and Krieger, 1956, p. 60). Within the bag, which was tightly wrapped and closed, mainly by integral (extra weft) lengths of stout cordage, were the following items:

2 lumps of pine pitch
1 small, complete mammal skin (bobcat kitten [Lynx rufus])[1] filled with wing and tail feathers of the red-tailed hawk (Buteo jamaicensis) secured at one end with a length of rawhide.
3 scraps of soft hide, all with evidence of sewing upon them.
1 scrap of mammal hide with enough hair remaining to allow tentative identification as of beaver (Castor canadensis).
1 scrap of extremely tough and twisted rawhide.
1 grass bundle tied with sagebrush bark.
1 small bundle of human (?) hair tied with sagebrush bark.
Several pieces of soft hide tied together with apocynum cordage, probably representing the toe of a moccasin.
1 twisted fragment of rawhide, probably the upper fragment of the moccasin mentioned above.
Soft, loose hair tufts of a lagomorph (hare or rabbit) found scattered throughout inner parts of the bag.
1 fragment of a worked greasewood (Sarcobatus vermiculatus) stick, 30 cm. long, 14 mm. in diameter at its center, broken roughly at one end and with a rounded point at the other, partially burnt, end. This was probably the distal end of a digging stick. It was not actually contained within the bag but was found lying directly atop the bundle.

Each item comprising the cache, except perhaps the bundle of human hair, shows an essential similarity to objects found in the thirty-one caches recorded by Heizer and Krieger at Humboldt Cave. However, almost all the caches at the latter cave contained much larger inventories of artifacts, including great

[1]Identification of animal remains from Eastgate Cave made by Dr. A. S. Leopold and Mr. Alan Ziegler of the Dept. of Zoology, University of California, Berkeley.

numbers of basketry fragments. On the other hand, both the rugged structure and the provision for such a tight wrapping in the Eastgate Cave bag suggest that it may originally have been intended or used for objects of relatively great value, which were removed prior to the last placing of the bundle in the cave by its owner.

The twined bag itself bears detailed description because it is a complete specimen in practically perfect condition. It was made entirely of sagebrush (Artemesia tridentata) bark, lengths of which were twisted roughly together to form bundle-like warps about 10 mm. in diameter and deliberately left frayed at either end (pl. 26, c). The bag is about 100 cm. long, 76 cm. wide at its center, and 25 cm. wide at its ends. These measurements indicate the generally ovoid shape of the bag when open and flattened out. This shape is explained by the fact that the approximately 60 warps at the center of the specimen decrease to less than 30 at either end. The technique of the twining over most of the specimen is thus simple, but about three or four twining courses from each end a few wefts begin to incorporate two warps at each twist rather than one. The wefts at the extreme ends include as single warps what began as two separate ones at the center of the specimen. Since the diameters of the warps are about the same throughout, it follows that those at the ends are simply more tightly secured by the weft than those at the center.

There are eighteen weft courses in the specimen, and these are spaced at distances from each other ranging from 6 cm. near the center of the bag to 3 cm. at its ends. The bag includes two separate wefts. Each was started near the center of the specimen by being doubled over the first (outside edge) warp of the bag and then passed to the opposite edge of the bag. Here each weft became a twined loop with about a 2 or 3 cm. opening before being passed back to the other side. One continuous weft course thus describes 10 loops (5 on each side) before termination, while the other, which started on the opposite edge of the bag, forms 7 loops (4 on one edge, 3 on the other). The looping technique in matting was apparently common in western Nevada. Examples of carrying bags and mats from Humboldt Cave with loops at the edges are shown in Heizer and Krieger (1956, Plate 26, a, b). The trait was also noted at Lovelock Cave for bags and mats, and at Ocala Cave for matting (Loud and Harrington, 1929, pls. 24, 26, 58).

Extra lengths of both wefts, at either end of the bag, were formed into 2-strand cordage, 33 and 120 cm. long, respectively. This cordage was found passed back through the loops on one of the outside edges of the bag, serving to draw it tightly closed. Both wefts were pitched up to the right, that is, twisted in a clockwise direction. The cordage, or extra lengths of weft, at both ends of the specimen, however, were about 8 mm. in thickness, and were twisted in a counterclockwise direction ("Z" twist). The shorter piece of cordage terminates in an overhand knot and the longer piece is unknotted and frayed. An unattached fragment of 2-strand cordage, 45 mm. long, with one end in an overhand knot, was found within the bag. This is probably the missing end of the longer continuation of the weft.

In addition to the cordage which was passed through the loops for the purpose of drawing the bag closed, a large rope, also of sagebrush bark, was found in the folds of the bag when it was opened. This may have been used as a sort of carrying strap for the bag. The rope consists of two sections, each of two strands, tied together with a square knot. One section is twined ("Z" twist) and is 22 mm. in diameter and 105 cm. long. Its free end is the starting end, that is, the doubled-over yarn is here the beginning of the twisting of the two strands. The other section is of 2-strand braiding technique, 30 cm. long and 18 mm. in diameter, with its free end frayed and unknotted.

It is with considerable confidence that we characterize the type of cache found in Eastgate Cave as a "shaman's bundle" or "medicine bag." Surely most of the items contained in this bundle are bizarre in terms of the necessities of everyday living, and almost certainly represent the prized possessions of some special ceremonial practitioner within the aboriginal band or group. Heizer and Krieger (1956, pp. 85, 86) have pointed out the widespread distribution of such bundles in archaeological sites, especially in dry caves throughout the American Southwest and the Great Basin. The contents of the Eastgate cache are similar to those of the Humboldt Cave caches, which are in turn similar to some caches associated with the Anasazi culture of the Southwest.

None of the artifacts in the Eastgate bundle, however, positively indicate trade relations with other regions, such as the Anasazi or California.

Hinged-stick Snares

In pit 12, at a depth of 7 inches, a cache of forty incomplete hinged-stick snares was found in situ. The sticks were stacked neatly with the open ends pointing in one direction. Only one of the sticks was broken.

The specimens are representative of the "Lovelock" type of hinged-stick snare, in which a cord noose is replaced by one made of wood (Loud and Harrington, 1929, pp. 102, 115; pls. 44, a, 48, a, b). They consist of stripped willow sticks about 5 mm. in diameter. Each is bent in the shape of a "U." One arm has a loop 5 mm. in diameter formed by a simple overhand knot near the end, and the other arm, to which a cord would have been attached, is roughened for 2 cm. at the tip to provide greater security for the cord. The knotted loop arm is 17 cm. long, and the other arm is 17.5 cm. long. The longer arm appears to have been designed to keep the string from slipping when the snare was triggered. The base or closed end of the snare noose is 1.2 cm. across. The sticks vary in size from each other by no more than several millimeters. The snares at Lovelock Cave were found in the Later Period, upper Transitional, and lower Transitional deposits (ibid., p. 115).

No pegs or cordage were directly associated with the sticks found at Eastgate Cave as they were at Lovelock Cave. However, three small willow pegs were screened from other parts of the cave and are presumably part of hinged-stick snares (pl. 25, m). Two pegs are each 7.6 cm. long, the other is 5.8 cm. long. All three are 8 mm. in diameter. Each has an encircling groove 4 to 5 mm. from one end. In two specimens apocynum string fragments are still present in the grooves, terminating in knots which serve to secure them therein. Each peg was thinned by cutting to a 5 mm. thickness at the squared base.

The hinged-stick snare is apparently of a type

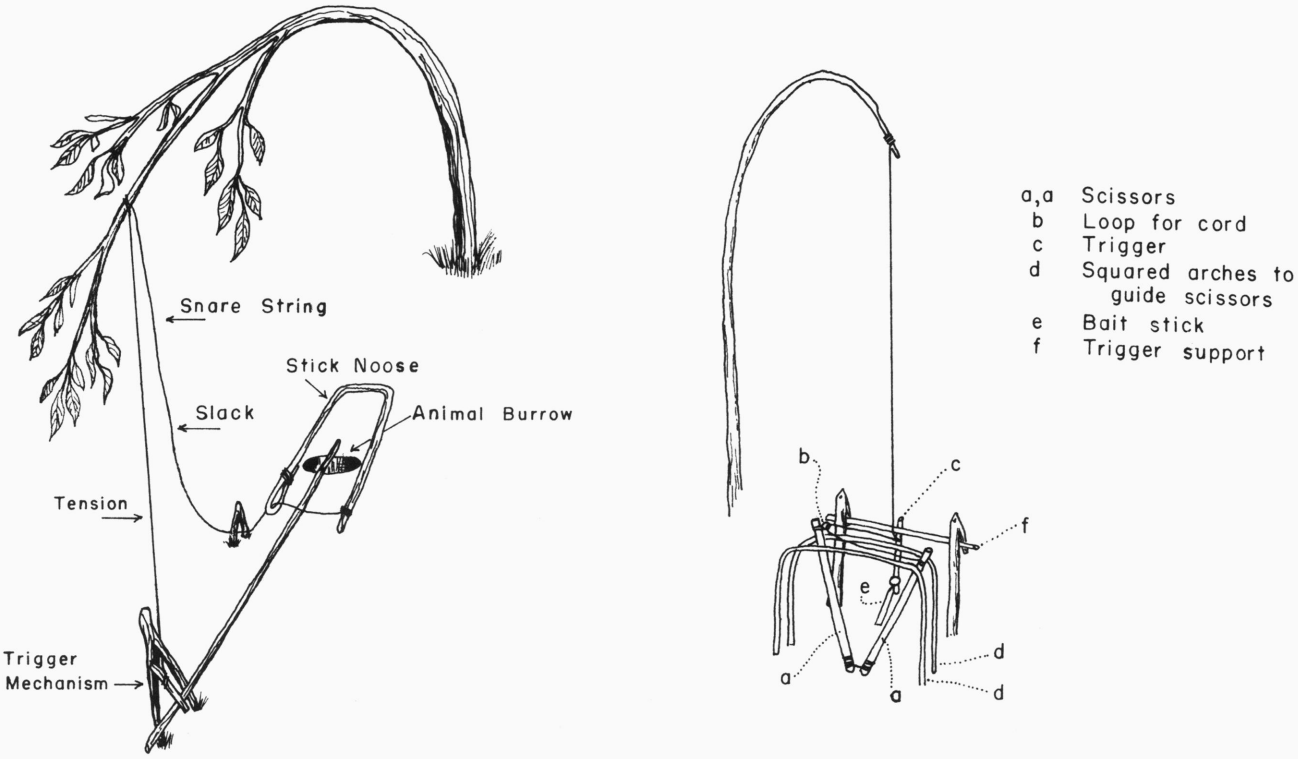


Figure 1

a. Suggested use of hinged-stick snares.

b. Use of "scissors" type snare (after Spier, 1955, p. 3).

called in modern parlance a "lifting" or "spring-pole" snare (Cooper, 1938, pp. 7, 8). One method of setting such a snare is shown in figure 1, a. The trigger mechanism in the drawing is taken from Harding (1935, p. 136) but is by no means the only or the best possible arrangement (see also Schellbach, 1927, fig. 95; Spier, 1955, p. 3). This type of snare could also easily be placed in a vertical position over a small burrow in a cut-bank or in a horizontal runway. If set horizontally, an additional peg evidently would have to be set in the ground in order to keep the snare from being pulled away prematurely when the trigger mechanism was tripped by the emerging animal. The additional parts of the trigger mechanism could easily be improvised on the spot from scraps of sagebrush or other material, as they require no particular finishing in their construction.

The size of the sticks indicates use on small mammals, such as the rats and ground squirrels that abound in the Great Basin (Hall, 1946, pp. 72-76). However, these sticks are quite large when compared with those of the snares found in Lovelock Cave. The Lovelock snares must indeed have been set for only the smallest of the desert rodents. Other hinged-sticks noted from the Great Basin or the Southwest are all approximately the same size as the Eastgate Cave specimens, usually varying no more than one inch in length from the latter.

A hinged-stick snare, including a peg, was recovered from Massacre Lake Cave in northwestern Nevada (Cressman, 1942, p. 122, fig. 100, c-5, 8). The stick differs from the Eastgate specimens only in that a small slip knot, rather than an overhand knot, was tied when the stick was green to form the loop. Other similar sticks are noted from Roaring Springs Cave and Catlow Cave 8 (ibid., p. 72).

A large bundle of hinged willow sticks, reportedly from the Granite Mountain area, was found some 110 miles northwest of Lovelock, Nevada. These are now stored in the Southwest Museum, Los Angeles, California, with the catalogue number of SWM 569-G-39. We examined these in 1958 and observed that in all of them the loop is formed by thinning the tip of one arm of the snare, bending the thinned section over, and lashing it with a fine sinew or fiber binding. A sample specimen from the bundle is shown in plate 25, i of the present report.

Schellbach (1927, pp. 232-240) describes a variant of the hinged-stick snare from the Sawmill Shelter near Baker, Nevada. These snares differ from all thus far described here in that they are made from two separate sticks tied at both ends, the trigger being attached in the center of the cord at one end. This type of trigger attachment is, seemingly, unique in the Great Basin.

Snares from Grand Gulch, Utah (Guernsey and Kidder, 1921, p. 92; Cosgrove, 1947, pp. 136-138) are made from two sticks also. The method of closing the stick noose, however, is the same as that used in the Oregon and western Nevada snares. The string guides in these specimens are made of fiber and are not an integral part of the wooden snare arms. Similar pieces are reported from the Fremont River area (Morss, 1931, p. 62).

The Basketmaker snare described from northeastern Arizona (Guernsey and Kidder, 1921, p. 92, pl. 41, a)

TABLE 2

Basketry Recovered from Eastgate Cave

UCLMA Spec. No.	Coiled Basketry			Remarks
	Stitches per 10 cm.	Coils per 10 cm.	Illustration	
2-33085	38	30	Pl. 1, d	Rim fragment
2-33086	40	28	Pl. 1, e	Start fragment
2-33087	30	28-30	--	--
2-33088	32	30	--	--
2-33089	32	28	Pl. 1, f	--
2-33090	38	--	--	--
2-33091	30	28	--	--

is also the two-stick type. In this specimen, to replace the loop, a small hole has been drilled in one arm to provide passage for the string. In contrast, Painted Cave, also located in northeastern Arizona, yielded a two-stick snare that utilizes the fiber loop (Haury, 1945, p. 52).

A hinged-stick snare has been noted from Cordova Cave, New Mexico (Martin, 1952, p. 347, fig. 146, g). The piece is too fragmentary to relate it to the specimens described in the present paper.

Two examples like those described from Grand Gulch, Utah, are noted from Ceremonial Cave in the Hueco Mountains of western Texas (Cosgrove, 1947, pp. 136-138, fig. 128, b, d-f). Another example is noted from Brewster County, Texas (Coffin, 1932, p. 31).

The hinged-stick snares from the greater Southwest can be quite clearly differentiated from those of the western Great Basin. All the Southwestern snares mentioned here are constructed of two sticks tied at one or both ends, whereas snares made from a single stick seem to be restricted to the western Great Basin, outside of the direct Southwestern influence.

Snares and traps have been reported ethnographically as being in common use by the peoples of the Great Basin (Steward, 1941, pp. 222, 224; 1943, pp. 267-268; Stewart, 1941, pp. 423, 424). However, only the Surprise Valley Paiute have been recorded as users of hinged-stick snares of the Lovelock type (Kelly, 1932, pp. 87-88). These were frequently used to catch small squirrels (Citellus douglasii). Kelly's informant states that one person could cover as many as twenty-five holes, and at times two snares would be set at one hole. Hinged-stick snares of the Southwestern type have been reported by Spier (1955, p. 4) and are referred to as "scissors traps." The arrangement of such a trap as used by the Mohave is reproduced herein (fig. 1, b). On the tip of the bait stick (e) shown in the drawing, a pumpkin seed might be impaled. Disturbance of this seed would allow release of trigger (c).

Basketry Fragments

Seven fragments of basketry were recovered from Eastgate Cave. Of these, six showed the coiling technique and one was a twined fragment. Dr. M. A. Baumhoff has kindly examined these fragments and has concluded that any of the pieces could be matched by specimens from Lovelock or Humboldt Caves in western Nevada. His comments and measurements are summarized in table 2.

All the coiled basketry is of rod-bundle foundation (see Heizer and Krieger, 1956, pp. 45, 46) and all specimens show interlocking stitching with occasional stitches split. Stitches are of split-strand willow (?), 2 to 3 mm. wide. Specimens 2-33085, 86, 87, 88, 91 were all found in the same pit and all seem to be fragments of the same vessel. The only differences between them are in stitches and coils per 10 cm. and these would be accounted for if the fragments were from widely separated parts of the basket (note that both start and rim fragments were recovered in the same pit).

Specimen 2-33089 is the rim of a small coiled bowl. The entire vessel was evidently 7 to 8 cm. in diameter. The basket was finished with a heavier than usual coil made of two rods side by side. Threading on the finish is neat but does not differ from the threading in the body of the piece.

Twined basketry fragment 2-33092 consists of single-rod warps about 2 mm. wide and wefts with an up-to-right pitch. Warps and wefts occur at rates of thirty and forty-five per 10 cm. (pl. 25, g).

Child's Skin Moccasin

The young child's moccasin was made for the left foot. It is 6-1/8 inches (15.5 cm.) long and 2-3/4 inches (7 cm.) wide (pl. 25, j). Material of the moccasin has been identified as of artiodactyl, most probably deer. The hair is to the outside.

The specimen is stitched in an over-and-under fashion with 2-ply "S" twist apocynum twine 2.5 mm. in diameter. The twine is secured by knots at the instep and the heel.

Two pieces of hide were used for the main body of the moccasin. There is no separate sole, hence the specimen may properly be classified as "soft-soled moccasin" (Driver and Massey, 1957, p. 326). The heel piece is composed of a thin dark skin stitched in the same manner as the rest of the moccasin. The heel shows three thicknesses of hide and is worn through at the point of contact. Small patches of hair occur in the arch area and on the outside edge.

Six sets of holes were spaced around the rim of the moccasin to take a draw-string.

It is evident that the moccasins of the Shoshonean peoples of the Great Basin described by Stewart (1941, p. 436), Steward (1941, p. 343), and Lowie (1924, p. 218)

are not related to the type found at Eastgate Cave. This specimen, instead, corresponds in virtually every detail to the Fremont River (Utah) moccasins found by Morss (1931, p. 63) and declared by him to be an important element in the definition of the Fremont culture (ibid., p. 76), a "primitive peripheral culture" existing in Pueblo II time in the Southwest. Subsequent investigation of the Fremont culture gave rise to the opinion that it was "a stable way of life which existed from about A. D. 500 to around A. D. 1300 in the Fremont area" (Taylor, 1957, p. 154).

"Fremont moccasins" have also been recovered from Lovelock Cave (Loud and Harrington, 1929, p. 47, pl. 22, e), Etna Cave in Lincoln County, and Owl Cave in White Pine County, Nevada (Wheeler, 1942, p. 30).

A fragment of moccasin heel of several thicknesses of hide was found in the "Shaman's bundle." The material and the stitching is the same as in the heel of the complete moccasin. The specimen from the cache is otherwise too fragmentary for an accurate reconstruction of the piece.

Bored Antler Base

A bored antler base was screened from the fill of a hole in which feature number 1 was found. The piece is 59 mm. long by 40 mm. wide at the widest point (pl. 25, n). A hole had been drilled in the distal end of the base. It is oval in cross-section, 15 mm. by 12 mm. in diameter, and 22 mm. deep. The entire surface of the specimen has been roughened by the gnawing of rodents. There is no evidence remaining of paint or polishing such as is present on a similar specimen found in Oregon (see below).

Bored antler bases similar to the 26-Ch-36 specimen are recorded from Roaring Springs Cave, Oregon (Cressman, 1942, p. 65, fig. 29), and Ventana Cave, Arizona (Haury, 1950, p. 384, fig. 90, d, e). They have been classed as awl, drill, or digging-stick handles, as well as bunts. Pieces that are identified as atlatl dart bunts from Lovelock Cave (Loud and Harrington, 1929, p. 111, pl. 46, a) and Cordova Cave, New Mexico (Martin, 1952, pl. 192, fig. 65, e) are made from bone and not antler. The 26-Ch-36 specimen would seem to be too large and heavy for use as a dart bunt, so that its function as perhaps an awl or drill handle appears more probable.

Worked Antler Fragment

A large section of antler, including the base and part of two tines, was worked in an unusual way. The tines were taken off by cutting or sawing part way through and then removed by breaking. A rough, shallow groove was gouged and pecked from the antler base to the fork. The specimen is otherwise unmodified. The function of this worked antler is not known. The writers are unaware of other occurrences of similar pieces in the Great Basin. Probably the specimen is an uncompleted tool of some sort.

Hide Thong

A piece of soft hide, 25 cm. long and 3 cm. wide, split about 10 cm. of its length at one end was found in pit 2. This was probably a thong, perhaps used to fasten some object about the arm or leg.

Mano

A loaf-shaped mano, 13 cm. long, 9 cm. wide, and 6 cm. thick, was recovered in the excavations. The specimen is a uniface-type mano made from a granite cobble; one end and both sides are markedly battered, suggesting a conscious shaping by the manufacturer or user.

Obsidian Projectile Point

The one projectile point recovered at Eastgate Cave is a tangled specimen 2.4 cm. long and 1.8 cm. wide (pl. 25, l), with a slightly concave or split stem. This type of point resembles roughly certain specimens from Lovelock Cave (Loud and Harrington, 1929, pl. 56, d, f, k) and may also be compared to specimens (recently classified as Type D-2) found on the Humboldt Lake bed now in the collections of the University of California Lowie Museum of Anthropology.

Blade or Knife

This specimen is 6.4 cm. long and 1.7 cm. wide. Its tip, which would add about another 12 mm. to the length of the blade, is missing (pl. 25, k). No evidence of hafting mastic was present on its convex base, hence it is assumed that the piece was simply an unhafted hand tool. Its oval cross-sectional shape at the tip break suggests that it may also have been used as a drill.

Haliotis Pendant

The specimen was in nearly disintegrated condition when found. It appeared to have been manufactured from *Haliotis rufescens* and was 50 mm. long and 23 mm. wide. A conically drilled hole near one end tapers from a diameter of 6 mm. to 3 mm. The pendant is of a type designated as "Z2a" (curved oblong, one terminal perforation, plain edge) by Gifford (1947). The type has not heretofore been recovered in western Nevada sites. The recorded occurrence closest to the Great Basin has been at Kingsley Cave in Tehama County, California (Baumhoff, 1955, p. 55), where specimens were found, mainly from the lower levels of the cave deposit. Baumhoff (ibid., p. 56) points out that such ornaments occur in several Middle Horizon sites in Central California and occasionally, in a slightly different form, in Late Horizon sites.

Miscellaneous

Three large flakes, one of brown chert, one of silicified volcanic material, and one of obsidian, all with slightly chipped edges, were found at various places throughout the deposit. All may have been used as scrapers, but are not sufficiently modified to merit further description. One unmodified clear quartz crystal, which may once have been part of the shaman's cache, was found, not associated with the cache.

In the great quantity of woody debris removed from the cave, several sticks or pieces of bark were found which showed slight cutting or rubbing marks. These appear to have been selected by the inhabitants for ultimate practical use of some sort but never brought to completion.

SUMMARY

The majority of the artifacts found at Eastgate Cave indicate a cache spot rather than a regular habitation locale and may be related to similar specimens found in other dry cave deposits in the Great Basin or, in the case of the "shaman's cache," the hinged-stick snares, and the moccasin, in the American Southwest. In spite of this general identification of remains, however, none of the artifact types except the "Fremont moccasin" and perhaps the one Haliotis ornament (in poor condition) is specific enough to allow, by means of cross-dating, exact determination of the time of occupation of the cave. It appears that there is no direct evidence that Eastgate Cave was utilized at the same time as the adjacent Wagon Jack Shelter, although both the immediate proximity and the lack of protohistoric or historic material in either spot would suggest that this was the case.

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Abbreviations

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-AP	Anthropological Papers
APS	American Philosophical Society
-T	Transactions
BAE	Bureau of American Ethnology
-B	Bulletin
CNHM	Chicago Natural History Museum
-FA	Fieldiana: Anthropology
MAIHF	Museum of the American Indian, Heye Foundation
-INM	Indian Notes and Monographs
PMH	Peabody Museum, Harvard University
-P	Papers
UC	University of California
-AR	Anthropological Records
-ASR	Archaeological Survey Report
-PAAE	Publications in American Archaeology and Ethnology

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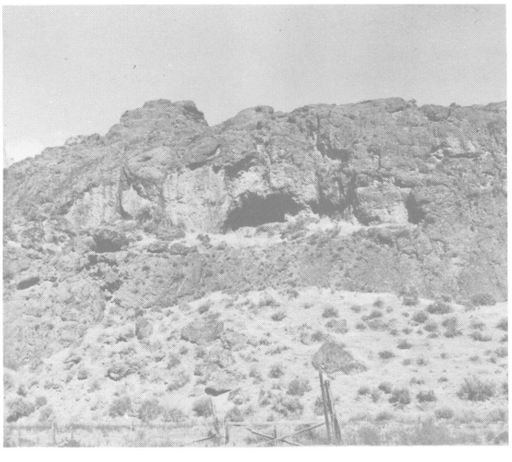
PLATE 25

Artifacts from Eastgate Cave are numbered with "2" prefix (R. H. Lowie Museum of Anthropology numbers, University of California, Berkeley).

a. View to south of entrance to Eastgate Cave. b. View of test excavation near rear of Eastgate Cave. Note rolled-up "shaman's bag" in situ (inner pit). c. Twined "shaman's bag," No. 2-33065. Arrow points to beginnings of weft courses. d. Coiled basketry, rim fragment, No. 2-33085. e. Coiled basketry, start fragment, No. 2-33086. f. Coiled basketry, rim fragment of small bowl, No. 2-33089. g. Twined basketry fragment, No. 2-33092. h. Hinged stick, No. 2-33080. i. Hinged-stick from Granite Mountain area, Nevada. Southwest Museum No. 569-6-39. j. Child's moccasin, No. 2-33050. k. Porphyry knife, No. 2-33094. l. Obsidian projectile point, No. 2-33081. m. Snare peg, No. 2-33093. n. Bored antler base, No. 33084.



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