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McCue: An Elko Site in Riverside, California

MEG McDONALD, PHILIP J. WILKE, and ANDREA KAUS, Dept. of Anthropology, Univ. of California, Riverside, CA 92521.
CHRIS MOSER, Riverside Municipal Museum, 3720 Orange St., Riverside, CA 92501.

THIS paper describes an assemblage of 736 artifacts (Table 1), including a substantial assemblage of Elko series dart points, from the McCue site, Riverside, California. The site (CA-RIV-112) is named after the persons that collected the majority of the artifacts described here, and the collection is now stored at the Riverside Municipal Museum under accession numbers A929 and A1130. The items were donated to the museum by area residents over a period of approximately ten years.

The purpose of this paper is to describe the material culture assemblage from the McCue site since few sites containing substantial assemblages of Elko series points and milling equipment have been reported from inland southern California.

The artifacts described herein are all surface finds, collected from about 100 m. of a stream bed and from the bank of the stream where they were exposed by erosion. Formed artifacts are dominated by Elko series projectile points and milling equipment and include a number of other flaked, ground, and percussive stone artifact forms. This assemblage in no way represents all the material that existed at the site, which has been known to collectors for many years. Some artifacts are still in private hands and were not available for study, many no doubt have washed away, and some material may still be at the site. Recent visits revealed the site area to be heavily overgrown by vegetation, with no cultural remains in evidence. The collection includes a few faunal remains, but the small assortment of bones likely is the result of normal paleontological deposition.

The fact that the McCue site never was systematically excavated presents problems in the analysis of the collection. Source determination was attempted on the obsidian specimens, but the cultural and stratigraphic contexts in which all of the materials were deposited are unknown. The value of the collection lies in its use as a descriptive baseline against which other assemblages in the region and elsewhere can be compared. As time passes, and with the increasing loss of archaeological data in context, collections such as that from the McCue site become ever more important for analysis.

SETTING

The McCue site (Fig. 1) is situated in northwestern Riverside County, California, in the Woodcrest area of the city of Riverside. It was exposed in the right bank of a small, unnamed, apparently perennial stream in a narrow canyon. This canyon is one of many drainages that descend from the Perris Plain to the valley of the Santa Ana River. The actual site area is very near the point where the canyon begins to widen out at the flank of the river valley. Recent lateral meandering of the streambed has been checked during a succession of years of reduced maximum stream discharges which have permitted invasion of the channel by baccharis

Table 1
THE McCUE SITE ASSEMBLAGE

Class, Category, and Type	Quantity
Flaked stone artifacts	
Projectile points	
Elko series	
Elko Eared	16
Elko Side-notched	14
Elko Corner-notched	6
Small exhausted points	5
Unifacial triangular	2
Large side-notched	4
Large triangular points or preforms	3
Pinto series	
Pinto Shoulderless	2
Gypsum Cave	1
Basally thinned lanceolate	1
Unclassified points	4
Drills	4
Narrow-stemmed bifaces	2
Bifaces or blanks	50
Graver	1
Unifaces	2
Edge-modified flakes	33
Cores	9
Debitage	
Unmodified flakes	509
Ground stone artifacts	
Manos	
Unifacial	12
Bifacial	34
Unclassified fragments	2
Metates	
Block (including fragments)	9
Slab (fragments)	3
Percussive artifacts	
Hammerstones	8
Total	736

(*Baccharis glutinosa*) and giant reed (*Arundo donax*, introduced from the Old World). Siltation and slumping of the stream banks have obscured the stratum that yielded the cultural remains. It is thought they were exposed both within the streambed itself and at the base of the high right embankment. Various visits to the site over the last six years have failed to reveal the exact position, thickness, and nature of the cultural stratum. A portion of the bank was cleared in an unsuccessful attempt to identify the cultural level. The only actual information available on the origin of the assemblage comes from the collectors.

Massive exposures of granitic rocks of the southern California batholith, especially quartz diorite, have been exposed by erosion in the general vicinity of the site and provide numerous surfaces for bedrock milling features. Ten bedrock metate surfaces (grinding slicks) occur about 200 m. to the north, but their contextual association with the McCue site cannot be firmly established. Configurations of some of the manos recovered from the streambed at the McCue site are, however, suitable for use on flat surfaces such as occur on the bedrock metates (see below). Bedrock metate features are ubiquitous on the nearby landscape, with observed frequencies as high as 90 per square kilometer (Swenson 1982).

The elevation of the McCue site is about 370 m. above sea level. Annual precipitation averages about 30 cm., and the growing season averages about 255 days (extrapolated from Felton [1965]).

The present vegetation is characterized as Coastal Sage Scrub, and common native perennials on the adjacent slopes are: scalebroom (*Lepidospartum squamatum*), coastal sagebrush (*Artemisia californica*), brittle bush (*Encelia californica*), and white sage (*Salvia apiana*); along the streambed, willows (*Salix* spp.) and baccharis occur.

FLAKED STONE ARTIFACTS

Artifacts included under this heading are projectile points, drills, bifaces, gravers, unifaces, edge-modified flakes, cores, and debitage.

Projectile Points

Terminology employed in this description of projectile points follows that in standard use in the literature. The discussion divides

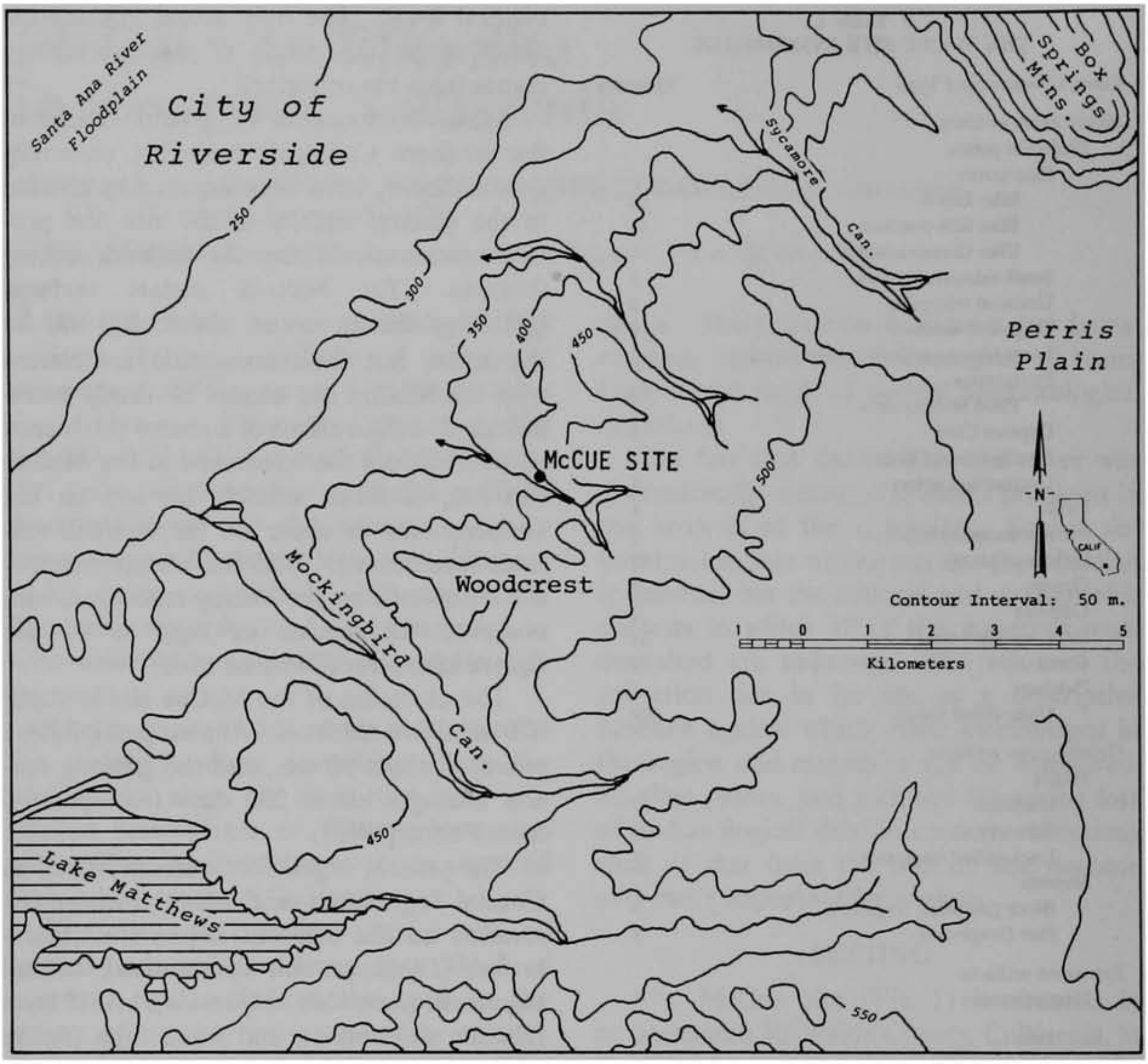

Fig. 1. Location of McCue site.

the collection into a number of forms, but this procedure is employed solely for descriptive purposes. The procedure should not be taken as an attempt to unnecessarily divide a formal continuum, or to establish a series of temporal periods. The collection contains 58 projectile points (including apparent preforms) and point fragments (Figs. 2-4). Thirty-six specimens are classified in the Elko series, two in the type Pinto Shoulderless, and one in the Gypsum Cave type. The remainder are forms labeled descriptively. Where possible, the same descriptive names of similar types from comparable assemblages are used and the reference noted.

The projectile point assemblage consists predominantly of large, bifacially flaked dart points. Some of the flake scars on these items have been eroded due to stream action. Materials and attributes are listed in Table 2. The materials are those common in col-

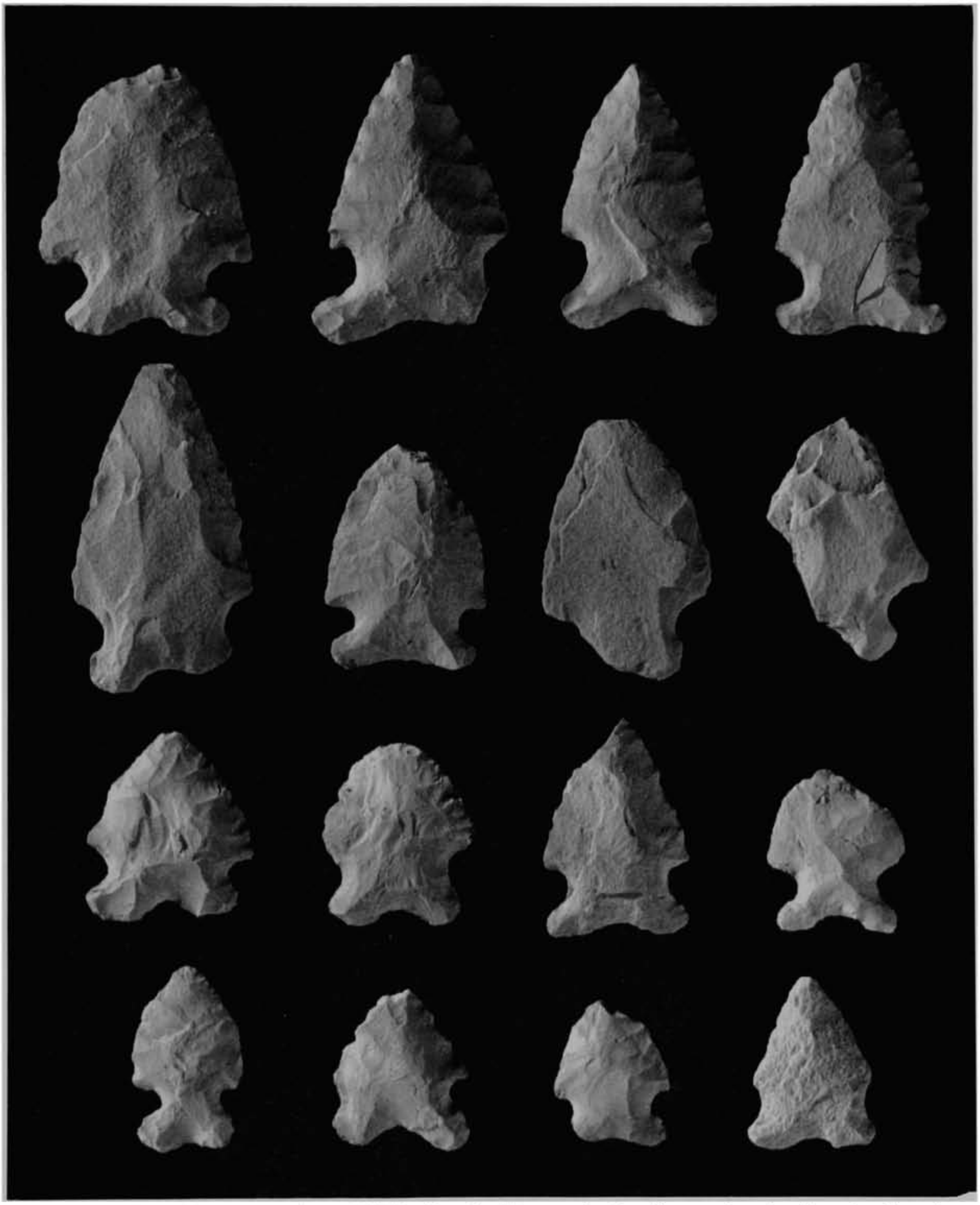

Fig. 2. Projectile points, actual size. All Elko Eared. These and other illustrated projectile points have been coated with ammonium chloride powder to enhance detail.

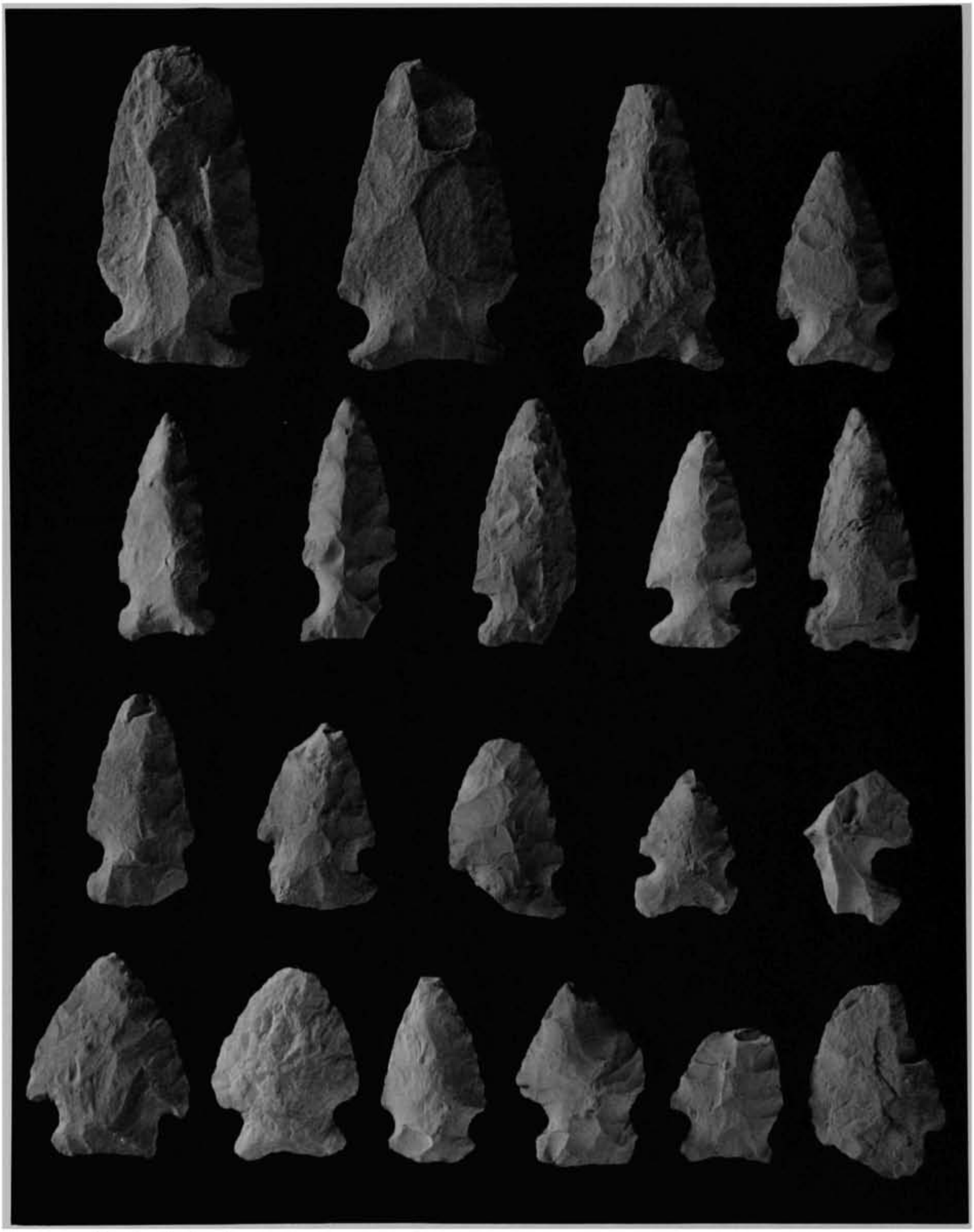

Fig. 3. Projectile points, actual size. Rows 1-3, Elko Side-notched; row 4, Elko Corner-notched.

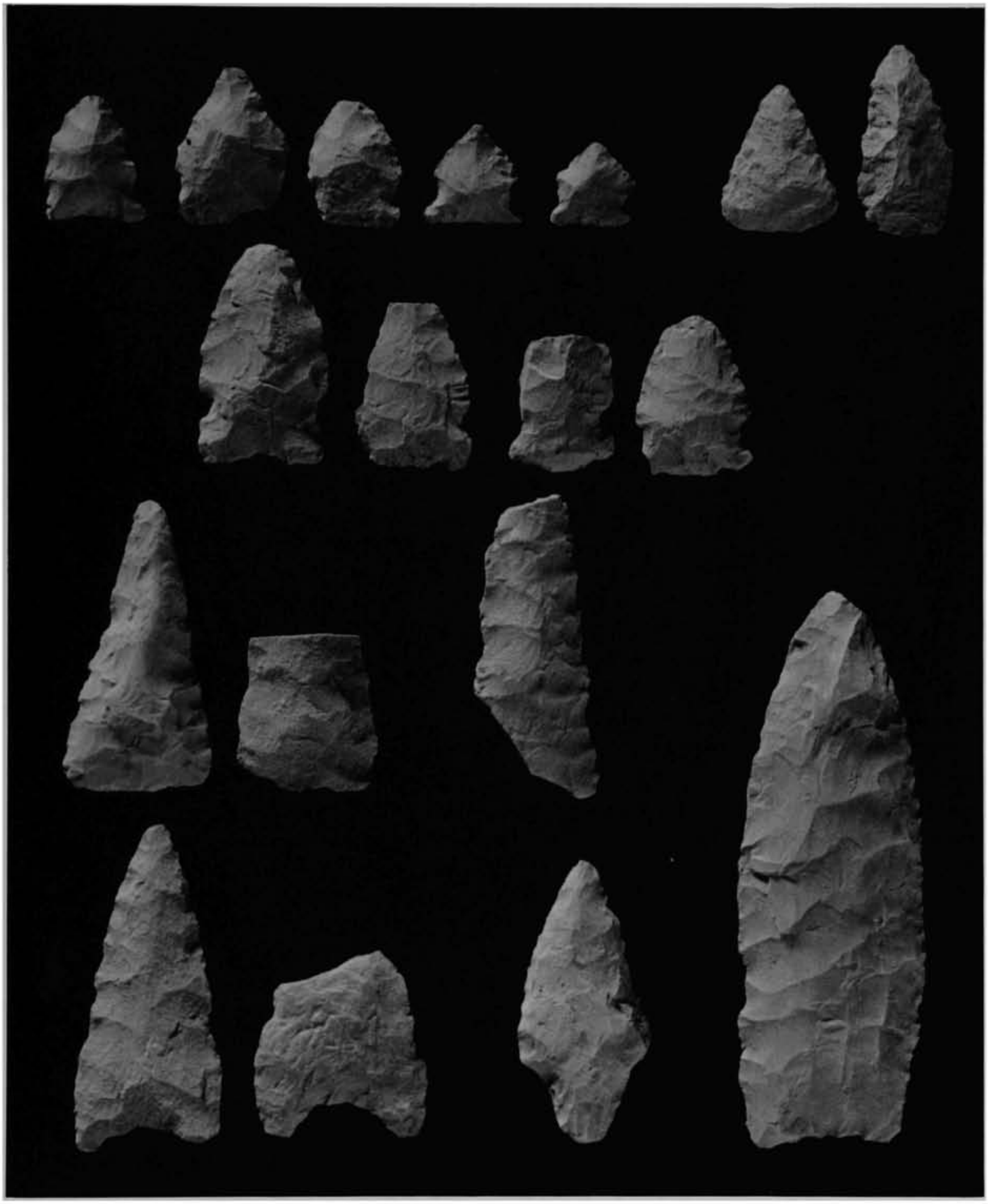

Fig. 4. Projectile points, actual size. Row 1, left, small exhausted points; right, unifacial triangular points or blanks; row 2, large side-notched points; row 3, large triangular points or preforms; row 4, left, Pinto Shoulderless; center, Gypsum Cave; right, large, basally thinned, lanceolate point.

Table 2
ATTRIBUTES OF PROJECTILE POINTS ILLUSTRATED IN FIGURES 2 THROUGH 4[a]

Projectile Point Form	Figure	Catalog No.[b]	Length	Thickness	Shoulder Width	Stem Width	Base Width	Weight	Material
Elko Series									
Elko Eared	Fig. 2, row 1	A929-673	>44.0	6.5	32.0	16.5	27.0	10.0	Quartzite
		A1130-10	>46.5	8.5	>29.5	21.0	—	10.7	Quartzite
		A929-674	43.0	8.0	25.0	17.0	25.5	8.1	Quartzite
		A929-691	44.0	7.0	—	19.0	28.0	8.2	Jasper
	Fig. 2, row 2	A929-688	>53.0	6.0	29.0	20.0	—	11.6	Basalt
		A929-676	>36.5	7.0	26.5	17.0	29.0	7.3	Chert
		A929-693	>43.0	6.0	28.0	16.0	—	7.5	Basalt
		A929-690	—	7.0	—	—	—	—	Basalt
	Fig. 2, row 3	A929-678	>30.5	6.0	27.5	19.5	>25.0	5.8	Chalcedony
		A929-677	30.0	7.0	25.0	17.5	21.5	5.5	Jasper
		A929-675	32.0	7.0	24.0	16.0	23.0	5.7	Quartzite
		A929-679	—	7.0	22.5	13.0	20.0	>3.5	Chalcedony
	Fig. 2, row 4	A929-685	30.0	5.0	18.0	9.5	16.0	2.4	Chert
		A929-680	—	7.0	>22.0	18.0	>22.5	3.3	Obsidian
		A929-681	>24.5	5.0	19.0	12.5	>16.0	2.1	Obsidian
		A929-683	28.0	6.0	19.0	17.0	21.0	3.4	Quartzite
Elko Side-notched	Fig. 3, row 1	A929-711	53.5	8.0	>27.0	17.5	>24.0	12.7	Quartzite
		A929-689	51.5	7.0	>30.0	19.5	26.0	11.8	Basalt
		A929-687	>47.0	9.0	21.5	17.0	23.0	9.8	Basalt
		A929-686	>36.5	7.0	20.5	13.0	17.5	4.2	Rhyolite
	Fig. 3, row 2	A929-699	35.0	7.0	13.5	11.5	16.0	4.0	Fine-grained volcanic
		A929-710	41.5	7.0	16.0	10.0	—	3.9	Chert
		A929-712	41.5	7.0	>17.0	>11.5	—	4.8	Quartzite
		A929-709	36.0	8.0	18.0	9.5	>16.0	3.8	Chert
		A929-700	40.0	7.0	18.0	12.0	19.0	3.9	Chert
	Fig. 3, row 3	Unnumbered[c]	>36.0	6.0	18.0	12.5	17.0	4.0	Basalt
		A929-707	>31.0	7.5	19.5	14.0	>18.0	4.3	Basalt
		A929-718	>30.0	8.0	19.5	12.0	—	3.9	Obsidian
		A929-703	24.0	5.0	16.0	12.0	17.5	1.9	Jasper
		A929-692	—	—	—	—	—	—	Chert

Table 2 (continued)

Elko Corner-notched	Fig. 3, row 4	A929-695	34.0	7.0	27.0	11.0	>17.5	5.4	Rhyolite
		A929-684	31.5	7.0	25.0	15.0	19.0	5.2	Vein quartz
		A929-706	>31.0	6.0	17.5	12.0	14.5	3.2	Chert
		A929-719	—	7.0	—	13.5	>17.0	—	Obsidian
		A929-702	—	5.0	—	13.0	>15.5	—	Obsidian
		A929-696	—	5.0	—	—	—	—	Quartzite
Small exhausted points	Fig. 4, row 1	A929-682	20.0	4.5	>15.0	13.0	>11.0	1.4	Obsidian
		A929-716	25.0	6.5	>18.0	16.0	—	2.9	Jasper
		A929-721	>21.0	6.0	15.5	13.0	—	1.9	Quartzite
		A929-722	16.5	5.0	14.0	11.5	17.0	1.0	Jasper
		A929-720	14.0	4.0	>13.0	10.5	13.0	0.5	Obsidian
Unifacial triangular		A929-726	24.0	4.0	—	—	19.0	1.8	Vein quartz
		A929-723	31.0	4.5	—	—	12.0	2.2	Basalt
Large side-notched	Fig. 4, row 2	A929-701	36.0	7.0	21.0	17.5	20.5	5.0	Quartzite
		A929-715	—	4.0	19.0	16.5	—	2.3	Rhyolite
		A929-708	—	6.0	—	12.5	17.0	2.7	Basalt
		A929-714	26.0	5.0	19.0	16.0	—	2.5	Chert
Large triangular points or preforms									
Straight Base	Fig. 4, row 3	A929-672	47.0	7.5	—	—	22.0	6.4	Chalcedony
		A929-767	—	7.0	—	—	22.0	—	Quartzite
Concave Base		A929-633	>49.0	7.0	—	—	—	6.1	Quartzite
Pinto Shoulderless	Fig. 4, row 4	A929-704	52.5	6.5	24.0[d]	—	23.5	7.0	Quartzite
		A929-705	—	5.5	28.0[d]	—	>25.5	—	Vein quartz
Gypsum Cave		A929-698	45.0	8.0	21.0	12.0	8.5	7.4	Chalcedony
Basally thinned lanceolate		A929-723	89.0	8.5	30.0[d]	—	25.0	28.8	Chert

[a] Artifacts are listed in the order they appear in the illustrations. Measurements are in mm.; weight in g. [>] denotes a smaller measurement due to slight breakage. Only measurements of complete or nearly complete attributes are given.

[b] The collection is stored under accession numbers A929 and A1130 at the Riverside Municipal Museum, Riverside, CA.

[c] This is a recent find and donation to the collection that has not yet been catalogued.

[d] Since these points have no definite shoulder, the greatest width of the point was measured instead.

lections from the immediate region. In some cases material identification could not be made without thin-sectioning, and the broad categories of *fine-grained volcanic, porphyritic volcanic*, and *other* have been used.

Elko Series. Elko series points (Figs. 2 and 3) predominate in the assemblage. The series was first described by Heizer and Baumhoff (1961) in their report on Wagon Jack Shelter, Nevada. A few years later O'Connell (1967) concluded that the series appeared about 1500 B.C. Elko points are large, notched dart points, generally with expanding stems, and bases that range from straight to deeply notched or broadly concave. The notches on most of the McCue specimens are extremely broad. Distal portions vary from elongate to broadly triangular, but this variation probably is more the result of reworking than of intention on the part of the makers. In fact, the preponderance of complete but short, blunt examples suggests that the assemblage is largely one of discards, or worn-out points, further reworking of which would not have resulted in effective missile tips.

The most commonly reported types of the series are the Elko Eared and Elko Corner-notched (O'Connell 1967; Bettinger and Taylor 1974; Heizer and Hester 1978), but the assemblage from the McCue site includes examples sometimes termed Elko Side-notched as well. The following discussion recognizes specific forms (types), but it is apparent that they grade into one another.

Elko Eared. These points (Fig. 2), 16 in all, have deep basal concavities and pronounced lateral basal protrusions or ears that give the type its name. Some of the McCue specimens are quite large for the type, and they clearly grade into the Side-notched type, less so into the Corner-notched.

Elko Side-notched. Fourteen points (Fig. 3, upper 3 rows) are characterized by broad side notches positioned generally at right angles to the longitudinal axis (Davis and Smith 1981:24); they make the bases appear to expand. They are differentiated here from the Elko Eared and Elko Corner-notched types by the moderate depth of the basal concavities and by the fact that the widths of the bases are approximately the same as the shoulder widths.

Comparison with Figure 2 shows the similarity with the Eared type and the difficulty in objectively separating the two. Thomas (1981), working with specimens from central Nevada, suggested dropping the Side-notched type from the Elko series and employed measurement criteria that would tend to group specimens of this form into either the Eared or the Corner-notched types. The distinction would, in his scheme, be based on the relative depth of the basal concavity. Such a procedure obscures the fact that the notches on specimens of this form are clearly executed in the lateral margins rather than in the corners, irrespective of arguments concerning basal concavity.

The Side-notched type is relatively rare in most Elko assemblages. This form is more commonly represented in southern California than in most other regions where the Elko series occurs. For example, the proportion of such specimens to other forms in the McCue point assemblage exceeds that in the assemblage from Newberry Cave. A possible reason for the common occurrence of this form in the McCue assemblage may be that it is extremely difficult to form notches in the corners of specimens of such intractable materials as basalt, quartzite, and other metamorphic rocks without losing both the ears and barbs (shoulders) in the process.

Elko Corner-notched. This usually is one of the predominant types in the Elko series.

Only six are represented in the McCue assemblage (Fig. 3, lower row). This type is differentiated from the Elko Eared form by the relative straightness of the base, varying from mildly concave to mildly convex, neither of which produces a notable eared appearance. Since they are notched in the corners, the bases tend to be narrower than the shoulders, a characteristic that also differentiates this form from the Elko Side-notched form.

Small Exhausted Points. Five examples (Fig. 4, upper row, left) are the smallest points in the assemblage. They share the characteristic of being exhausted to the extent that their original forms can no longer be discerned. They are of materials that are readily pressure-flaked, and appear to have been reworked after dulling or breakage until they no longer were functional. The thickness of the specimens is roughly equivalent to that of the larger points, suggesting that in their original configuration they might have been classified in the Elko series.

Unifacial Triangular Points or Blanks. Two unifacially worked, slightly curved flakes, with overall triangular outlines and rounded bases characterize this group (Fig. 4, upper row, right). Similar specimens were common at Afton Canyon on the lower course of the Mojave River (Schneider 1986), where they were interpreted as blanks or preforms.

Large Side-notched Points. Four examples of this form (Fig. 4, second row), are weakly side-notched with bases that range from slightly convex to concave.

Large Triangular Points or Preforms. Three large, robust points are roughly triangular, with straight sides and straight or concave bases (Fig. 4, third row). Flake scars originating at the lateral margins terminate near the longitudinal axis, resulting in very thick cross sections. Similar forms were described by Lanning (1963) from Rose Spring (Inyo County, California), but the latter appear not to be as thick as the specimens from the McCue site. Davis and Smith (1981) described similar specimens from Newberry Cave, noting that some may have served as knife blades rather than as points. The McCue specimens resemble blades of hafted stone knives described by Fowler and Matley (1979) in the Powell collection of material culture of the historic Southern Paiute. Two of the specimens are straight-based and similar to the "broad isosceles triangle" described by Lanning (1963:252). Both are bifacially flaked, but one point is flat on one face, and markedly convex on the other. This form resembles Kowta's (1969) Type 16 in the Sayles Complex from Cajon Pass, about 50 km. to the north in San Bernardino County. One point is more elongate than the others and the base is fragmented but deeply concave.

Pinto Shoulderless. Two points (Fig. 4, lower row, left) can be classified in the Pinto Shoulderless type described by Harrington (1957:51) from the Stahl site near Little Lake, Inyo County, California. They are roughly triangular in outline and have "edges bulging slightly above the base." The bases are concave.

A similarity to the Humboldt Basal-notched biface (Bettinger 1978) is noted. However, these are more broadly and less deeply notched in the base than most specimens classified as Humboldt Basal-notched. Whatever their original configuration and function, their forms suggest extensive re-sharpening while hafted.

Gypsum Cave. A single point (Fig. 4, lower row, center) is roughly equivalent in size and form to the Elko Side-notched and Corner-notched points except that the stem contracts rather than expands. The type was first described by Harrington (1933), who placed it chronologically very early due to false association with sloth dung at Gypsum Cave, Nevada. More recent dates on dart foreshafts from Gypsum Cave, as well as association with other projectile point series in other sites, show the Gypsum Cave type to be coeval with the Elko series (Bettinger and Taylor 1974; Davis and Smith 1981; Fowler et al. 1973). Given the occurrence of this point in a predominantly Elko assemblage, the specimen might better be termed Elko Contracting-stem (Bettinger and Taylor 1974:18; Heizer and Hester 1978:159). It probably results from rejuvenation of a badly fractured corner-notched or eared specimen.

Basally-thinned Lanceolate. This point (Fig. 4, lower row, right) is the largest in the collection. The base is slightly concave and a few short thinning flakes were removed from one face. The specimen was found separate from the main site area, about 30 m. upstream on the opposite bank.

Unclassified Points. Four specimens (not illustrated) probably represent one or more of the above-mentioned forms but are not classified because they are so fragmentary. In their original forms, all were notched, but the shapes of their bases can no longer be discerned. Two are of quartzite, one is of chert, and one is of welded tuff.

Discussion. The projectile point assemblage from the McCue site consists of large notched and barbed specimens indicating use of the atlatl and dart, a weapon system in general use throughout western North America between about 8,500 and 1,500 B.P. A wide range of forms is present but, as noted above, the predominating types grade into one another and the groupings offered here are arbitrary, reflecting traditional approaches to classification. Two observations are evident: the specimens tend to be generally complete, in the sense that they are not badly fragmented; and the tips of individual examples are blunt, the lateral edges converging in rather obtuse (as opposed to acute) angles, suggesting substantial reworking of broken or damaged dart points. Some specimens show spalling, crushing, or other impact damage at the distal ends. In some cases, especially in specimens made of obsidian or of cryptocrystalline quartzes (chalcedony, jasper, chert), reworking has been carried to an extreme degree, with the final discarded products much blunted and reduced in size and configuration. Specimens made of quartzite, basalt, or tough metamorphic rocks appear to have been manufactured and repaired primarily by percussion flaking; as a result they were not reworked to the extent indicated by those made of cryptocrystalline quartzes.

From a functional standpoint, the assemblage is interesting in that it consists of specimens that saw hard service and eventually were discarded when considered exhausted.

Drills

Three drills (Fig. 5, upper row, left) and one drill proximal fragment (not illustrated) are in the collection. They are bifacially flaked, and the lateral edges are steeply flaked to give the distal portion an overall rounded cross section. Bases of two of the specimens are simple expanding tangs, and they may have been used by hand without hafting. The other two specimens have side-notched tangs and most likely were hafted. Such drills function efficiently when mounted on a rodlike shaft and twirled between the palms. The drills appear to have been made from large side-notched projectile points such as those illustrated in Figure 3. Materials are quartzite, chert, fine-grained volcanic, and an unidentified stone. The

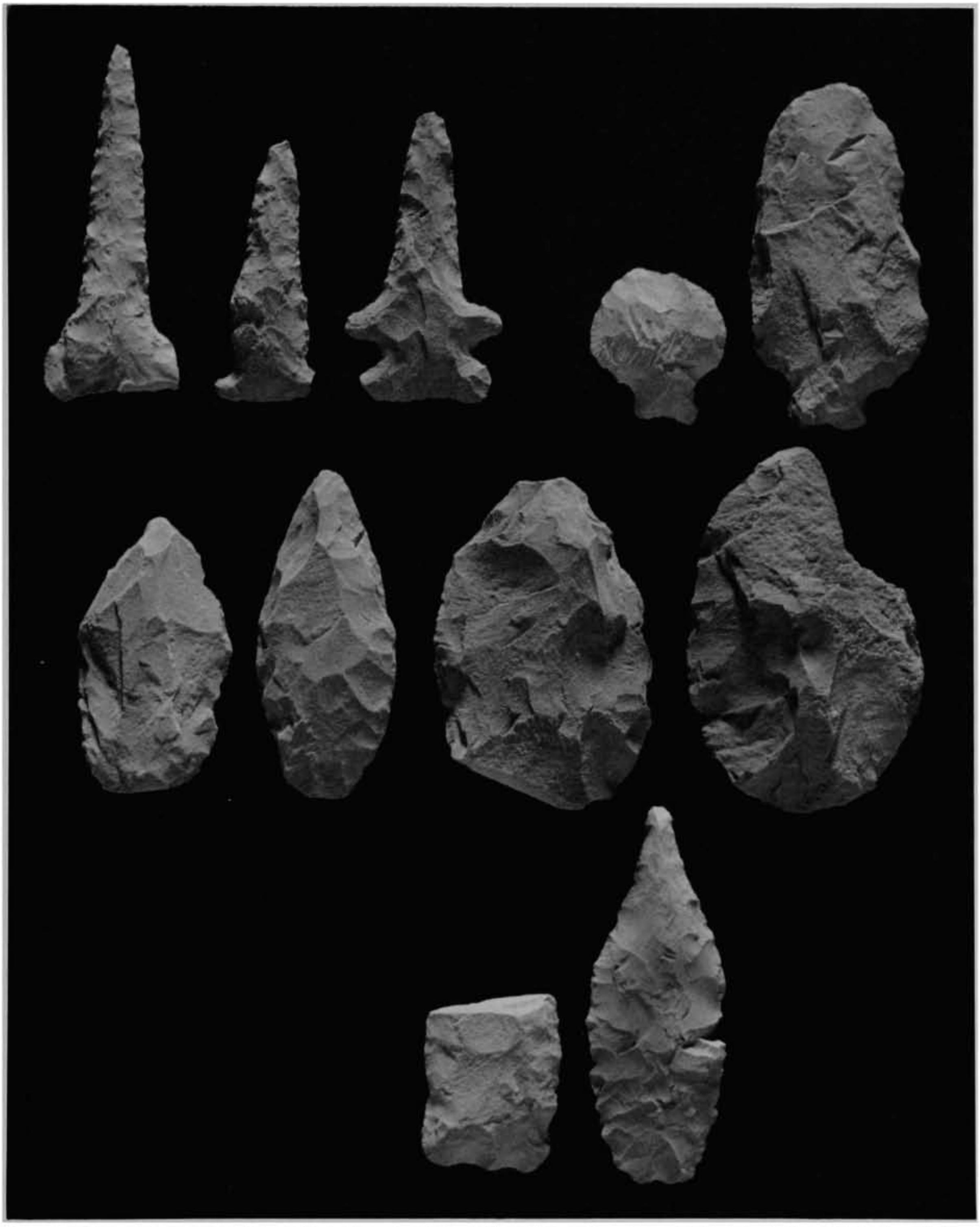

Fig. 5. Flaked stone artifacts, actual size. Row 1, left, drills; right, narrow-stemmed bifaces; row 2, bifaces; row 3, square-based biface and graver.

drills are of a size and configuration that closely matches the proximal ends of dart foreshafts reported in literature (e.g., Lindsay et al. 1968). Among other possible functions, they may have been used to form the sockets in the distal ends of dart mainshafts.

Narrow-stemmed Bifaces

Two specimens, one quartz and one fine-grained quartzite (Fig. 5, upper row, right), may be knives that once were hafted. The stems are very narrow when compared to the widths of the blades, and their bases are concave. The rather unusual blunt shape may be due to resharpening.

Bifaces or Blanks

Most of the 50 specimens classified as simple bifaces or blanks are roughly flaked, largely by percussion, and appear to have been broken during manufacture. Many may have been intended as blanks for the production of dart points. Most of the more complete specimens are generally ovate in outline, with one end tending toward square and the other tending toward pointed. Materials represented, in decreasing frequency, are basalt, quartzite, quartz, chert, rhyolite, chalcedony, jasper, and obsidian. Examples of bifaces are shown in Figures 5 and 6.

One specimen of chert (Fig. 6, third row, left), a material commonly heat-treated, has a crenulate fracture of the kind that sometimes results from cooling too rapidly in the process of heat treatment. It has fine pressure flaking around the edges and has a width to thickness ratio of 6:1. The break may have been initiated during heat treatment and completed while the specimen was being pressure-flaked to form, perhaps as a dart point.

Another specimen (Fig. 5, second row, second from left) has extreme abrasion and polish on one worked edge, suggesting use as a knife.

Graver

The single chalcedony graver (Fig. 5, lower row right) is bifacially worked but plano-convex in cross section. The distal end tapers to a blunt point that is more steeply flaked on one face.

Unifaces

Two large flakes are unifacially flaked around the entire margin (Fig. 7, upper row) suggesting use as scrapers. One is jasper, the other basalt. The distinction between *unifaces* and *edge-modified flakes* (discussed below) is one of degree, and thus arbitrary.

Edge-modified Flakes

These are flakes that show some modification on one or more edges (Fig. 7, lower two rows). They were probably used for various purposes such as scraping and cutting. There are 33 specimens made of basalt, undetermined metamorphic rocks, chalcedony, chert, jasper, quartzite, obsidian, vein quartz, and rhyolite.

Cores

Nine multiplatform cores and core fragments range from 32 to 71 mm. in maximum diameter. Most appear to have been exhausted by the removal of flakes. The largest has only a few flakes removed, the remaining cortex showing extensive smoothing from stream abrasion. Materials represented are chert, jasper, quartz, and various volcanic and metamorphic rocks.

Debitage

This category comprises residue from flaking that shows no evidence of use. None of the debitage is illustrated.

Unmodified Flakes. As the largest cate-

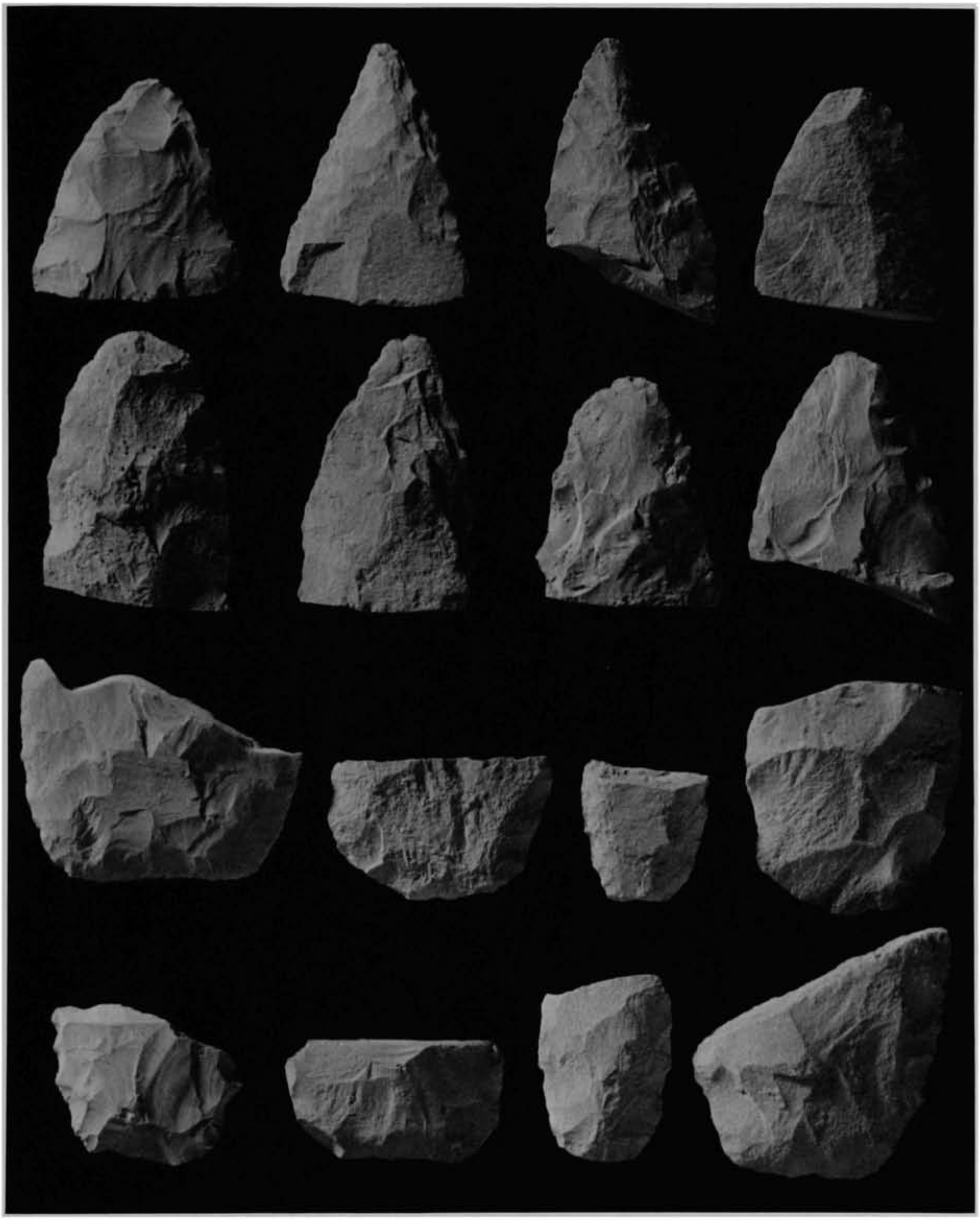

Fig. 6. Biface fragments, actual size.

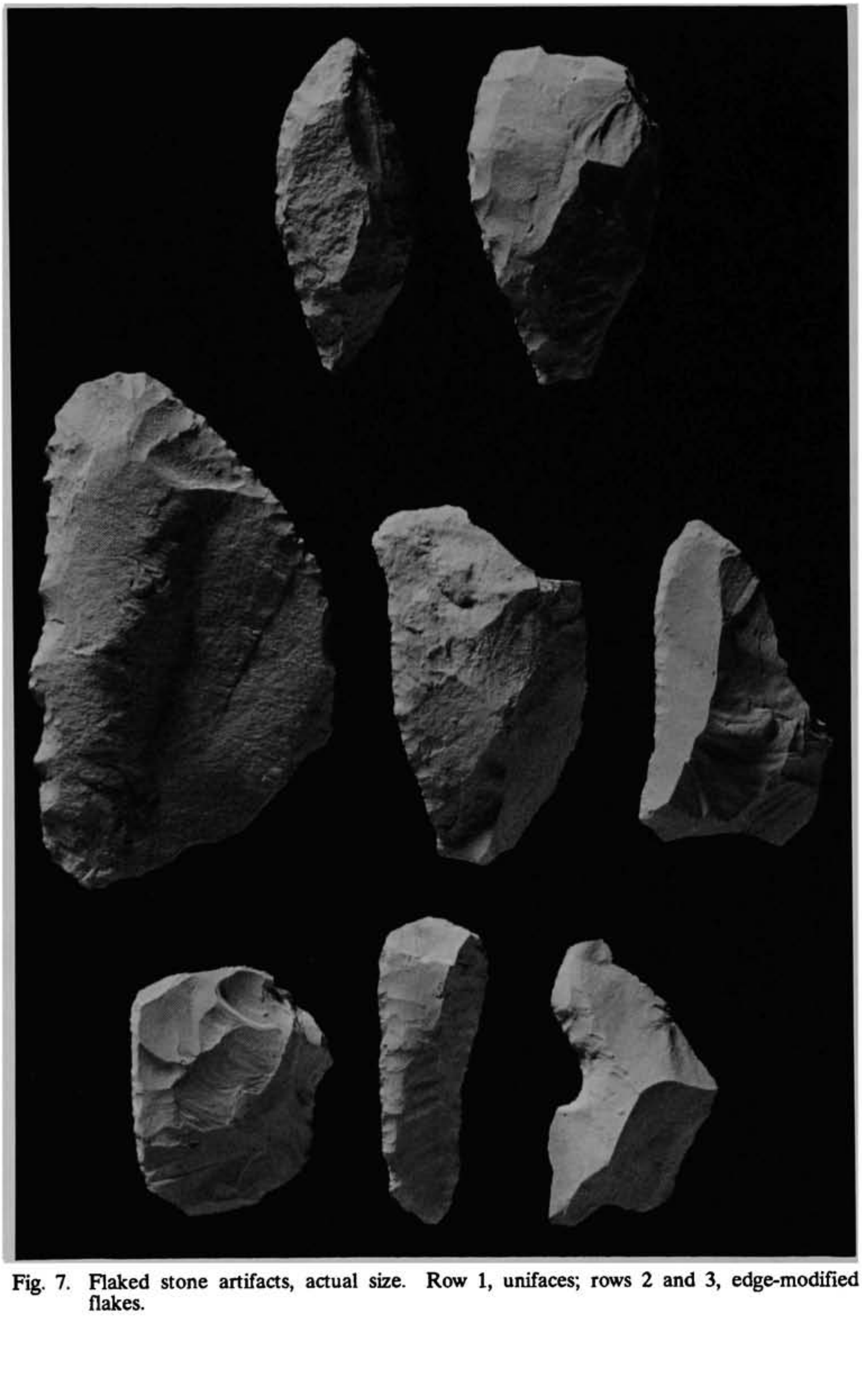

Fig. 7. Flaked stone artifacts, actual size. Row 1, unifaces; rows 2 and 3, edge-modified flakes.

gory, this consists of 509 specimens. Materials include (in order of abundance) various volcanic and metamorphic rocks, quartzite, quartz, jasper, chalcedony, chert, and obsidian. Most of these materials are obtainable in the general region, but the obsidian was imported from distant sources (see Appendix), and the jasper and chalcedony (and perhaps also the chert) were likely imported from the desert regions.

The debitage collection is strongly dominated by specimens of large size, individual flakes 2-5 cm. in maximum dimension being common. This reflects the manner in which the collection was acquired, and the loss of small specimens by stream action, rather than the actual composition of the cultural assemblage that once existed at the McCue site. Table 3 lists the material, quantity, and mean weight (g.) per flake. The debitage represents the reduction of cores of various configurations, with some bifacial core thinning repesented in each material category except vein quartz. Most of the debitage resulted from reduction of local volcanic and metamorphic rocks common to the margin of the southern California batholith; these are available locally in stream gravels. The obsidian debitage includes specimens indicative of bipolar reduction of small pebbles, including one specimen that may be from either the Fletcher source in Mineral County, Nevada, or the Bodie Hills source in Mono County, California. These sources are located near one another (see Appendix Fig. 1) and are of similar chemistry. Other sources represented in this collection include the Coso volcanic field in Inyo County, California, and at least four "unknown" (i.e., yet uncharacterized) small nodule source areas.

Table 3
DEBITAGE ATTRIBUTES

Material	Quantity	Biface-thinning Flakes	Mean Weight/ Item (g.)
Jasper	33	7	4.7
Chert	21	5	4.1
Chalcedony	24	3	2.2
Vein quartz	48	0	4.0
Quartzite	129	11	6.7
Obsidian	18	1	3.6
Volcanic/metavolcanic[a]	236	11	5.8
Total	509	38	

[a] Includes a variety of rock types common to the margin of the southern California batholith.

Discussion

The projectile point assemblage shows extreme reworking of broken and otherwise damaged specimens, suggesting conscious attempts to economize on scarce quality material.

Even an approximate dating of the McCue site on the basis of projectile point typology must remain an open question. The collection is dominated by examples assigned to the Elko series. Most authors working in the central and western portions of the Great Basin argue for an appearance of the Elko series after about 2000 B.C. According to Heizer and Hester (1978) the time span in the Great Basin for the Elko series is 2000 B.C. to A.D. 1080. Bettinger and Taylor (1974) shortened the period of presumed use to 1200 B.C. to A.D. 600 for the western Great Basin, and Thomas (1981) placed it 1300 B.C. to A.D. 700. In their report on Newberry Cave, Davis and Smith (1981) accepted the beginning date of the series at 2000 B.C. Warren (1984:414-416) supported the dating offered by Davis and Smith and suggested that the types Humboldt Concave-base (here called Pinto Shoulderless) and Gypsum Cave were used during the same interval. Elsewhere in the Desert West, notably at Hogup, Danger, and Cowboy caves, Utah; Sudden Shelter, Utah; Weston Canyon Rockshelter, Idaho; O'Malley Shelter, Nevada; Connley Caves and Dirty Shame Rockshelter, Oregon, the Elko series dates far older, up to 8,500 years (Flenniken and Wilke 1986). At Skull Creek Dunes, Oregon, Wilde (1985) recovered Elko series points in deposits overlain by Mount Mazama ash, which fell just after 7,000 radiocarbon years ago (Bacon 1983). A longer time span for the series is clearly indicated.

Most of the flaked stone assemblage from the McCue site likely functioned as implements associated with hunting. Due to the large size of the points, the prey animals were probably large, most likely deer, mountain sheep, or pronghorn.

The source patterns among the various tool categories and the debitage suggest a procurement strategy or strategies that differs from that in other areas. Typically, the greatest diversity of obsidian sources is represented among the projectile points and not among the other artifact forms or debris. Perhaps projectile points were exchanged on a regular basis and more frequently than other tools. The points also may have been recycled, cared for, or reused more frequently than other items.

The McCue assemblage, by contrast, exhibits the greatest source variation in the debitage collection. This would be a unique pattern, unless the Bodie Hills/Fletcher and the Mono Glass Mountain assignments are incorrect and represent two other nodular obsidian sources. Further work now in progress in the collection and analysis of these obscure source areas should help to resolve this question in the future. Two large sources just across the state line in Nevada have only recently been found and have not yet been chemically characterized and reported.

GROUND STONE ARTIFACTS

The ground stone artifacts from the McCue site are all subsistence-related grinding implements. There are 60 of these artifacts: 48 manos and 12 metates. The artifacts are described by general morphological characteristics (size and form) and by the configuration of the ground surface(s) within the two functional categories. Comments are offered regarding any distinctive features such as pecking or striations on the grinding surface(s).

Manos

Manos are classified by the number and configuration of the grinding surfaces. Twenty of the 48 manos are incomplete; all but two are large enough to be included in the analysis. Most (43 of 48) are of granitic material. The remainder are of schist, rhyolite, gneiss, and an unidentified fine-grained black rock.

Unifacial Manos. Twelve (ten complete specimens and two fragments) of the 48 manos and mano fragments are unifacial. In plan view they display no apparent overall patterning, but are either oblong or round, and are flat, domed, or triangular in cross section. They show little evidence of intentional modification. The ten complete manos (Fig. 8, left) range from 10.3 to 14.6 cm. in length, from 7.9 to 11.3 cm. in width, and from 4.8 to 7.4 cm. in thickness. The mean dimensions of these manos are 11.6 x 9.5 x 6.1 cm. Five of the 12 unifacial manos show evidence of an additional grinding surface not worked enough to display a uniformly smooth horizon. The opposing faces on triangular or dome-shaped manos may have functioned as handgrips.

Eleven of the unifacial manos have grinding surfaces slightly rounded along the shorter axis. Striations parallel to this axis were observed on two of these manos.

Bifacial Manos. Thirty-four of the 48 manos and mano fragments are bifacial.

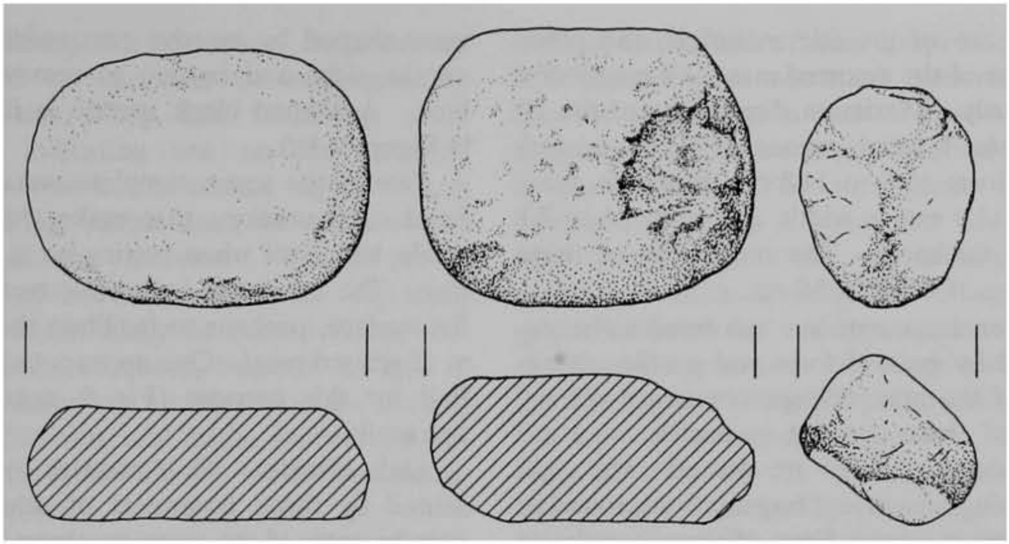

Fig. 8. Manos and hammerstone, approximately one-half actual size. Left, unifacial mano; center, bifacial mano; right, hammerstone.

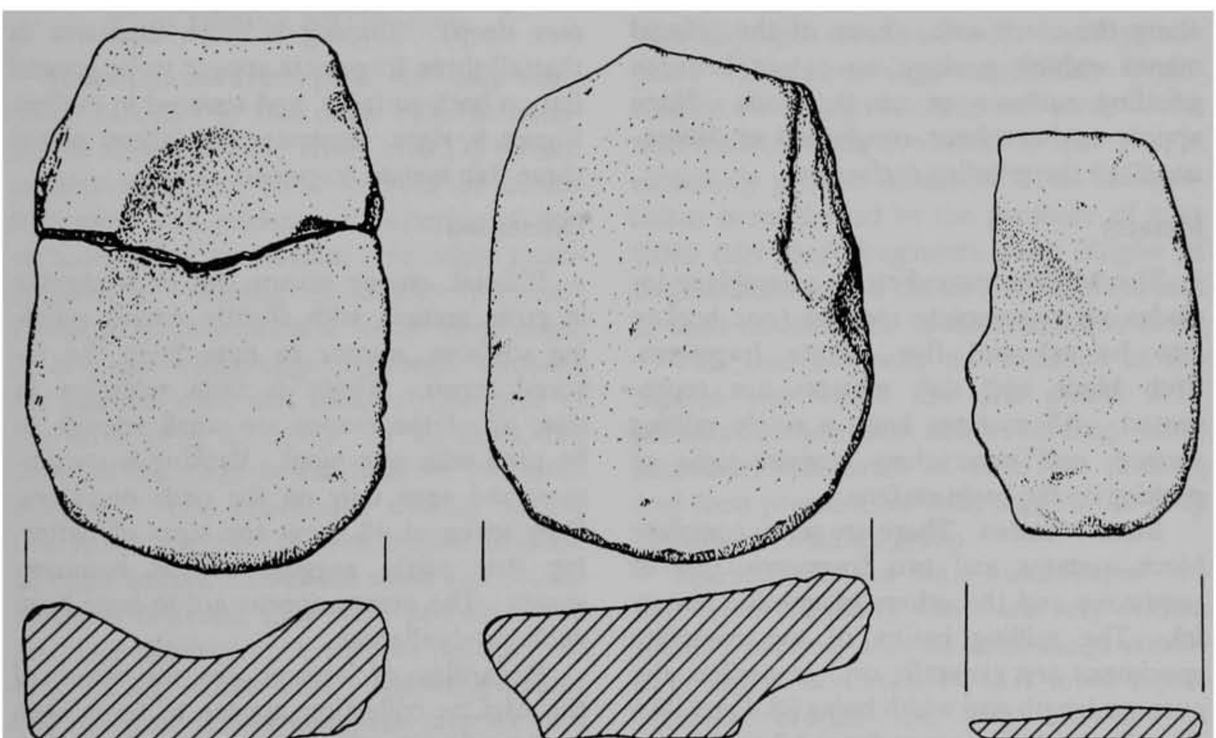

Fig. 9. Metates. Left, shaped block metate; center, block metate with bevelled, percussion-flaked base; right, slab metate. Specimen at left is 43 cm. long.

Thirty are of granitic materials; the other four are of the assorted materials mentioned previously. Maximum dimensions of the 19 complete bifacial manos (Fig. 8, center) range from 10.6 to 14.8 cm. in length, from 7.7 to 11.0 cm. in width, and from 3.6 to 7.1 cm. in thickness. The mean size of these manos is 11.5 x 9.2 x 5.2 cm.

Seven fragments are too small to be described by general form and profile. Nineteen of the other 27 specimens are oblong; eight of these are flat in profile, nine are triangular, and three are domed. The eight remaining manos and fragments are round or irregular in form. Four of these are flat in cross section and the others are of various forms.

Thirty-one of the 34 bifacial manos have convex grinding surfaces with the curve along the short axis. Four of the bifacial manos exhibit pecking on ridges between grinding surfaces or on the ends. None appear to have been roughened or "sharpened" on the grinding surfaces.

Metates

The McCue ground stone assemblage includes seven complete metates (one broken into halves) and five metate fragments. Both block and slab metates are represented. All metates have a single milling surface, and none show obvious signs of pecking on the basin surface.

Block Metates. There are seven complete block metates and two fragments, one of sandstone and the others of granitic material. The milling basins of the complete specimens are generally oval in outline, the average length and width being 28.0 and 20.6 cm. Basin depths range from 1.7 to 4.7 cm., with a mean of 2.7 cm. The minimum thickness of the block metates ranges from 10.0 to 18.0 cm.

Six of the block metates and fragments were shaped by massive percussion flaking on the sides and bottom to remove excess bulk. A shaped block metate is illustrated in Figure 9, left.

Five of the seven complete metates have basal configurations that make them fairly stable and level when resting on a flat surface. The other two lean while resting on a flat surface, perhaps to facilitate the removal of ground meal. One appears to be modified for this purpose (Fig. 9, center), and tips easily.

Slab Metates. Slab metates are represented by three fragments of schist, and may be parts of the same specimen. In comparison to the block metates, the slabs are thinner and flatter in configuration. Minimum thicknesses range from 2.9 to 3.8 cm., and milling surfaces are shallow (3, 8, and 11 mm. deep). Shaping is more extensive in that all three fragments appear to be ground flat on both surfaces, and squared in outline. Figure 9, right, illustrates the largest of the three slab metate fragments.

Discussion

Bifacial, oblong manos, flat or triangular in cross section, with slightly convex grinding surfaces, appear to have been the favored forms. There is little variation in size; all of the manos are small enough to be used with one hand. Pecking is uncommon and seen only on the ends or ridges. Only seven of 48 show any signs of battering that might suggest use as hammerstones. The manos appear not to have been deliberately shaped.

Regardless of form or size, the manos of the McCue collection appear to have been used predominantly with a push-pull grinding motion. Many have been used with enough rotation to make the grinding surface wrap around the leading and/or trailing edges of the mano, as described by Riddell (1960:

42-43). Except for one mano, the convexity is limited to one axis of each grinding surface, the other axis remaining fairly straight, indicating use on flat grinding surfaces. Few of the manos suggest use in deep milling basins, such as are seen on several of the metates. Rector (1983) pointed out that manos used with deep basin metates would likely be convex along both axes. As noted above, bedrock metates or grinding slicks are also found in the area of the McCue site, and might account for the excess manos that do not fit the metates in the collection.

Most of the metates are made on thick blocks of stone, with basins 1.7 to 4.7 cm. deep, and are not suitable for convenient transport.

PERCUSSIVE ARTIFACTS

Hammerstones comprise the only functional category in this class. The hammerstones here are what True (1980:17) termed cobblehammers: "small cobbles or cobble fragments with evidence of battering on one or more edge or surface. No other modification or shaping is usually present." Evidence of percussion is found along edges or at points where edges converge, allowing for concentration and focus of the force of the blow (Fig. 8, right). In all cases, the angle of the ridge is less than 90° but more than 45°. This provides a striking surface that is fairly narrow but not fragile. Because all eight hammerstones are small and not extensively battered, they were probably used for more delicate work, such as light percussion flaking, rather than roughening manos and metates. These hammerstones are of a variety of volcanic and metamorphic rocks.

SUMMARY AND INTERPRETATIONS

The McCue site artifacts were analyzed without the benefit of intrasite provenience. It is assumed, but not at all demonstrated, that the assemblage is derived from a single component and that a single temporal period is represented. The significance of the McCue site lies in the fact that few other sites in the region have yielded large predominantly Elko hunting assemblages together with abundant milling equipment. The archaeological record of inland southern California prior to the late prehistoric period is everywhere poorly documented.

A contrast can be drawn between the assemblage from the McCue site and that from Newberry Cave on the Mojave Desert (Fig. 10). The latter is interpreted (Davis and Smith 1981) as a place of activities conducted by members of a hunters' society, where weapons were fabricated and ritualistic activities associated with hunting took place. The assemblage suggests the beginning of a hunting round, in that some of the dart points were deposited at the site in essentially pristine condition. The interpretation is reinforced by the presence of over 1,000 dart shaft fragments, stick effigies of large mammals, and the almost complete lack of food remains and food preparation tools.

This contrasts with the situation at the McCue site where the dart points show pronounced attrition and reworking, other functional categories of tools are present, and food preparation tools suggest the daily activities of a mixed group.

Specialized sites with assemblages like that from Newberry Cave are very seldom found. McCue, with its assemblage consisting largely of throwaways, is more representative of the the daily activities of archaic hunters and gatherers.

Several sites in inland southern California have yielded assemblages not greatly dissimilar; unfortunately, none of these is yet

Fig. 10. Locations of some of the sites discussed in the text.

well dated either. Many similarities are seen in the assemblage from Indian Hill Rockshelter in extreme southeastern San Diego County (Wallace and Taylor 1960; Wallace et al. 1962; Wilke et al. 1986). Dart points from Indian Hill also display broad notches and are made from materials comparable to those found at McCue, and a like assemblage of milling equipment was found there.

Two excavated sites in western San Diego County yeilded assemblages not unlike that from McCue. Site W-1556, reported by O'Neil (1982), yielded 14 large dart points classifiable in the Elko series. The assemblage also included milling equipment and diverse other tool categories.

The Avocado Highlands site (Cardenas 1986) in southwestern San Diego County yielded an abundant assemblage sharing many similarities with that from McCue, including several Elko Eared dart points. As part of his report, Cardenas included a compendium of over 50 sites in San Diego County and northern Baja California containing Elko series points. These numbers indicate that while the actual frequency of such points at most sites is low (most were only recorded in surveys), their distribution is widespread in space. One no longer need look to the Great Basin for comparison with assemblages containing such dart points.

Parallels are also seen with flaked and ground stone assemblages from Hi Card Ranch in southwestern Riverside County (McCarthy 1986) and with some of the site loci (especially the Greven Knoll) at the Yucaipa site in San Bernardino County (Hicks 1958; Martz 1977). The Pauma Complex sites of northern San Diego County (True 1980), which are not well dated, may be related to McCue, although much of what is ascribed to Pauma may actually reflect fairly specialized lithic reduction activity.

A series of assemblages from Crowder Canyon, near Cajon Pass in San Bernardino County (Kowta 1969; Basgall and True 1985), contained similar milling equipment, but the projectile points share no resemblance to specimens from McCue. Unlike projectile points, it appears that milling implements display little change over time or across space in the region. The Crowder Canyon sites are believed to date to the interval 1,000-3,000 B.P.

Little can be said of the age of the McCue assemblage other than that it apparently was deposited sometime between 8,500 and 1,500 years ago.

In terms of technology, the projectile point assemblage from McCue consists of large, bifacially flaked dart points, predominantly of the Elko series. This series is characterized by triangular points with expanding stems and bases that range from straight to deeply concave or broadly notched. Points from McCue are broader and blunter than specimens commonly seen in Elko series assemblages. Easily worked stone (cherts, chalcedonies, jaspers, etc.) is scarce in the area and the prehistoric craftsmen made extensive use of tougher, poorer quality materials locally available for dart point manufacture. Much of the flaking was done by percussion. The broad side or corner notches may have been fashioned by indirect percussion, rather than by pressure. The generally blunt distal ends on most of the dart points are the result of fracture and rejuvenation. Most of the points also are reasonably complete. It might seem that this characterization reflects the selection made by the collectors, but a large collection of debitage was also assembled; thus, the configurations of points probably reflects the true nature of the assemblage. Stem and base fragments apparently were not overlooked.

Aside from damage to the distal end, fracture patterns commonly seen on Elko series dart points from Great Basin sites, where the dominant materials are obsidian, chert, chalcedony, and jasper, are of three kinds. These are: stem separations, which result from bending fractures across the blade between the notches; barb or shoulder fractures; and ear fractures (Flenniken and Wilke 1986). Ear fractures are the only one of these patterns commonly seen in the McCue assemblage. This almost certainly reflects the toughness of the stone from which most of the points were made, and indicates additionally the importance of material in determining the configuration of finished points, the nature of the fractures they were likely to sustain in use, and the avenues for rejuvenation that existed after fractures occurred. Decisions to discard specimens appear to have been based on the bluntness of the tips or distal ends; the short lateral cutting edges; and the improbability of effective rejuvenation in the event of further damage. A few specimens of easily worked materials were reduced to very small size (Fig. 4, upper row, left; cf. Table 2).

The ground stone assemblage consists entirely of subsistence-related grinding implements. Manos from the McCue collection are generally bifacial with slightly convex grinding surfaces, and small enough to be used with one hand or two hands overlapping. Deliberate shaping is not seen, and pecking of the working surfaces or edges is uncommon. Most of the metates were made on large blocks of stone, with fairly deep, sloping basins. Many of the manos in the assemblage do not fit the basins of the block metates; it is suggested that the configuration of these manos is due to use on bedrock grinding slicks. Slab metate fragments in the collection have flat grinding surfaces.

All of the percussive tools in the McCue assemblage are small hammerstones. Evidence of percussion occurs on ridges or points where ridges join. Because the McCue hammerstones are small and not extensively battered, it is suggested that they probably were used for delicate percussion flaking, as in the manufacture of dart points from basalt and other tough rock, and in the flaking of blanks and preforms for such points.

Small nodules of obsidian were reduced bipolarly, as indicated by core remnants, and biface-thinning flakes are represented among nearly all debitage materials.

The assemblage from the McCue site contains a broad range of artifact forms reflective of a diversity of activities. Hunting and seed milling are attested by the artifacts discussed in the above paragraphs. The drills suggest manufacture or repair of atlatl dart mainshafts. Most of the bifaces, such as those illustrated in Figure 6, are of a size and configuration that suggests their intended use, before they went awry, in dart point production. Abundant debitage suggests tool production, and much of the material is foreign to the immediate region and would have necessitated importation from the deserts or beyond. While we doubt a habitation site (a place of long-term residence likely to have a complex tool inventory) is represented, the assemblage is consistent with what would be expected of a seasonal camp occupied for short intervals, perhaps over a long period of time. The latter would be expected to have an artifact assemblage reflecting a lesser number of tasks, a characterization that agrees with the assemblage from the McCue site as we interpret it here.

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