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The Archaeology of Southcott Cave, Providence Mountains, California

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SOUTHCOTT CAVE (CA-SBR-334), located in the eastern Mojave Desert of California, was excavated in 1962 by Christopher Donnan with a crew from the University of California, Los Angeles (UCLA). The results of that excavation, along with the materials from Rustler Rockshelter (Davis 1962) and Mitchell Caverns (not then reported in full; see Pinto [1985]), were used to formulate the basic chronology for the eastern Mojave Desert (Donnan 1964).

The latter part of this chronology was called the Providence Complex (Davis 1962: 45-46; Donnan 1964:12) and included a pre-ceramic Yuman Horizon (to A.D. 800), a ceramic Yuman Horizon (ca. A.D. 800-1400), and a Shoshonean Horizon (A.D. 1400-1850). Donnan's 1964 paper, in which the material from Southcott Cave was considered but not described, still stands as the baseline to which new data from the area are compared (cf. Warren 1984:392-393).

Donnan (1964:11) believed that the lowest levels of Southcott Cave reflected the pre-ceramic Yuman Horizon of the Providence Complex while the upper materials from Southcott reflected a ceramic Yuman occupation. By inference, then, Donnan (1964) dated the occupation of Southcott Cave to between A.D. 800 and A.D. 1400.

This report documents the excavation of the cave, describes the collection, and serves as the final report on the project. The collection and notes are housed at UCLA under accession number 365.

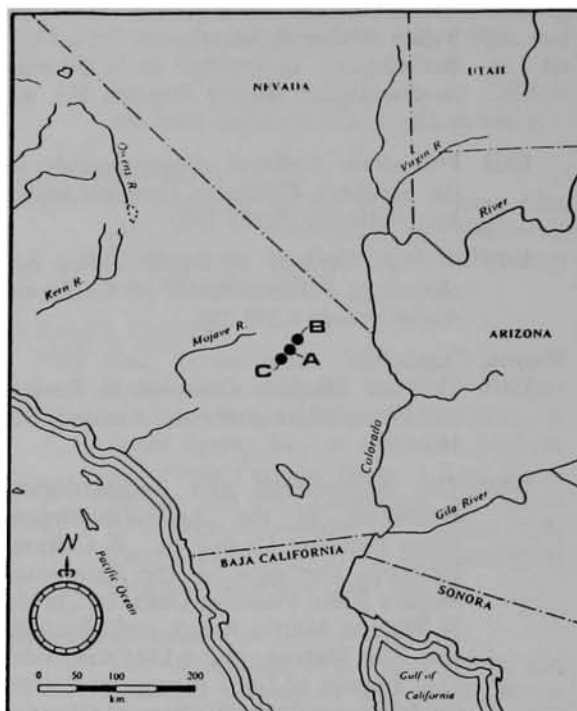


Fig. 1. Location of Southcott Cave (A), Rustler Rockshelter (B), and Mitchell Caverns (C).

LOCATION AND SETTING

Southcott Cave is located in the Providence Mountains approximately 13 km. (8 mi.) northeast of Mitchell Caverns (Fig. 1). The cave is situated on the east-facing slope of a small finger ridge at an elevation of 370 m. (1,220 ft.) (Fig. 2), and formed within a soft volcanic ash lens exposed in the hillside. It is fairly small, measuring about 6 m. wide, 2.5 m. deep, and 2 m. high (Fig. 3). As the ceiling and walls are soft, they are



Fig. 2. View of Southcott Cave (arrow), looking west. Photo by C. Donnan, 1962.

continually exfoliating and any evidence of smoke-blackening on the ceiling would have long since eroded away. The color of the soil in the cave is dark gray, the same as the matrix of the hillside. The soil color of the deposit is more likely the result of ash deposition than of midden development.

The surrounding area is within the Creosote Bush Scrub plant community (Munz and Keck 1949, 1950). Plants typical of this community include creosote bush (*Larrea tridentata*), burro bush (*Ambrosia dumosa*), silver cholla (*Opuntia echinocarpa*), and various grasses. Banana yucca (*Yucca baccata*) also exists in the area. Pinyon (*Pinus monophylla*) and juniper (*Juniperus osteosperma*) inhabit the higher elevations just to the west and northwest of the cave. Associated fauna include woodrats (*Neotoma* spp.), antelope ground squirrel (*Ammospermophilus leucurus*), various other rodents (cf. *Peromyscus* and *Perognathus*), cottontail rabbit (*Sylvilagus audubonii*), black-tailed hare (jackrabbit; *Lepus californicus*), desert tortoise (*Gopherus agassizi*), and bighorn sheep (*Ovis canadensis nelsoni*).

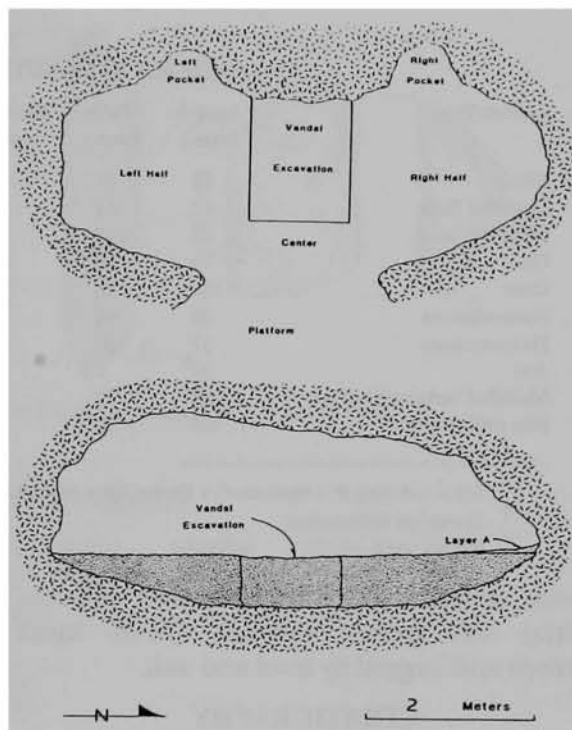


Fig. 3. Plan and profile view of Southcott Cave.

FIELD METHOD

When the site was first visited by the UCLA crew, there was a large open hole in the center of the deposit, probably the result of vandalism. The site was arbitrarily divided into several "units" (Fig. 3), including the Left and Right halves, two small pockets in the rear of the cave, the "Center" of the cave (in front of the vandal excavation), and the "Platform" area (in the mouth of the cave), each of which was excavated separately. The vandal excavation was stabilized and the sidewalls cleaned.

A datum point was established and excavation proceeded in 6-in. levels from below the datum point. A small portion of the deposit, in the northern side of the cave, extended above the level of the datum point and that material was excavated separately as "Layer A." The Platform and Center were already about a foot below the datum point and the excavation levels for those

Table 1
ARTIFACT ATTRIBUTES AND PROVENIENCE

Artifact Type	Length (mm.)	Width (mm.)	Thickness (mm.)	Weight (g.)	Material	Depth (in.)	Unit ^a	Figure
Biface	68	46	18	60.1	rhyolite	Surface	—	4a
Modified flake	67	58	16	73.6	rhyolite	12-18	LH	—
Modified flake	27	19	7	3.9	chalcedony	30-36	LH	—
Core	70	52	29	107.7	chalcedony	12-18	LH	—
Core	125	85	85	752.0	rhyolite	30-36	P	—
Hammerstone	98	60	25	222.3	quartzite	30-36	P	4b
Hammerstone	57	39	25	65.9	quartz	30-36	P	4c
Awl	39 ^b	6.5	3.5	1.1	bone	12-18	C	—
Modified tortoise plastron	22	19	17 ^c	1.7	bone	—	—	—
Fire drill hearth	188	21	—	—	wood	0-6	RP	11

^a LH = Left Half; P = Platform; C = Center; RP = Right Pocket.

^b incomplete measurement.

^c interior depth.

areas began at the 12-18-in. level. All material was passed through 1/2-in. mesh screen and bagged by level and unit.

STRATIGRAPHY

No stratification was visible in the side-walls of the excavations. A large quantity of plant remains was collected from the upper 12 in. of the Right Half (including Layer A) and undoubtedly represented a woodrat nest. The distribution of ceramic pieces throughout the deposit demonstrates the lack of stratigraphic integrity in the interior of the cave. This may be due partly to the considerable rodent disturbance noted during the excavation. Several of the levels of the Platform contained a concentration of material and may represent an intact deposit.

ARTIFACT DESCRIPTIONS

The various artifacts recovered from the site are described below. Attributes and provenience of these artifacts are presented in Table 1, with the debitage and ceramics considered separately.

Chipped Stone

Formed Artifacts. One rhyolite biface (Fig. 4a), two edge-modified flakes, and two

cores, one rhyolite and one chalcedony, comprise the chipped stone artifacts (Table 1). No projectile points were found.

Debitage. There are 118 flakes (106 rhyolite, 10 chalcedony, one obsidian, and one jasper). The distribution of the debitage is provided in Table 2. The Platform is considered separately since it represents the entrance of the cave; excavations did not occur in front of the cave.

Rhyolite. One-half of the rhyolite debitage (53 pieces) came from the Platform, in the same location as the rhyolite core and hammerstones. The 24-30-in. level of the Center also contained a concentration (12) of rhyolite flakes. The average weight of the rhyolite flakes from the Platform is 35.5 g., from the Center, 37.3 g., and from the rest of the cave, 12.9 g. Rhyolite occurs in the immediate vicinity of the site in the form of large cobbles. A large diffuse scatter of rhyolite debitage, cores, and bifaces, along with cobble reduction loci, is present on the eastern slope of the ridge where Southcott Cave is located. This scatter appears to be the result of the prehistoric assaying of the quality of the rhyolite material on the slope.

Chalcedony. Ten chalcedony flakes were recovered (Table 2). The average weight of

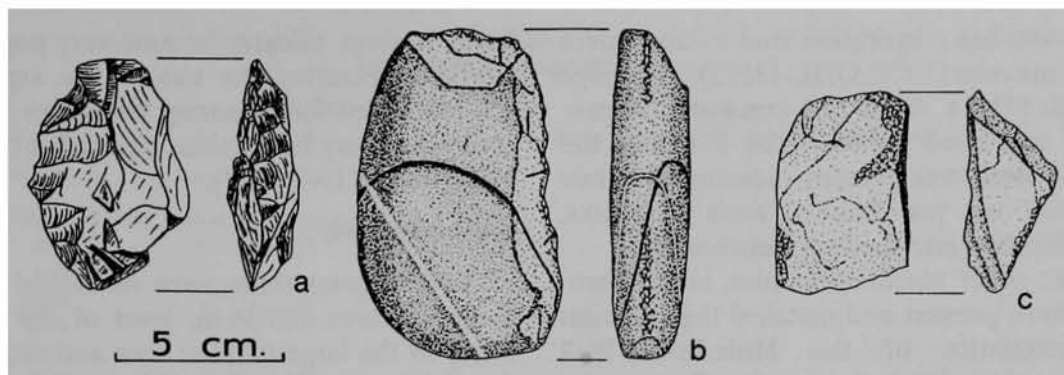


Fig. 4. Some stone artifacts from Southcott Cave. a, biface; b-c, hammerstones.

Table 2
DISTRIBUTION OF LITHIC DEBITAGE

Provenience	Rhyolite Freq. (wt.) ^a	Chalcedony Freq. (wt.)	Jasper Freq. (wt.)	Obsidian Freq. (wt.)	Totals Freq.
Pothole (total)	15 (214.8)	2 (2.4)			17
Interior Units (in.)					
0-6	6 (42.8)	2 (10.4)			8
6-12		1 (6.4)			1
12-18	1 (64.6)				1
18-24	5 (38.4)	1 (5.7)			6
24-30	18 (585.6)	3 (18.8)			21
30-36	2 (6.9)			1 (27.7)	3
36-42	4 (75.3)	1 (12.6)			5
42-48	1 (28.3)				1
Platform (in.) ^b					
12-18					0
18-24			1 (0.2)		1
24-30	16 (558.7)				16
30-36	15 (615.0)				15
36-42	21 (684.3)				21
42-48	2 (59.3)				2
Totals	106 (2,974.0)	10 (56.3)	1 (0.2)	1 (27.7)	118

^a Freq. = Frequency; (wt.) = aggregate weight in g.

^b surface of Platform was 12 in. below the datum point at the beginning of excavation.

the flakes (5.6 g.) suggests core reduction rather than tool maintenance. The presence of a chalcedony core and roughly finished biface may support this interpretation.

Jasper. A single small (0.2 g.) jasper flake was found and may represent retouch activity. No other jasper material was recovered from the site.

Obsidian. One bipolarly sectioned "Apache tear" obsidian nodule came from the 30-36-in. level of the Right Half. The nodule retains considerable cortex and did not appear to have been worked, although it was broken open. The piece is of similar trace element chemistry as material from the Bagdad source area (45 km. to the south-

west) and has a hydration rind measurement of 7.6 microns (UCR-OHL-13083). It is large enough (43.1 x 35.5 x 14.1 mm.) to have provided tool-sized flakes. The fact that the nodule itself was present indicates that raw material, not just finished tools or blanks, were brought into the Providence area.

Two other obsidian nodules, both unbroken, were present and matched the chemical characteristics of the Hole-in-the-Wall source area, located several miles to the north of the site. It is possible that these were natural inclusions in the site, perhaps eroding out of the ash matrix of the cave.

Discussion. The recovery of debitage was undoubtedly skewed by the use of 1/2-in. screen. So, the large average weight of flakes in the collection probably does not reflect cultural behavior. With this in mind, the following observations are made.

The concentration of the rhyolite flakes from the Platform and Center, along with the presence of the two hammerstones and the rhyolite core in the same area, is suggestive of a small lithic work locus. Small flakes indicative of earlier stages of tool production and of resharpening, if present, were not recovered.

Another pattern is apparent. Most of the stone working assemblage is located fairly deep in the Platform area (and the same levels of the Center). The flakes there are almost exclusively of rhyolite. While there are some chalcedony flakes present in the assemblage, they are few and stratigraphically above the majority of the rhyolite. It seems that rhyolite became less popular over time and was partially replaced by chalcedony as a material for manufacturing lithic implements.

The same pattern is evident at the Denning Springs Rockshelter near the south end of Death Valley, California (Sutton 1987a), where, in the lower levels of the deposit, argillite was almost exclusively utilized.

Later in time, silicates became very popular, nearly supplanting the use of the argillite. The dating of this apparent transition is not secure but may have taken place about A.D. 1000 (Sutton 1987a:137).

Hammerstones

Two hammerstones were recovered from the same area (30-36-in. level of the Platform) as the large rhyolite core and much of the debitage. The first (Fig. 4b) is made from a waterworn quartzite cobble, the second (Fig. 4c) is of quartz and appears to have been broken roughly in half.

Modified Bone

Two pieces of modified bone are present in the collection, an awl and a worked piece of tortoise plastron. The awl is almost complete, with just the tip missing. The piece is badly burned and was made from the bone of an unidentified large mammal. Production and maintenance of basketry may have been an activity carried out at the site.

The second piece of modified bone is a small fragment of unburned desert tortoise (*Gopherus agassizi*) shell. The piece is thin and curved and probably is a carapace fragment. The (outside) edge of the piece has been modified and smoothed. It is possible that it is a fragment of a tortoise shell bowl or ladle.

No such artifacts were reported from Mitchell Caverns (Pinto 1985) but they are known to have been used in the general area during the ethnographic period. Drucker (1937:14) reported that the Chemehuevi used tortoise shells as ladles. Van Valkenburgh (1976:235) further reported that the Chemehuevi used tortoise shells to dig graves.

Ceramics

The collection includes 559 sherds. These mostly belong to two common wares of the southern California Desert, Tizon Brown

Table 3
DISTRIBUTION OF CERAMICS

Provenience	Vessel Number						Potcovers			Totals
	1	2	3	4	5	6	Tizon	Parker Buff	Lower Colorado Buff	
Vandal Pit	4	2	50	16	2	1	—	—	—	75
Right Side (half, pocket, and Layer A)										
0-6	9	4	74	16	12	7	—	—	4	126
6-12	2	—	—	1	—	—	—	—	—	3
12-18	1	—	8	4	3	—	—	—	—	16
18-24	—	—	7	1	—	—	—	1	—	9
24-30	—	—	1	—	—	—	—	—	—	1
30-36	—	—	3	—	—	—	—	—	—	3
36-42	—	—	1	—	—	—	—	—	—	1
42-48	—	—	—	—	—	—	—	—	—	0
Left Side (half and pocket)										
0-6	1	1	16	11	—	—	—	1	—	30
6-12	1	—	17	8	7	1	2	—	—	36
12-18	1	—	12	10	10	—	—	1	—	34
18-24	—	3	29	17	3	—	1	1	—	54
24-30	1	4	14	2	1	—	1	—	—	23
30-36	1	—	2	2	1	—	—	—	—	6
Center										
12-18	7	1	11	2	2	—	—	—	—	23
18-24	—	1	27	9	3	—	—	—	—	40
24-30	—	1	6	2	2	—	—	—	—	11
30-36	—	—	—	—	—	—	—	—	—	0
Platform										
12-18	—	—	1	—	—	—	—	—	—	1
18-24	—	—	8	—	1	1	—	—	—	10
24-30	—	1	12	—	—	—	—	—	—	13
30-36	—	—	26	1	—	—	—	—	—	27
36-42	—	1	15	—	1	—	—	—	—	17
42-48	—	—	—	—	—	—	—	—	—	0
Totals	28	19	340	102	48	10	4	4	4	559

Ware and Lower Colorado Buff Ware, the latter represented by the Parker Buff series. Both wares were reported to have been constructed using the paddle and anvil method (Rogers 1936; Euler and Dobyns 1958; Schroeder 1958; Waters 1982). The exception is a single unidentified buff ware pot cover. The distribution of the various ceramics is presented in Table 3. Not all of the pieces are included, however, due to the loss of some catalog numbers.

Tizon Brown Ware. Three partial vessels and one pot cover of Tizon Brown are present. Two of the vessels were tempered with

irregularly sized quartz and feldspar particles and varying amounts of amphiboles, indicating that the temper was crushed and sorted. Tizon Brown Ware is thought to have been made between A.D. 800 and A.D. 1900 (Euler and Dobyns 1958).

Vessel No. 1. This Tizon Brown Ware vessel is represented by 28 sherds, eight of which belong to its upper portion and were reconstructed (Fig. 5), allowing an estimate of the original shape and dimensions of the jar. It was probably ca. 45 cm. wide with a mouth opening of about 15 cm. in diameter. The height of the jar is estimated to have

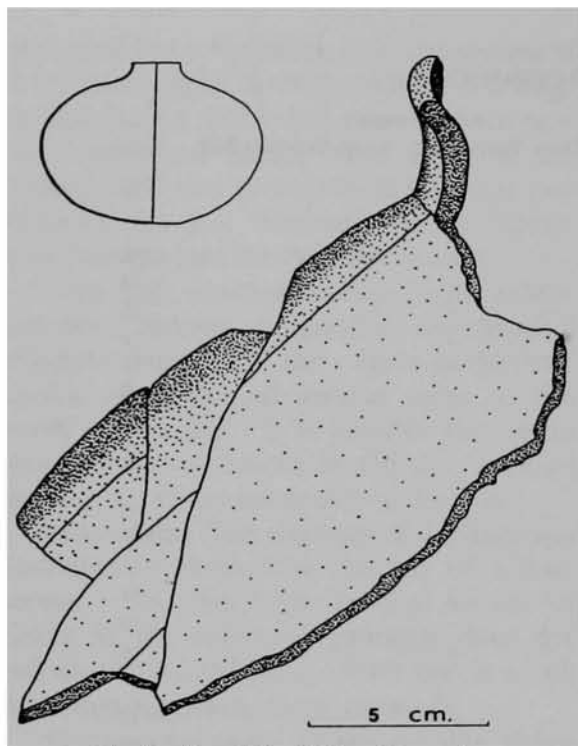


Fig. 5. Vessel No. 1, Tizon Brown jar.

been about 50 cm.

The body is globular with a neck that curves up and slightly outward. The rim is somewhat rounded but is primarily flattened along the top. The result was a large jar that could be filled with some material (e.g., seeds) and easily sealed with a small pot cover for storage.

Vessel No. 2. Only 19 sherds of this Tizon Brown Ware vessel (not illustrated) are present. They were easily separable from the other brownware sherds in the collection due to the unusual "gritty" nature of their surfaces and the high percentage of evenly sized amphibole fragments associated with the temper. This regularity of temper and inclusions seems to indicate that the clay and temper were carefully ground prior to the mixing of the paste. Unfortunately, too little of the vessel was present to allow even a minimal estimate of its original size and shape, although a single rim sherd does suggest that it was the same kind of jar as

Vessel No. 1. The rim of Vessel No. 2 is less well formed and much more weathered than that of Vessel No. 1, however.

Vessel No. 3. The third Tizon Brown Ware vessel (not illustrated) is represented by 340 sherds. Most of these are bright reddish-orange to brick red in color. However, Tizon Brown Ware commonly varies in color from pale yellow to brick red or dark brown, all within a single vessel, and Vessel No. 3 contains many sherds of varying shades of brown, gray, orange, and pink. The identifying attributes used to place these sherds together and separate them from the other Tizon Brown Ware sherds are temper type, consistency and size, paste consistency, and surface texture.

Sherds from Vessel No. 3 contain quartz and feldspar temper which is more regular in composition and size than those of Vessel No. 1. It also contains a small amount of mica and fewer amphiboles than were found in Vessel No. 1. The paste is not as sandy and the surface is covered with a float of fine particles that conceals the temper and fills the pores of the clay. Vessel No. 3 was more finely finished than Vessel No. 1.

Eight rim sherds from this vessel are in the collection, indicating that the vessel was a large jar with a mouth diameter of about 16-18 cm. The rim was flattened and slightly irregular in thickness and curvature. The body of the jar apparently was an elongated oval shape that rose to within 1 cm. of the rim before recurving slightly. The size of the body could be reconstructed accurately, although dimensions of 30-40 cm. in height and 25-30 cm. in width seem reasonable based on the rim/neck form and number of sherds. There is no evidence that this jar was sealed with pitch, although another form of cover that left no obvious trace could have been put over the mouth.

Pot cover. One pot cover (Fig. 6a) was partially reconstructed from four pieces. It

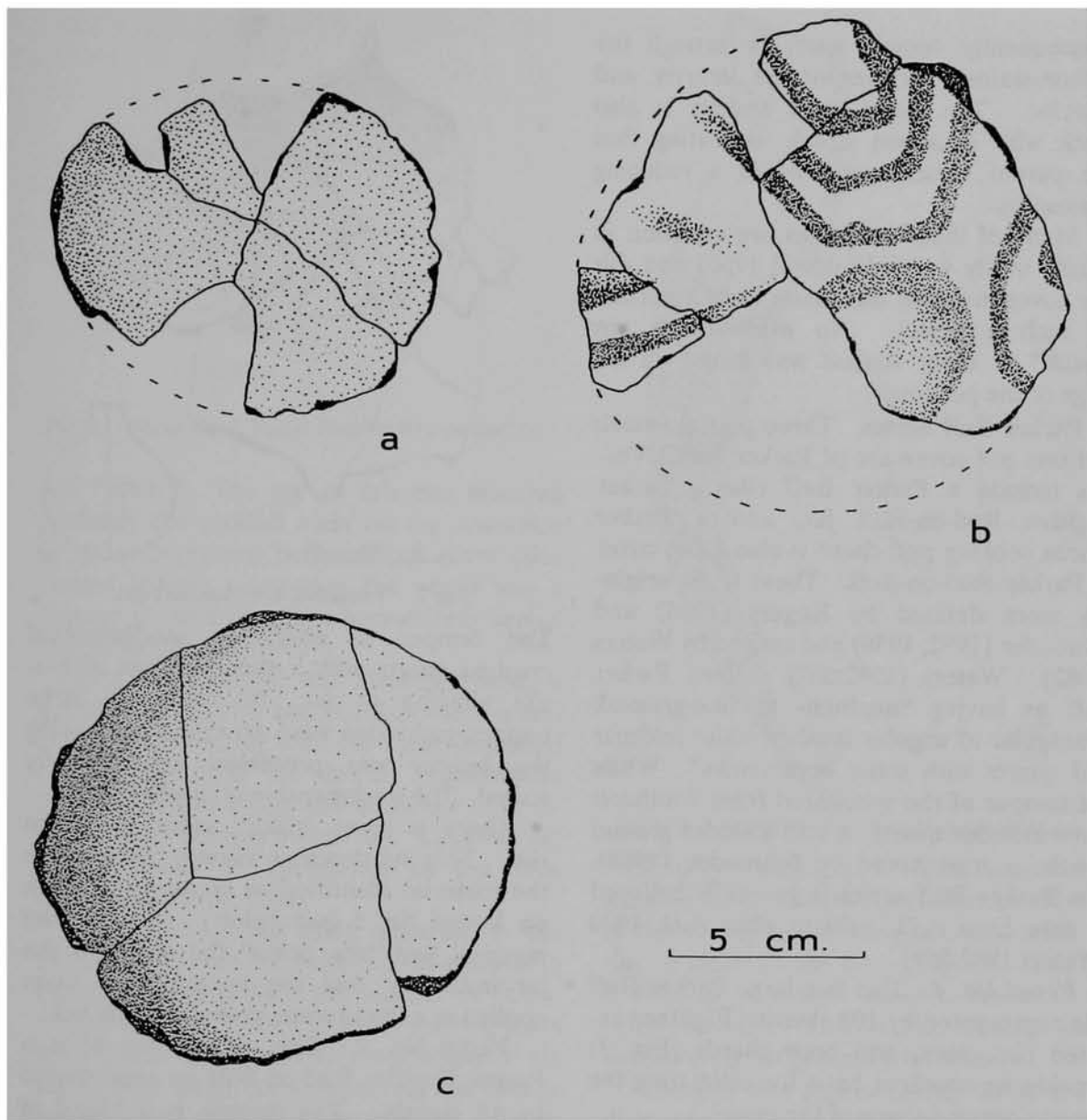


Fig. 6. Pot covers. a, Tizon Brown; b, Parker Red-on-Buff; c, unidentified buffware.

is 9.9 cm. in diameter and averages 0.7 cm. in thickness. Although it is made of residual clay with quartz and feldspar temper, it varies from "typical" Tizon Brown Ware in its very crude appearance. Both surfaces of this sherd have very distinct paddle and anvil marks. These frequently appear as irregular lines deeply impressed into the clay,

as if the potter were pressing with the edge, rather than with the flatter portion, of an instrument. Some minimal attempt was later made to smooth the resulting lumpy surface of the exterior but it was not successful and a "float" surface, which is so common among the local variants of Tizon Brown Ware (Jenkins 1984:10), was never developed.

Consequently, temper sparkles through the carbon-stained surfaces of the interior and exterior. The sherd cross section is also black with a carbon streak, indicating that the parent vessel was fired in a reducing atmosphere.

Many of these attributes are common in Paiute utility wares (Baldwin 1950) and this pot cover probably was made from a portion of such a vessel. No evidence of any "pitch" or other sealant was found on the edge of the pot cover.

Parker Buff Series. Three partial vessels and one pot cover are of Parker Buff. Vessels include a Parker Buff olla, a Parker Fugitive Red-on-Buff jar, and a Parker Stucco cooking pot; there is also a pot cover of Parker Red-on-Buff. These types originally were defined by Rogers (1936) and Schroeder (1952, 1958) and revised by Waters (1982). Waters (1982:567) defined Parker Buff as having "medium- to fine-grained, subangular to angular crushed white feldspar and quartz with some hornblende." While the temper of the specimens from Southcott Cave includes quartz, it also includes ground sherds, a trait noted by Schroeder (1958). The Parker Buff series is generally believed to date from A.D. 1000 to after A.D. 1900 (Waters 1982:567).

Vessel No. 4. This is a large Parker Buff olla represented by 102 sherds. Eighteen refitted rim, neck, and body sherds (Fig. 7) provide an excellent basis for estimating the dimensions and shape of the vessel.

The mouth of the olla is 9.6 cm. in diameter and the rim is flat. The neck rises 10 cm. above the wide, globular body. The first 8 cm. of this rise constitutes a rapidly constricting orifice with the last 2 cm. forming a perpendicular to slightly recurving neck/rim. The vessel was approximately 42 cm. in diameter and 50 cm. in height. Surface and core colors range from black to light tan due to the presence of many fire clouds.

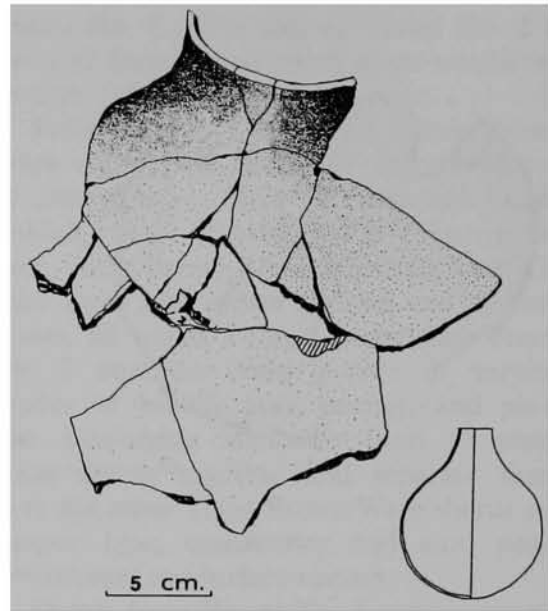


Fig. 7. Vessel No. 4, Parker Buff olla.

The temper is small- to medium-sized crushed quartz with a small amount of biotite clinging to it. No unusually large temper inclusions were observed, suggesting the temper was processed and carefully sorted. The workmanship is excellent.

There is some "pitch" adhering to the rim. This substance is visually identical to the material identified as creosote lac resin on Vessel No. 5 (see below). Some of the material had "run down" the inside of the jar indicating that the material had been applied in a liquid state, probably while hot.

Vessel No. 5. This vessel (Fig. 8) is a Parker Fugitive Red-on-Buff jar represented by 48 sherds. The temper is a blend of crushed sherd and subangular quartz. Temper, frequently bulging from the surface (a trait not discussed by Waters [1982:567]), adds to the rough, dimpled finish left by paddle and anvil marks on the neck.

The jar was approximately 25-30 cm. in diameter and 30-35 cm. in height, as estimated from 12 refitted rim, neck, and body sherds. It had a mouth opening some 9.5 cm. wide and the rim is covered with dense

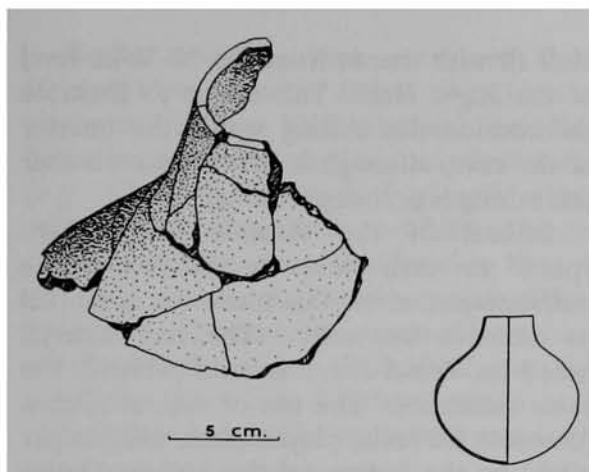


Fig. 8. Vessel No. 5, Parker Fugitive Red-on-Buff jar.

red "pitch." The arc of this rim matched perfectly the reddish stain on the underside of an undecorated buffware pot cover (discussed below), suggesting the vessel was a storage jar that had been hermetically sealed and cached in the cave.

The red material was identified using a gas chromatograph and voucher samples and compares favorably with the resin deposited by the creosote lac insect (*Tachardiella larreae* Comstock) on the branches of creosote bushes (*Larrea tridentata*). Creosote lac insects occur in abundance in the area around Southcott Cave.

A portion of the resin adhering to the rim was removed for radiocarbon analysis in order to directly date the vessel. A radiocarbon assay of $2,100 \pm 230$ radiocarbon years B.P. (UCR-2034/AA-2467) was obtained via accelerator from the sample. As this date is considerably older than any previous date on Parker Buff, a second analysis was performed. This second assay, also using an accelerator and from the same sample as the first, resulted in a determination of 230 ± 85 radiocarbon years B.P. (UCR-2034-1/AA-3043). This discrepancy is discussed below.

Vessel No. 6. This is a large open-mouthed Parker Stucco (the cooking variety of Parker Buff series [Rogers 1936:34; Waters

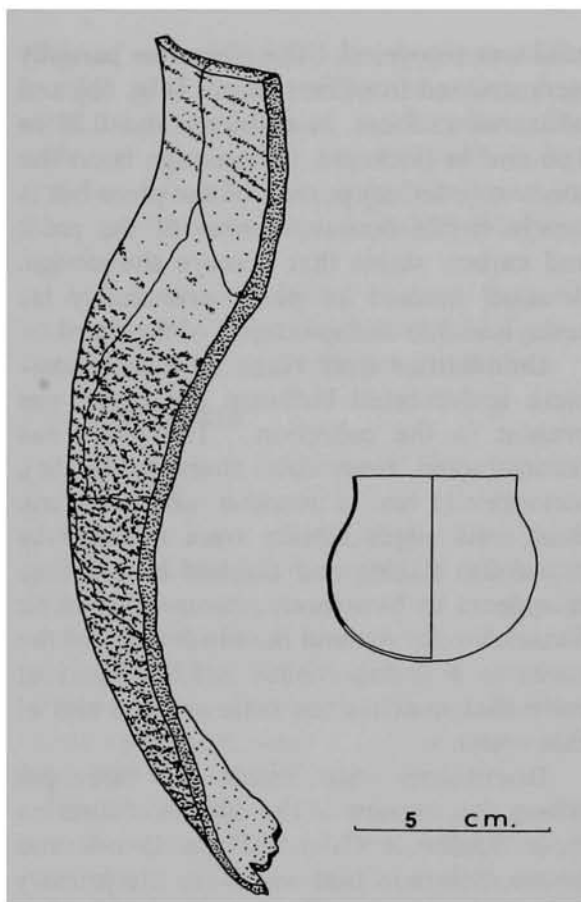


Fig. 9. Vessel No. 6, Parker Stucco cooking pot.

1982:567]) cooking pot. Ten large sherds were refitted to form approximately 15-20% of the vessel, constituting one side from the rim to close to the base (Fig. 9). The rim is flat and the neck recurves about 3 cm. below the lip. This is also usually where the stucco grout generally terminates.

The pot was approximately 25-30 cm. in diameter, 25 cm. in height, and had an opening of approximately 20-25 cm. in diameter. The pot is dark gray and deeply stained with carbon. The stucco is in excellent condition and the pot does not appear to have been used extensively. The temper is composed of ground sherds and sparse grains of quartz, virtually identical to that of Vessel No. 5.

Pot cover. A pot cover made from a portion of a decorated Parker Red-on-Buff

bowl was recovered. The piece was partially reconstructed from four sherds (Fig. 6b) and measures 12.5 cm. in diameter and 0.38 to 0.66 cm. in thickness. The design is on the concave (interior) portion of the piece but is poorly visible due to erosion of the paint and carbon stains that obscure the design. A small amount of pitch, presumably lac resin, is visible on the exterior of the sherd.

Unidentified Buff Ware. A nearly complete undecorated buffware pot cover was present in the collection. The piece was reconstructed from four sherds (Fig. 6c), measures 12 cm. in diameter, and is 5.8 cm. thick. Its edges initially were trimmed by percussion flaking and finished by grinding. It appears to have been custom-made to fit Vessel No. 5. Around the inside edge of the cover is a plainly visible reddish band of resin that matches the resin-covered rim of that vessel.

Discussion. Six vessels and three pot covers are present in the ceramic collection from Southcott Cave. Tizon Brown and Lower Colorado Buff wares are the primary taxa present, although a single unidentified buffware pot cover also was recovered. Tizon Brown Ware and Parker Buff series are commonly found among the Mohave along the Colorado River (Euler and Dobyns 1958; Schroeder 1958) and on some archaeological sites in the central Mojave Desert and northern Colorado Desert (Rogers 1936)--that is, within the Patayan or Hakatayan area and ceramic tradition. Minor differences in vessel forms, decorations, temper, and other attributes may consistently exist throughout the area, but attempting to identify these differences with our limited data is impossible at this time.

The sherds refitted from the various vessels were collected in diverse levels. For example, sherds from Layer A fit with sherds from the 24-30-in. level of the Left Half, and sherds from the 0-6-in. level of the Left

Half fit with sherds from the 30-36-in. level of the Right Half. This serves to illustrate the considerable mixing within the interior of the cave, although it is not clear whether this mixing is post-depositional.

Several of the ceramic pieces have "pitch" on their rims. In the case of the buffware pot cover, this pitch was identified as creosote lac resin. The red material noted on Vessel No. 5 is most probably the same substance. The use of various pitches (creosote lac resin, pinyon pitch, and juniper pitch) by the Indians of the Mojave Desert has long been noted (Coville 1892; Drucker 1937; Laird 1976). Unfortunately, such "pitch" is often uncritically assumed to be pinyon pitch.

Rogers (1936:33) noted that the Yuman groups used sealed ollas to store food:

The food storage olla had a rather small orifice. To protect the contents during a lengthy storage period, a potsherd ground in the shape of a disc was cemented over the mouth [of the olla] with pitch.

Euler and Jones (1956) discussed the use of hermetic sealing as a technique of food storage. They collected a jar from a rock-shelter near Kingman, Arizona, that contained processed mescal (*Agave* sp.). This jar also was sealed with creosote lac resin. Pinto (1985:81) identified lac resin as the mastic used in hafting several artifacts reported from nearby Mitchell Caverns.

Other cached ollas containing seeds and food have been found in various locations throughout the desert (e.g., Campbell 1931; Swenson 1984), and such practices are commonly reported ethnographically (Rogers 1936; Driver 1937; Drucker 1937; Steward 1938; Laird 1976). Resources such as seeds were often stored near the place they were gathered when too abundant to carry back to the main habitation site, or as reserves. Perhaps the stored material at Southcott Cave served this function.

Similar ceramics were recovered from Mitchell Caverns, some 13 km. (8 mi.) to the southwest (Pinto 1985:133-142), including Tizon Brown and Lower Colorado Buff wares (e.g., [Parker] Red-on-Buff pieces), along with some Anasazi Black-on-White. The ceramic assemblage was considered to date to the late prehistoric/historic period (Pinto 1985:142). The ceramics reported from Rustler Rockshelter (Davis 1962:30-32) included all of the types from Southcott plus a variety of other Lower Colorado Buff wares and Southwestern ceramics.

Basketry

Two small fragments of basketry were collected from the site. The first piece (Fig. 10a), which has no edge evident, from Layer A, measures 9.7 mm. x 19.4 mm. The piece is open twined, S-stitch (over two, under two) with 15 warps per 10 cm. and 17 wefts per 10 cm. The warp consists of peeled twigs of an unidentified woody plant resembling desert willow (*Chilopsis linearis*) that are 3.0 mm. in diameter. The weft was made from the split bark of a woody plant (probably not desert willow) and measures 3.0 mm. wide by 1.0 mm. thick.

The piece probably is a fragment of a winnowing tray, known ethnographically for the Southern Paiute (cf. Euler 1966; Fowler and Matley 1979). A nearly complete winnowing tray was reported from Mitchell Caverns and was dated to 480 ± 100 radiocarbon years B.P. (Pinto 1985:107). Several other winnowing tray fragments came from Cave No. 5, which is located nearby (Sutton and Yohe MS).

The second basketry fragment, which also has no edge evident (Fig. 10b), is smaller, measures 3.5 cm. x 3.3 cm., and came from the 0-6-in. level of the Right Pocket. The piece is closely twined, S-stitch (over two, under two) with 8 warps per 2 cm. and 7 wefts per 2 cm. The warps are of peeled

twigs of an unidentified woody plant, similar to that used in the weft of the first fragment, and are 3.0 mm. in diameter. The wefts are of a similar material as the warps and are 2.0 mm. wide and 0.5 mm. thick. The type of basket represented by this piece is unknown.

A coil of unidentified basketry material was recovered (Fig. 10c) but is no longer in the collection. Its provenience is unknown.

Fire Drill Hearth

A single fire drill hearth (Fig. 11) was present. The provenience of the piece is unknown and the identification of the wood is not possible, as the piece is no longer with the curated collection. All of the descriptive data (Table 1) were taken from the photograph (Fig. 11). Three drill holes are present in the piece but it is possible that there were more since it appears to be broken. The holes are 0.9 cm. in diameter.

In the Mojave Desert, two fire drill hearths were recovered from Mitchell Caverns (Pinto 1985:70) and three others came from Newberry Cave (Davis and Smith 1981:56). Kelly (MS) stated that the Chemehuevi used fire drill hearths while the Mohave made fire by striking stones together. A Chemehuevi fire drill hearth was said to be nearly two feet long with holes made along both sides (Kelly MS). One hole could be used about 20 times. A long fire drill hearth (with room for numerous holes) was said to have lasted about a year. Chemehuevi fire drill hearths were made of split *tamab mpi* (identification unknown) and the drills of *tiri-sawapi* (desert arrowweed; *Pluchea sericea*) (Kelly MS).

Modified Horn

A single piece of modified horn was present. The piece (Fig. 12) was molded into the shape of a small bowl or ladle. It presumably is made of the horn of a bighorn

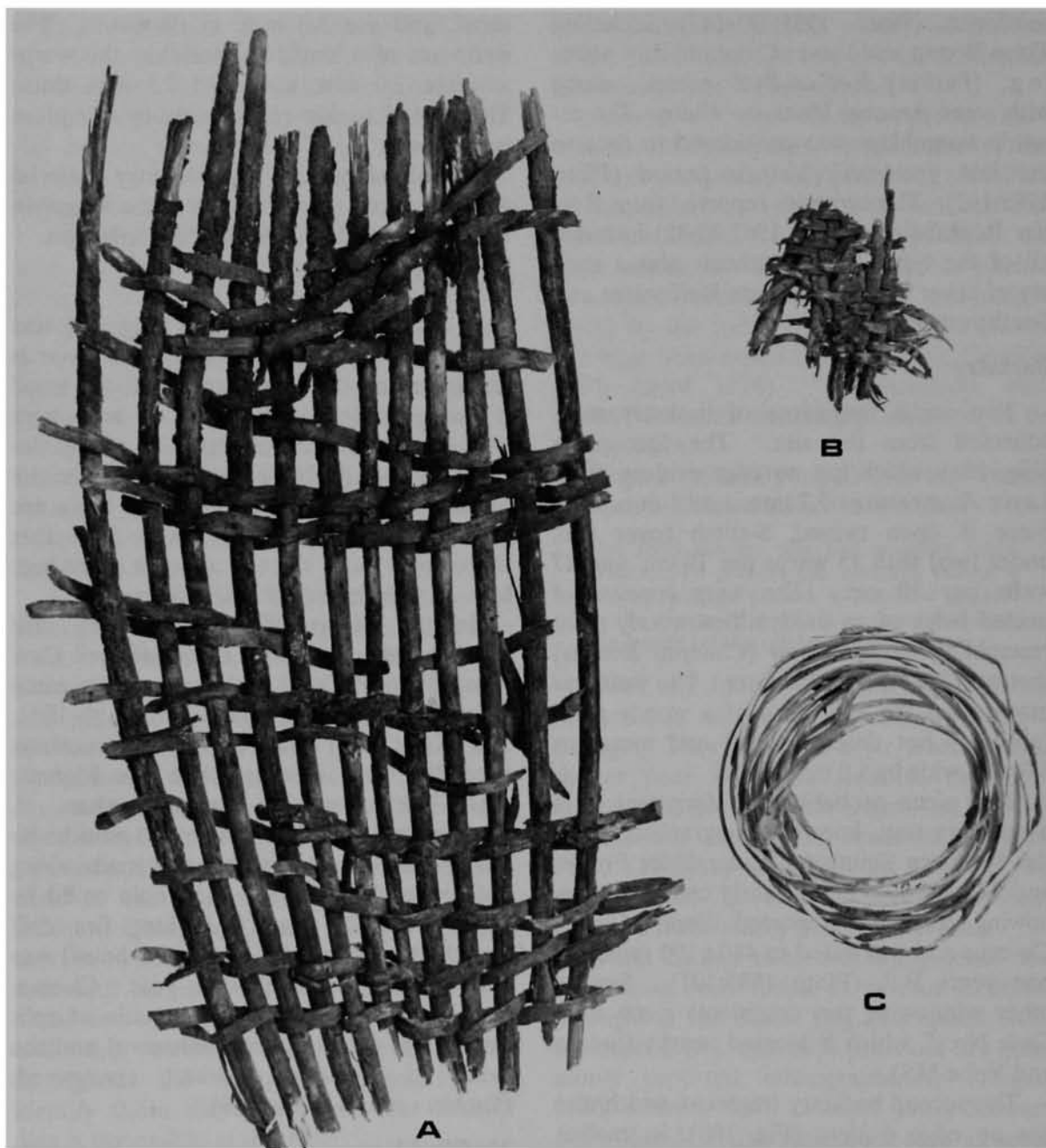


Fig. 10. Basketry. A, winnowing tray fragment; B, twined basket fragment; C, unidentified material. Slightly reduced.



Fig. 11. Fire drill hearth, 18.8 cm. in length.

sheep (*Ovis canadensis nelsoni*). The piece probably was heated and then shaped while the material was pliable. The edges appear to have been rounded, perhaps by use.

Several interpretations might be put forth for the function of the artifact. It may have been a bowl, ladle, or spoon, to judge by its shape and its appearance of having been molded. It is also possible that the piece is the remnant of a sheep horn which was boiled to obtain glue (cf. Coville 1892:361).

Bowls, spoons, and ladles of sheep horn are known ethnographically for the Southern Paiute (Stewart 1942:263; Fowler and Matley 1979:76). Kelly (MS) noted that the Chemehuevi made both bowls and ladles from sheep horn. For a bowl, the horn of a two-year-old sheep was used. The horn was boiled to soften it so that it could be bent.

Other Perishables

A large quantity of plant material is in the collection. Few pieces exhibit direct evidence of use. Several pieces of juniper (*Juniperus* cf. *osteosperma*) were recovered, one piece from the 12-18-in. level of the Left Half and the other from the 18-24-in. level of the Left Half. Since juniper is not currently present in the immediate vicinity of the site (the nearest are about 1 km. to

the west), the material was most likely brought to the cave by people, not by rodents, and represents cultural activity. The material may have been intended to make cordage or for use in basket repair. Numerous specimens of juniper fibers and cordage are present in the Mitchell Caverns collection (Pinto 1985).

A large number of tips (126) and midsections (13) of yucca (cf. *Yucca baccata*) leaves are in the collection. They all appear to have been chewed off at the tips and brought into the cave by rodents. Most (112) of the tips and all of the midsections came from the upper 12 inches of the Right Half (including Layer A) and probably represent the remains of a pack rat nest.

Several species of grass, in the form of clumps, including roots, were present and apparently had been pulled out of the ground and brought into the cave by people. Three grasses are represented, desert needlegrass (*Stipa speciosa*), *Muhlenbergia porteri*, and galleta grass (*Hilaria rigida*). These grasses are perennials and provide no clues to the seasonality of the occupation or use of the cave.

It is possible that the grass clumps were brought into the cave to serve as kindling for a fire, as the bottom of one of the *Stipa* clumps was burned. They also could have



Fig. 12. Modified horn, 17.3 cm. in length.

served a variety of other purposes as well, such as small brooms or brushes, or for bedding. *Muhlenbergia rigens* was commonly used as material for basket making, and the presence of that genus in the cave may relate to that function.

The partially burned stump of a cholla (*Opuntia* cf. *ramosissima*) was recovered. This piece was much too large to have been brought into the cave by rodents and probably represents the remains of a fire. Cholla currently is present within 200 m. of

the site and would have made a convenient, but not necessarily a good quality, firewood.

Several unmodified creosote (*Larrea tridentata*) twigs, an unidentified grass, and fruits of the banana yucca (*Yucca baccata*) were also present. These probably were introduced by rodents.

Faunal Remains

Few faunal remains (13 fragments) were collected. Two other bone pieces were modified and were discussed above. In addition, a small piece of coyote (*Canis latrans*) scat containing several fragments of lagomorph bone came from the 0-6-in. level of the Left Half. This paucity of faunal remains may be related to the use of 1/2-inch screen; most of the small fragments would not have been saved.

Two fragments of desert tortoise (*Gopherus agassizi*) were recovered, a burned piece from the 6-12-in. level of the Right Half and an unburned piece from the 30-36-in. level of the Right Half. A third carapace fragment had been modified and was discussed above.

Desert tortoise was widely used as food in antiquity (Connolly and Eckert 1969; Everson and Schneider 1986) and during the ethnographic period (e.g., Drucker 1937:8; Van Valkenburgh 1976:9; Laird 1976:5, 116; Jenkins 1982:60). Tortoise remains were also present at Rustler Rockshelter (Davis 1962:42-43), and at Mitchell Caverns (Pinto 1985:91-95).

A fragment of a mandible from an artiodactyl (pronghorn, deer, or mountain sheep) came from the 0-6-in. level of the Right Half. It was unburned and in two pieces. Since the Right Half is the area of the rodent deposit, the presence of the artiodactyl remains cannot necessarily be tied to the human occupation of the site.

Seven fragments of lagomorph (rabbit or hare) bone, a possible tortoise bone frag-

ment, and a burned longbone shaft fragment of a bird were collected in conjunction with the straightening of the sidewall of the vandal excavation. Unfortunately, no species-specific diagnostic elements are present.

DATING

Two radiocarbon dates ($2,100 \pm 230$ radiocarbon years B.P., UCR-2034/AA-2467, and 230 ± 85 radiocarbon years B.P., UCR-2034-1/AA-3043) were obtained from the creosote lac resin adhering to the rim of Vessel No. 5, a Parker Fugitive Red-on-Buff vessel. This ceramic type was associated to the prehistoric and historic Mohave (Schroeder 1958) (among other Yuman groups) and was assigned a date between A.D. 1000 to post-1900 by Waters (1982:567).

The more recent radiocarbon date probably better reflects the age of the ceramic vessel. The early radiocarbon date cannot be explained at this time, although there are several possible sources of error. First, a substance containing "old" carbon may have been added to the lac resin during its preparation in antiquity, a small amount would account for the error using the accelerator. However, the gas chromatogram of the archaeological sample was virtually identical with that of raw lac and did not indicate the presence of another substance, although this type of testing is not particularly sensitive toward heavy organic compounds such as petroleum derivatives. Further, the resin was quite red, the same color as the modern material, indicating that no asphaltum or charcoal had been added in antiquity.

Second, there may have been a minute contamination of the sample. One of the problems inherent in accelerator rather than conventional radiocarbon dating is the non-homogeneity of small samples. The presence of minute particles of a foreign substance might result in highly erratic results, depending on the quantities involved, while in

conventional radiocarbon techniques, larger samples are used and such inconsistencies are hardly noticeable.

Third, the first radiocarbon date could be correct and the Parker Red-on-Buff ceramic type could date earlier than originally thought. So much of ceramic typology is constructed on inference and assumption and with so few chronometric data that this possibility is not necessarily unfeasible. However, a single "old" radiocarbon date should not serve to alter the established chronologies and should be regarded with great caution. The obsidian hydration measurement (7.6 microns) is suggestive of some antiquity and is not incongruous with the first radiocarbon assay. Unfortunately, there are too few data to allow for a reasonable chronometric determination of the micron reading.

In sum, the available information suggests that the site was used sometime after about A.D. 1000, most likely after A.D. 1500. The need for further research on directly dating the ceramic types in the region is clear.

INTERPRETATIONS

Southcott Cave is viewed as having served as a small temporary camp and storage facility. The presence of the basketry material, the awl, the fire-making apparatus, and the few faunal remains indicates short-term use. It is possible that this occupation was related to the rhyolite assaying activity evident in the platform levels of the cave and on the slope of the hill. The cave was later used as a storage place for sealed ceramic vessels, presumably full of foodstuffs. Unfortunately, no remnants of such foodstuffs were recovered.

The identity of the occupants of the site is not clear. There may have been two distinct occupations. The presence of some artifacts that appear characteristically Chemehuevi (modified tortoise shell, fire hearth, winnowing trays) support the idea (Kroeber

1925; Laird 1976; Kelly and Fowler 1986) that the Chemehuevi occupied the Providence area. The presence of lower Colorado buffwares, characteristic of Yuman groups, suggests an occupation or use of the area by the Mohave (judging from geographic proximity).

Winnowing trays are part of a basketry complex identified by Bettinger and Baumhoff (1982) as "Numic" (the Chemehuevi speak a Numic language), a complex that they argued would have afforded Numic groups an adaptive advantage in the Great Basin. Archaeological examples of this basket form are unknown for most of the Great Basin but seem to be common in the Providence Mountains area. This suggests either that winnowing trays originally were developed in the eastern Mojave Desert or that Numic groups entered the region earlier than now believed.

One interpretation of the data from Southcott Cave is that the Mohave (or Desert Mohave [e.g., Harrington 1986:R1 146, Fr. 144]) occupied the Providence Mountains area (e.g., the Yuman Horizon) until replaced recently by the Chemehuevi (e.g., the Shoshonean Horizon) (Sutton 1986:75). This replacement likely was part of the Numic expansion that apparently took place late in time (Sutton 1987b).

While the reporting of the data from Southcott Cave does not alter the earlier formulation of the Providence Complex, the results will be useful to a further understanding of the archaeology of the Providence Mountains and the eastern Mojave Desert.

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