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Final Report on the Analysis of Perishable Artifacts
from the 1984 Excavations at West Ruin,
Aztec Ruins National Monument

by

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Laurie D. Webster and Gary M Brown

In 1984, eight rooms at the West Ruin of Aztec were excavated by National Park Service (NPS) archaeologists and volunteer personnel in preparation for a drainage and re-roofing project in the western part of the pueblo. Most of this mitigation work was carried out under the supervision of archaeologist Jim Trott of the NPS Support Office in Santa Fe. The most extensive excavations were undertaken in Room 225 in the northwestern portion of the pueblo (Figure 1), where significant deposits of perishable materials were encountered beneath protective layers of roof fall.

In 2003, Trott was assigned the duty of compiling a report on the excavations and expressed a need to have a specialist analyze the perishable assemblage. A few of the perishable artifacts had been previously described for consultation under the Native American Graves Repatriation and Protection Act (NAGPRA) (Mathien et al. 1992), but the assemblage had never been examined by a trained analyst. In 2004, Gary Brown, archaeologist at Aztec Ruins National Monument (AZRU), and Laurie Webster, a private textile consultant in Tucson, applied for and received a grant in the amount of \$7,500 from the Western National Parks Association (WNPA) to support Webster's analysis and write-up. Webster had previously analyzed the worked fiber assemblage from nearby Salmon Pueblo (Webster 2006a), and had just completed a survey of Earl Morris's worked fiber collections from the West Ruin at the American Museum of Natural History in New York with support from WNPA and AZRU (Reed et al. 2005; Webster 2004). Co-Principal Investigator Gary Brown's role in the project was to arrange access to the perishable collections at WACC and to assist with project administration and research.

The analysis had two major goals: to produce a chapter on the perishable assemblage for Trott's excavation report and to examine the relationship of the 1984 assemblage to other perishable collections from the West Ruin and other great-house assemblages from Salmon Pueblo and Chaco Canyon. Both of these goals are addressed in Webster's report on the assemblage prepared for the NPS for inclusion in the final excavation report (Webster 2006b). The present report summarizes this larger study and presents the major findings of the analysis.

Project Results

Webster conducted her analysis of the 1984 assemblage at the Western Archeological and Conservation Center in Tucson in August and September 2005. The technical analysis entailed a complete description of construction technique, decoration, element counts, dimensions, raw material, and object condition. All analysis was non-destructive in nature. The objects were photographed, and technical drawings were completed as needed. Following analysis, the data were entered into an Excel database. As a match for the WNPA grant, Webster also donated 40 hours of volunteer time to survey the remaining perishable artifacts at WACC collected by other NPS-sponsored projects.

Analysis of the 1984 assemblage led to the identification of 138 samples of worked fiber and wood, representing the remains of more than 100 different objects. The

vast majority of these artifacts came from Room 225 (Table 1). Artifacts in the Room 225 perishable assemblage include yucca ties and knots, cordage of various materials, two loom-woven cotton fabrics, several coiled baskets, a yucca ring basket, a plaited yucca band, plaited rush mats, a sewn willow mat, a knotted rush mat, a plaited sandal, twined sandals, a twined feather blanket, nine bundles of plant raw materials, a piece of animal hide, and eighteen samples of worked wood, including four possible digging sticks and seven batches of elements from a willow ceiling. The Room 225 deposits were heavily impacted by rodent activity, and most objects were found in fragmentary condition. Although the final ceramic analysis from Room 225 is not yet complete, at this point most of the artifacts from this room are considered to date to the Mesa Verde period, the later occupation of the site.

Three other areas investigated during the 1984 excavations—rooms 232 and 239 and the West Plaza—also produced perishable artifacts (Table 2). These include a billet of wood, two pieces of smoothed wood, some willow ceiling elements (from backdirt), part of a handle from a modern trowel or hand drill, and a small piece of modern corkboard. No worked fiber artifacts were recovered from these contexts.

All artifacts are fully described in Webster's (2006b) the final report submitted to the NPS and are briefly summarized here. The knotted yucca ties are all worked in square knots. The cordage sample includes examples of yucca, feather-wrapped yucca, cotton, and human hair cordage. Of the two woven cotton fabrics, one is plain woven with twine-stitch embroidery, the other is twill woven in 2/2 twill and patterned with red and white stripes. Two coiled basket foundation structures are represented: two-rod-and-bundle, bunched, and three-rod, bunched. The plaited yucca ring basket has a diamond-twill design and an ornamental rim braid (Figure 2). The rush plaited mat fragments are woven in a 2/2-twill and have an ornamental border known as an intricate selvage with twining. The yucca plaited sandal is woven in 2/2 weave, and the yucca twined sandal fragments are woven in 2-strand twining. The latter sandals are the only perishable artifacts from Room 225 that can be confidently dated to the pre-AD 1200 period (see Morris 1928:412). The hide artifact is a small scrap of animal hide without evidence of modification. All of the abovementioned artifacts are fragmentary and very poorly preserved. Another woven item, a twined blanket, was associated with an infant burial in the room and was repatriated, along with some associated cordage.

Among the better preserved artifacts in the Room 225 assemblage is a mat of threaded willow elements, which broke into pieces when the second story collapsed (Figure 3). The elements are drilled and threaded with yucca cordage. Nearly a meter long and more than a meter wide, the mat appears to have served as an ornamental ceiling for the first-story room. At least four other rooms in the West Ruin had threaded willow mats used as ornamental ceilings (Morris 1928:350, 354, 373, 390). Similar mats have also been found at Mesa Verde, Salmon, and Pueblo Bonito.

Excavations also produced over 200 undrilled willow ceiling elements. All but one sample of these willow elements are from Room 225, and the other was recovered from the mixed backdirt from several rooms. Two samples from Room 225 contain full-length elements three-quarters of a meter in length that are smoothed at each end. Most appear to be peeled, and many are smoke-blackened. Morris (1928:322, 342, 351) recorded the presence of ornamental willow ceilings in at least three second-story rooms at the West Ruin, but he did not collect the willow elements (Gary Brown, personal

communication). Thus, the ceiling pieces collected during the 1984 excavations constitute a unique collection that offers archaeologists the opportunity to study how these architectural elements were prepared and finished.

Another artifact recovered in relatively good condition is a long, narrow rush mat made of parallel rush stems joined by yucca cordage tied in overhand knots (Figure 4). The function of the object is unclear. Its closest analog at Aztec West is a cradleboard from a nearby room, but the two objects are not identical in construction.

The remains of eleven bundles of well-preserved yucca, rush, and sumac or willow elements were also found in Room 225 (Figure 5). They had presumably been stored there for craft production. This cache of prepared raw materials provides some of the best evidence for the production of perishable artifacts at the West Ruin of Aztec.

In summary, the Room 225 assemblage significantly expands our understanding of late perishable traditions in the west wing of the West Ruin. Nearly all of these artifact classes have been previously reported from other rooms at Aztec West, but the assemblage offers a few new additions to the perishable database from the site. The knotted rush mat has not been previously reported. The willow ceiling elements provide a new opportunity to study the architecture of the pueblo. The caches of yucca, rush, and other plant bundles provide new insights into how plant raw materials for craft production were gathered, bundled, and stored, even recycled. All artifacts are more fully described and interpreted in Webster's (2006b) final report to the NPS, which will constitute a chapter in Trott's final report on the 1984 excavations.

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2006a Worked Fiber Artifacts from Salmon Pueblo. In *Thirty-five Years of Archaeological Research at Salmon Ruins, New Mexico. Volume Three: Archaeobotanical Research and Other Analytical Studies*, edited by Paul F. Reed, pp. 893-1012. Center for Desert Archaeology, Tucson, and Salmon Ruins Museum, Bloomfield.

2006b Perishable Artifacts of Worked Fiber and Wood from the 1984 Excavations at West Ruin, Aztec Ruins National Monument. Final report submitted to Aztec National Monument and the National Park Service Support Office, Santa Fe.

Table 1. Worked fiber and worked wood artifacts from Room 225.

Field number	Provenience	Catalog number	Object description
FS 72	100-120 cm, level 6	AZRU 8434	willow ceiling elements
FS 110	N balk, 2nd story roof, NE corner	AZRU 9000	1 yucca-leaf tie with incomplete knot
		AZRU 9012	6 yucca-leaf ties with square knots
		AZRU 9021	willow ceiling elements
		AZRU 9374	cotton yarn, 2z-s, tied in overhand knot
		AZRU 9482	feather-wrapped cordage, 2s-z, tied in square knot
		AZRU 9485	1 yucca-leaf tie, previously knotted
		AZRU 9938	human-hair cordage, 3(2z-s)z, tied in overhand knot
		AZRU 10684	willow ceiling elements
		AZRU 10686	willow ceiling elements
		AZRU 13223	2 yucca-leaf ties with square knots
FS 111	NW corner, 2nd story roof	AZRU 9265	cotton 2/2 twill-weave fabric fragments
		AZRU 9311	yucca cordage, 2s-z
FS 123	W balk, 0-40 cm	AZRU 9533	willow ceiling elements
FS 130	160-180 cm below 2nd datum	AZRU 9385	1 yucca-leaf tie with square knot
FS 143	80-100 cm below 2nd datum	AZRU 9148	modern cotton string, 14z-s?
FS 162	100-120 cm below 2nd datum, NW corner	AZRU 9484	3 yucca-leaf ties with square knots
		AZRU 9724	yucca cordage, 2(2z-s)z
FS 164	120-140 cm below 2nd datum	AZRU 9331	thin piece of worked wood with pointed tip
		AZRU 9334.1	coiled basket fragments with 2-rod-and-bundle foundation
		AZRU 9334.2	plaited rush mat, disarticulated
		AZRU 9334.3	feather-wrapped cordage, 2s-z
		AZRU 9335	3 yucca-leaf ties with square knots
		AZRU 9339	thin rectangular piece of wood with 3 smoothed edges
		AZRU 9340	small stick with rounded tip
		AZRU 9355	curved twig, formerly wrapped around some object
FS 165	120-140 cm below 2nd datum	AZRU 9376	yucca cordage, 2(2z-s)z and 2s-z
		AZRU 9554	2 narrowleaf yucca plants bound with yucca leaves tied in square knots
FS 165	120-140 cm below 2nd datum, N half of room, 133 cm depth	AZRU 9553	rush mat (cradle???), elements tied together with overhand knots
		AZRU 10683	sewn willow mat fragments
FS 165E	140-160 cm below 2nd datum, NE corner, 137 cm depth	AZRU 9379	7 yucca-leaf ties with square knots
		AZRU 10681	remains of rush bundle bound with yucca leaves tied in square knots
FS 165K	120-160 cm, N half of room	AZRU 9388	rush bundle bound with yucca cordage tied in square knot
FS 165?	NE corner?	AZRU 8109	willow ceiling elements
		AZRU 10676	remains of rush bundle with yucca-leaf tie
		AZRU 10677	rush bundle bound with yucca leaves tied in square knots
		AZRU 10678	rush bundle bound with yucca leaf tied in square knot
		AZRU 10679	rush bundle bound with yucca leaf tied in square knot
		AZRU 10682	rush bundle bound with yucca leaf and turkey-feather cordage tied in square knots
FS 166	140-160 cm below 2nd datum	AZRU 7735	digging stick?
		AZRU 7756	feather-wrapped cordage, 2(2z-s)z
		AZRU 7907	coiled basket fragment with 3-rod foundation

		AZRU 9258	2/2 plaited rush mat fragment with intricate selvage
		AZRU 9292.1	feather-wrapped cordage, 2(2z-s)z, 1 strand tied in square knot
		AZRU 9292.2	coiled basket fragments with 2-rod-and-bundle foundation
		AZRU 9293	yucca cordage, 2(2z-s)z and 2(2s-z)s
		AZRU 9295	3 yucca-leaf ties, 2 tied in square knot, 1 incomplete
		AZRU 9298	cotton yarn, z
FS 166 or 169?	140-160 cm below 2nd datum	AZRU 9319	cotton yarn, 2z-s
FS 167	80-100 cm below 2nd datum, second-story floor debris	AZRU 7917	broken stick with rounded tip
		AZRU 7935	cordage (reburied)
		AZRU 9872	coiled basket base with 2-rod-and-bundle foundation, fused to stone
FS 169	120-160 cm below 2nd datum, roof section, NE corner	AZRU 7776	long slender stick with tapered end, possibly worked
		AZRU 7931.1	feather-wrapped cordage, 2(2z-s)z
		AZRU 7931.2	yucca cordage, 2(2z-s)z
		AZRU 9378	1 yucca-leaf tie with square knot
		AZRU 9309	coiled basket fragments with 3-rod foundation
		AZRU 9328.1	coiled basket fragments with 3-rod foundation, sandwiched between matting
		AZRU 9328.2	2/2 plaited rush mat fragments
		AZRU 9316.1	coiled basket fragments with 3-rod foundation, sandwiched between matting
		AZRU 9316.2	2/2 plaited rush mat fragments
FS 170	160-180 cm below 2nd datum	AZRU 8119	2/2 plaited rush mat fragment
		AZRU 8135	feather-wrapped cordage, 2(2z-s)z, 1 fragment tied in square knot
		AZRU 8203	plaited mat fragments, disarticulated
		AZRU 8207	yucca cordage, 2s-z, tied in square knots
		AZRU 8208	2 yucca-leaf ties with square knots
		AZRU 8210	feather-wrapped cordage, 2(2z-s)z
		AZRU 8158	twined sandal fragment
		AZRU 8176	yucca cordage, 2(2z-s)z
		AZRU 9275	twined sandal fragment
		AZRU 9276	yucca cordage, 2(2z-s)z, 1 fragment tied in square knot
		AZRU 9638	yucca cordage, 2(2z-s)z and 2s-z
		AZRU 9639	1 yucca-leaf tie with square knot
FS 170 OR 171?	160-180 cm below 2nd datum	AZRU 8179	2 yucca-leaf ties, 1 tied in square knot, 1 with incomplete knot
	Unknown	AZRU 9273	yucca cordage, 2(2z-s)z
FS 171	160-180 cm below 2 nd datum at 166 cm depth, Burial 1	AZRU 9637	feather-wrapped cordage (reburied)
		AZRU 9269	cordage (reburied)
		AZRU 11063	twined feather and fur blanket (reburied)
FS 172	180-200 cm below 2nd datum, ash layer, NE corner	AZRU 9045	feather-wrapped cordage, 2s-z and 2(2z-s)z
		AZRU 8134	2/2 plaited rush mat
		AZRU 8140	2 yucca-leaf ties with square knots
		AZRU 8216	yucca cordage, 2(2z-s)z
		AZRU 9043	1 yucca-leaf tie with square knot
		AZRU 9044	willow? twig tied in square knot
		AZRU 9366	2 yucca-leaf ties with square knots
		AZRU 9367	1/1 plaited band
		AZRU 9425	twined sandal fragments
		AZRU 9042	cotton plain-weave fabric fragments with twine-stitch embroidery

FS 173	180-200 cm, 1st story fill	AZRU 9404	plaited mat fragments, disarticulated
		AZRU 8142	fragment of unidentified twined object
		AZRU 8154	1 yucca-leaf tie with square knot
		AZRU 8155	2 yucca-leaf ties with square knot
		AZRU 8213	feather-wrapped cordage, 2(2z-s)z
		AZRU 9259	1 yucca-leaf tie with square knot
FS 174	180-200 cm below 2nd datum	AZRU 9261	yucca cordage, 2(2z-s)z
		AZRU 9203	plaited ring basket fragments with diamond-twill design, ornamental rim braid
		AZRU 9416.1	plaited ring basket fragments, disarticulated
		AZRU 9416.2	small stick with purple-red stain
FS 175	180-200 cm below 2nd datum	AZRU 9448	plaited ring basket fragments, with diamond-twill design
FS 176	180-200 cm below 2nd datum	AZRU 10408	digging stick
FS 176	180-200 cm below 2nd datum	AZRU 10675	ceiling elements
		AZRU 11004	digging stick, blade end
FS 184	180-200 cm below 2nd datum	AZRU 10407	digging stick or sword-like object, knob end
FS 193	180-200 cm below 2nd datum	AZRU 9200	bundle of sumac or willow strips tied with square knot
FS 194	180-200 cm below 2nd datum	AZRU 9041	cotton yarn, z
FS 209	200-220 cm below 2nd datum, new layer	AZRU 7955	juniper bark tied in square knot
		AZRU 8619	1 yucca-leaf tie, knot missing
FS 236	200-220 cm below 2nd datum	AZRU 7950	feather-wrapped cordage, 2(2z-s)z
		AZRU 8772	hide fragment
FS 237	200-220 cm below 2nd datum	AZRU 7951	3 yucca-leaf ties with square knots
		AZRU 9451	2/2 plaited sandal, coarse weave
		AZRU 9447	1 yucca-leaf tie with square knot
FS 274	W balk, 80-100 cm, roof level	AZRU 9409	1 yucca-leaf tie with square knot
		AZRU 9446	1 yucca-leaf tie with square knot
FS 277	W balk, 100-120 cm, trash, roof level	AZRU 9444	2 yucca-leaf ties with square knot
		AZRU 9450	1 yucca-leaf tie with square knot
FS 280	100-120 cm, W balk, trash layer	AZRU 9136	4 yucca-leaf ties, 1 with square knot
FS 281	120-160 cm, W balk, trash layer	AZRU 9158	1 tie with square knot from roof beam
FS 288	140-160 cm below 2 nd datum, W balk	AZRU 9156	1 yucca-leaf tie with square knot

Table 2. Objects of worked wood from Rooms 232, 239, and the West Plaza.

Room number	Field number	Object context	Catalog number	Object description
Room 232	FS 34	Level 2	AZRU 9026	Rectangular piece of wood smoothed along edge
Room 239	FS 13	NE, 80-90 cm	AZRU 10428	Billet of wood
	FS 121	Backdirt from Rooms 239, B-3, and 129	AZRU 10463	Willow ceiling elements
	FS 157	Drainage trench, 0-20 cm	AZRU 10414	Handle from modern wooden tool (trowel?)
West Plaza	FS 134	Drainage trench, 60-80 cm	AZRU 9912	Modern corkboard fragment
	FS 135	Drainage trench	AZRU 9123	Small piece of worked wood; could be modern

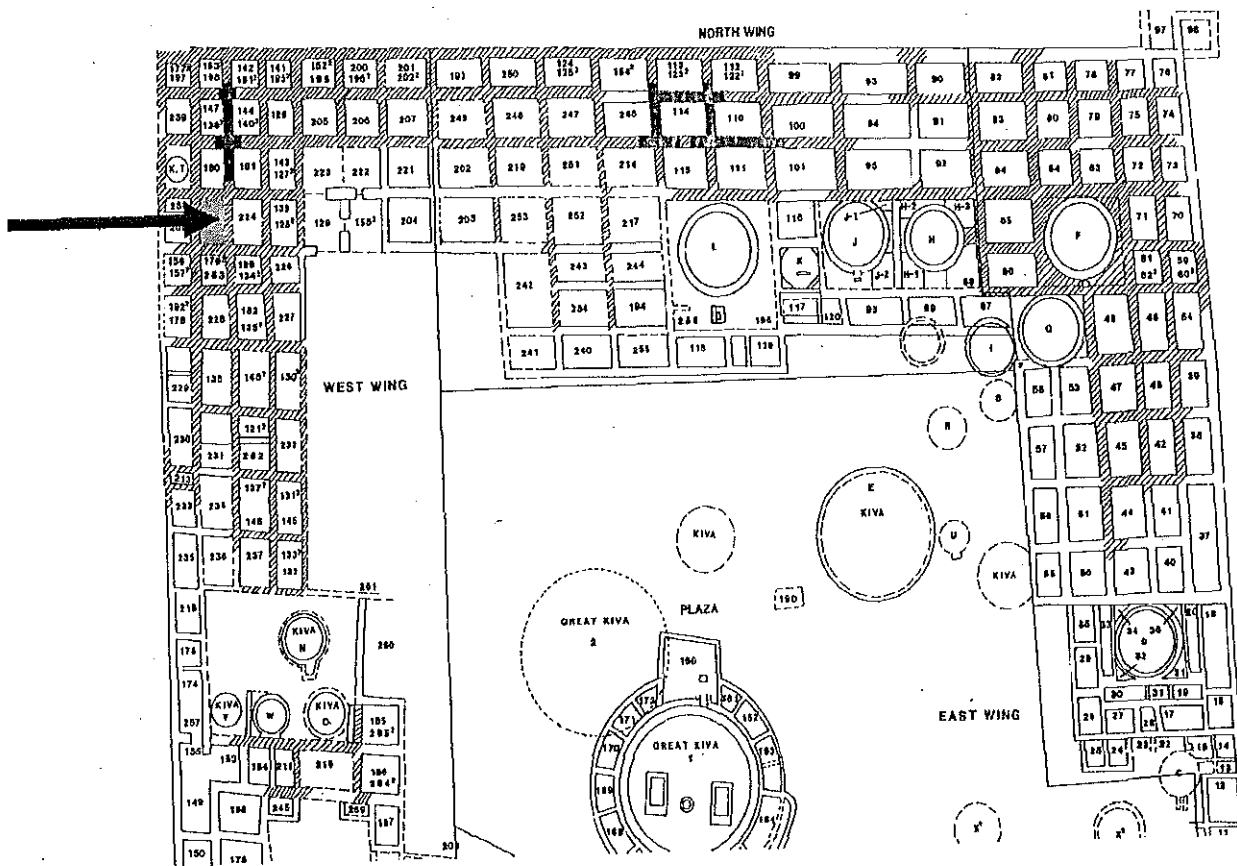


Figure 1. Map of West Ruin, showing location of Room 225.

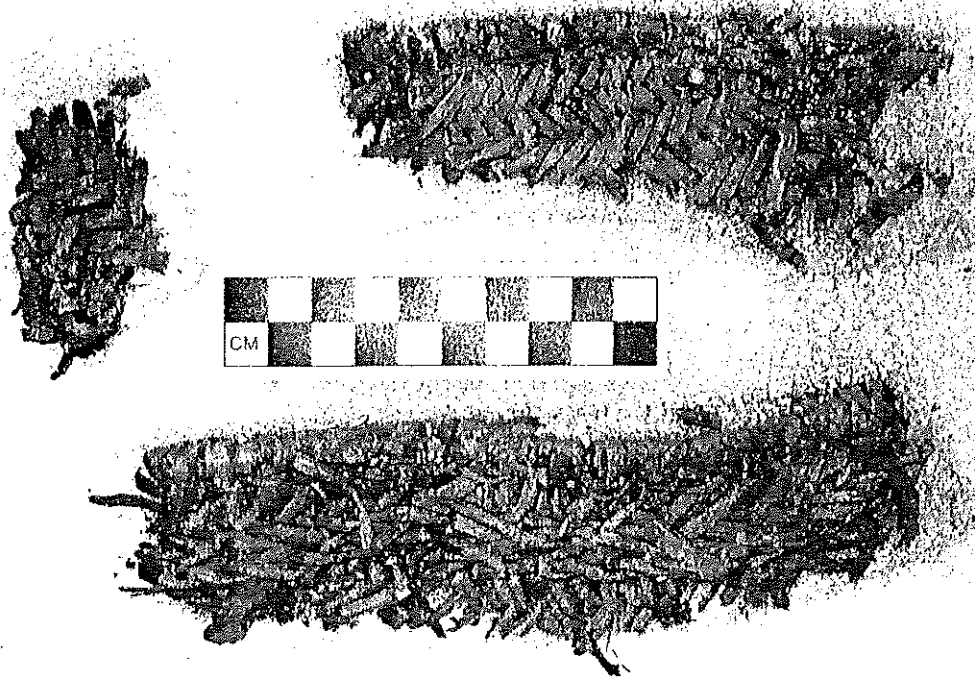


Figure 2. Fragments of plaited ring basket AZRU 9203 with diamond-twill pattern and ornamental rim braid.

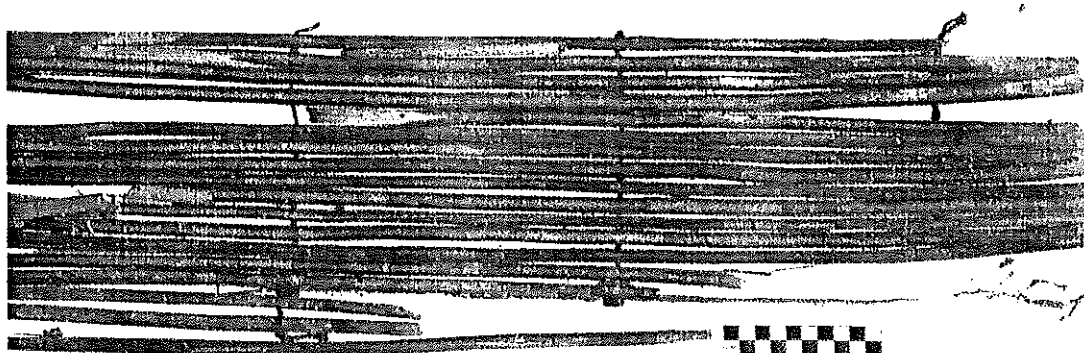


Figure 3. Piece of threaded willow mat AZRU 10683, probably from the ornamental first-floor ceiling.

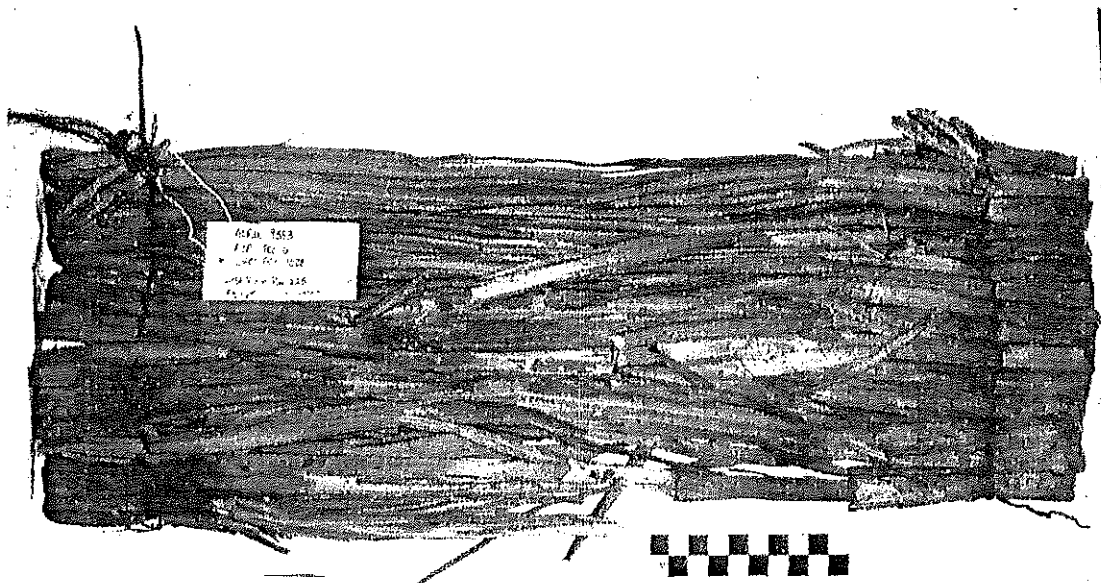


Figure 4. Rush mat AZRU 9553 made of parallel rush stems joined by knotted yucca cordage.

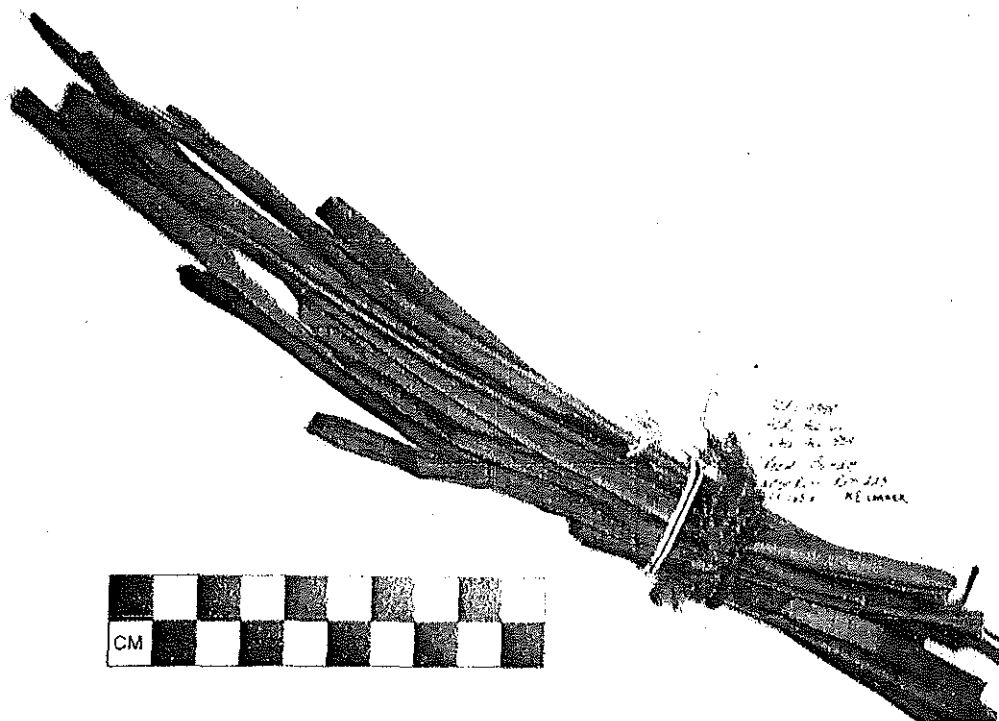


Figure 5. Rush bundle AZRU 9388 tied with yucca cordage from Room 225.