Excavations at the Mystery Column: The Possible Remains of a Wind-Powered Wool Fulling Post Mill in La Purísima Mission State Historic Park

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Abstract

The 1998-1999 excavations in the vicinity of a masonry column of unknown use revealed the base of a second column and an associated ceramic pipeline feature. Historical documents indicate that this complex may be the remnants of initial construction of a wind-powered post mill intended for fulling wool. If this interpretation is correct, the column represents part of an unsuccessful attempt by Franciscan mission padres to initiate increased industrialization in California some thirty years before Anglo settlement.

Introduction

Between October, 1998, and June, 1999, archaeological excavations were conducted around a masonry pillar in Los Berros Valley at Mission La Purísima State Historic Park in northern Santa Barbara County (Fig. 1). Investigations under the direction of Dr. Robert L. Hoover were carried out with a research permit issued by the California Department of Parks and Recreation and with the efforts of senior volunteers from the Prelado de los Tesoros, the park's docent group. The purpose of this isolated column was uncertain, but attorney and historian Jeremy Hass had accumulated clues that it was part of a wind-powered post mill designed for fulling woolen textiles. Both documentary and archaeological research were employed to try to resolve this question during the current project.

Mission La Concepcion Purísima de Maria Santisima was founded on December 8, 1787, the eleventh of the twenty-one missions of Spanish Alta California (Fig. 2). The mission was located in the territory of the populous and prosperous Chumash people, originally to the south of the Santa Ynez River in the present town of Lompoc. Following a disastrous earthquake in 1812, the mission was relocated north of the Santa Ynez River in the present Mission La Purísima State Historic Park. The mission grew incrementally in population. In 1823, there were 3,266 Indian baptisms at La Purísima. The mission was also a major center for crop production and animal husbandry. In 1823, the mission sheep herd numbered 10,000, but decreased dramatically afterward (Englehardt 1932:131) (Fig. 3). This livestock decline is important in later arguments.

On July 15, 1815, Fr. Mariano Payéras, one of the priests who had been stationed at La Purísima since 1804, was appointed Father Presidente of the

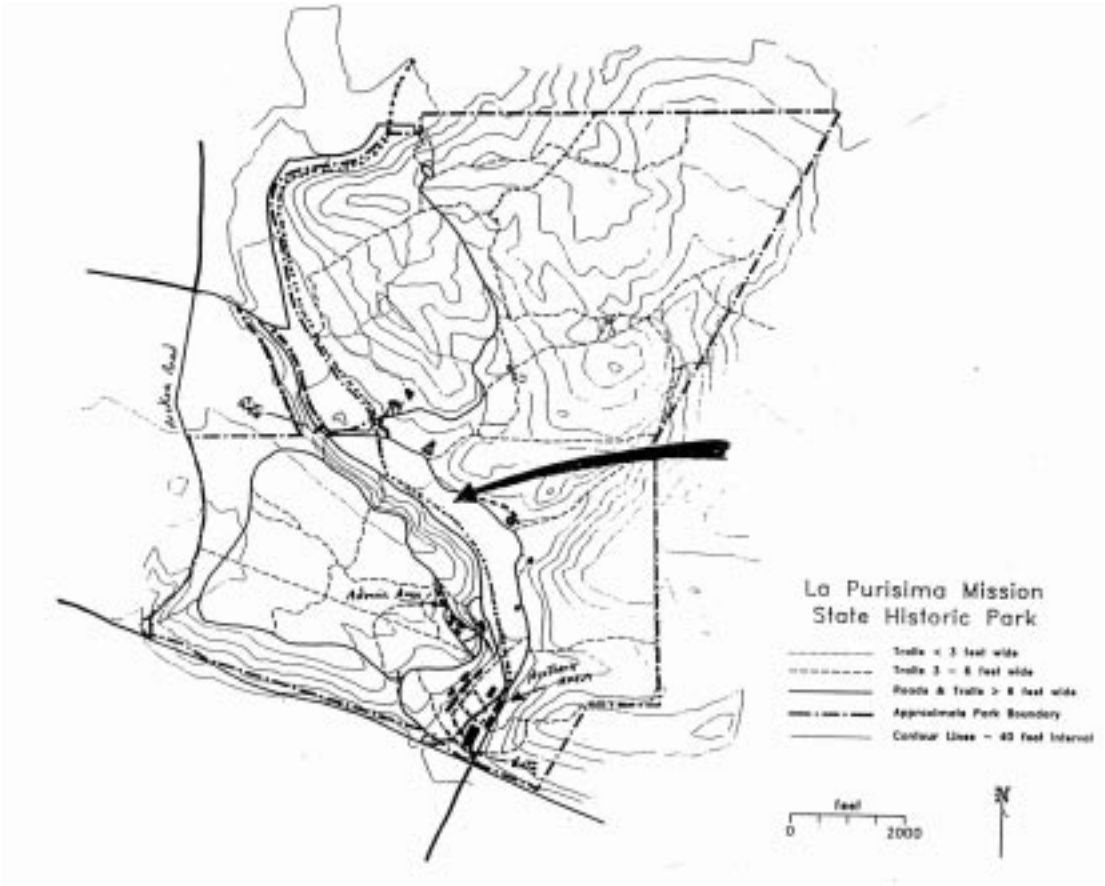

Fig. 1. La Purísima Mission State Historic Park. The arrow locates the “Mystery Column” within the Park.

Fig. 2. Mission La Purísima Concepcion, founded in 1787, was relocated to its present site in 1812, following a major earthquake. It was located in the territory of the populous and advanced Chumash tribe.

Fig. 3. In 1815, Mission la Purísima became the headquarters of the California Fransciscan mission for a period of eight years under the administration of Fr. Mariano Payéras. by 1823, the mission's sheep herd numbered 10,000.

Franciscan Missions of Alta California. As he decided to remain at his beloved La Purísima, the mission became the *de facto* ecclesiastical headquarters of the province until Payéras' death on April 28, 1823, at the age of fifty-four. From October to November, 1822, Payéras traveled northward from Monterey to the Russian settlement at Fort Ross, returning to Spanish territory in a weakened condition (Englehardt 1932: 93-94). As a result of this journey as Father Commissary, he returned with three Russians to La Purísima. Bancroft, not known for his pro-mission views, described Fr. Payéras as having "extraordinary business ability, was a clear and forcible as well as voluminous writer, and withal a man of great strength of mind and firmness of character" (Bancroft 1886: 488). The latter report ties Payéras and other specific individuals to an attempt in 1822-23 to industrialize wool production at La Purísima, some thirty years before the California Gold Rush and the Anglo-American industrial revolution which followed. Such efforts by Joseph Chapman had recently proved successful at nearby Mission Santa Inés (Hoover 1992).

The Mystery Column

For many years, an apparently lone column of stone, tile, and lime cement has stood in Los Berros Valley about a mile northeast of the main mission complex. I recall seeing it surrounded by brush on a hike led by James Deetz over the mission grounds in the summer of 1962 with students of his archaeological field school. At that time, it was dubbed "the mystery column," a title that has endured over the years. What was this column doing so far from the main mission complex in the isolation of agricultural fields?

Deetz was not the first to note this column. During the Civilian Conservation Corps' (CCC) excavations and reconstruction of La Purísima Mission, a crew conducted test excavations around the column from April 4 to May 2, 1938 (CCC Field Book 20: 72-75). Arthur Woodward noted "an excavation of the masonry pillar area to find possible evidence of a mill was conducted by a crew led by Mr. William Manlove. Nothing was found to support this theory" (Tenny Leary, personal communication). A number of

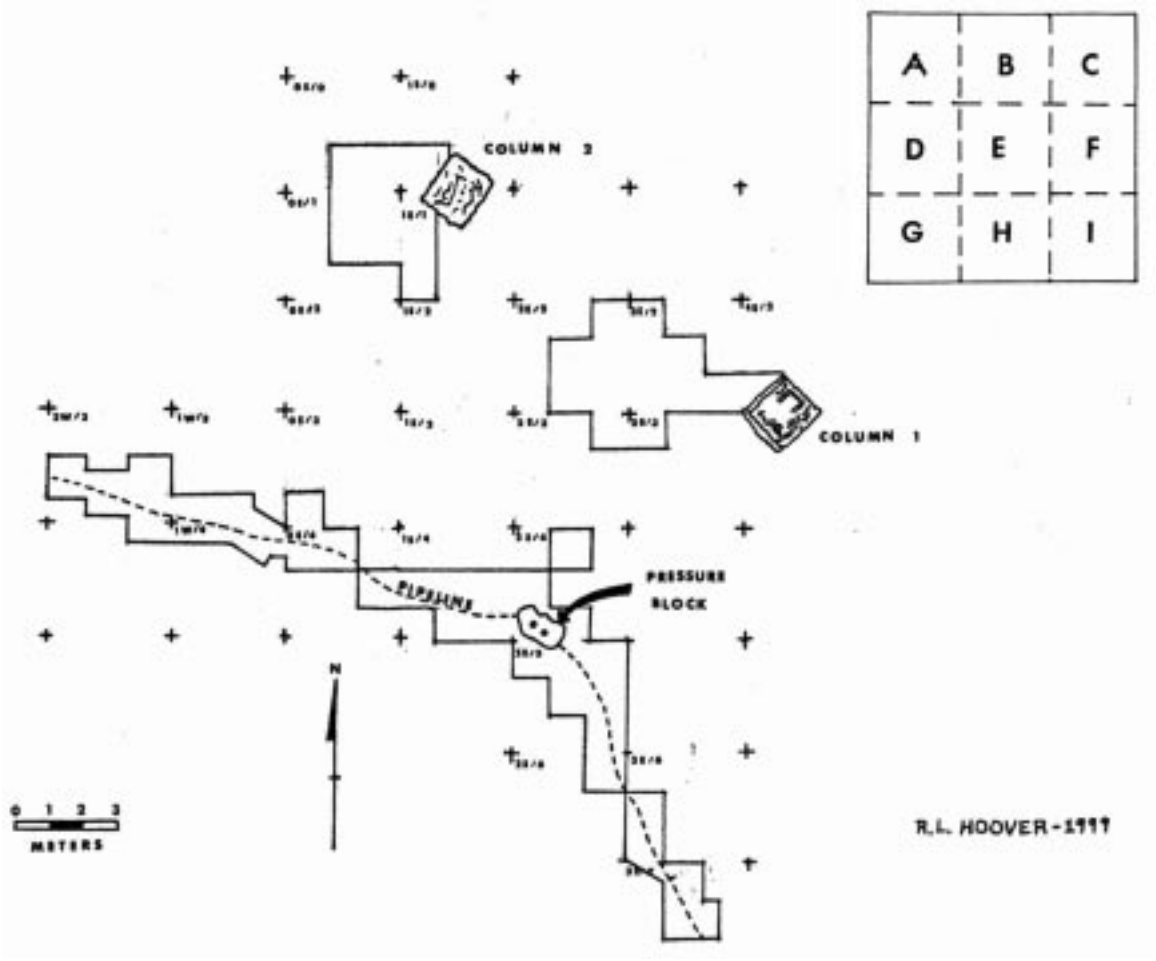

Fig. 4. Excavation plan, La Purísima Mission, 1998-1999.

pits and trenches were excavated by shovel and without any screening as late as October 22-30, 1941. Measurements recorded then do not correspond to what was found in 1998-99 and must be used with caution. The 1998-99 crew did, however, discover the base of a second column of identical dimensions to the first pillar nearby.

Field Methods

The entire area between the two columns and the area to the south of them was gridded into three meter squares (Fig. 4). These squares we designated sequentially from a 0/0 horizontal datum point in the cardinal directions of the compass. Thus, grid square 1E/1S had a northwest corner that was three meters east and three meters south of the 0/0 datum. A vertical datum was established at the western corner of the standing column at the top of its basal platform. Each three meter square was further divided into nine smaller squares measuring one meter per side, labeled from west to east and north to south as squares A to I. An artifact from Square A of 1E/1S would come from the northwesternmost meter of its grid square.

Excavation was conducted with standard tools, including trowels, mason's hammers, whisk brooms, and shovels. The excavated earth was at first passed

through one-eighth inch screens. Virtually no artifacts other than large architectural objects were found using this method. After two months, screening was abandoned, and the crew concentrated on clearing architectural features. Plans of the excavation area and adjacent pipeline were drawn and color slides were taken of various stages of the excavation and associated artifacts. Artifacts were placed in unit bags, cleaned, catalogued under accession number P1176, and packed according to Department of Parks and Recreation guidelines. Artifacts are currently on loan to La Purísima Mission State Historic Park from the State Parks Archaeological Laboratory in Sacramento.

Features

The Columns

The remains of two columns are located about one mile northeast of the main mission complex at the edge of what was in mission times, and still is, an agricultural field. Column #1, the "mystery column" was readily visible and nearly complete, surrounded by coyote bush and wild blackberry. After the plant growth was cleared away, the column appeared to rise to a height of approximately 4.5 meters above a flanged basal platform (Fig. 5). Both base and column consisted of cemented blocks and tile fragments. The column is about 1.2 meters square and appears to have been repaired in spots with concrete during the CCC restoration of the 1930s. However, the top of Column #1 is the original upper surface of this feature, as *ladrillos* (floor tiles) and indentations clearly indicate where transverse beams were supposed to be located. The base extends about 50 cm beneath the ground surface.

Column #2, located about 8 meters northwest of Column #1, consists only of a basal platform of the same dimensions (1.2 meters square). Apparently, Column #2 was never completed. The rubble concentration described below does not appear to have formed part of a collapsed Column #2 but was intended for its construction. Apocryphal stories of a fallen column that had been dragged away to the creek or trees by an annoyed farmer proved to be unverifiable.

Fig. 5. Single standing column of brick, stone, tile fragments, and cement is all that remains above ground of the possible windmill foundations at La Purísima.

Building Debris

A concentration of local stone boulders, roof and tile fragments, and even discarded and reused artifacts were found in grid 2E/2S, 2E/3S, 3E/2S, and 3E/3S. There appears to be no pattern through part of this feature into deep sterile sand and may have resulted in the displacement of some of the rubble. It might also

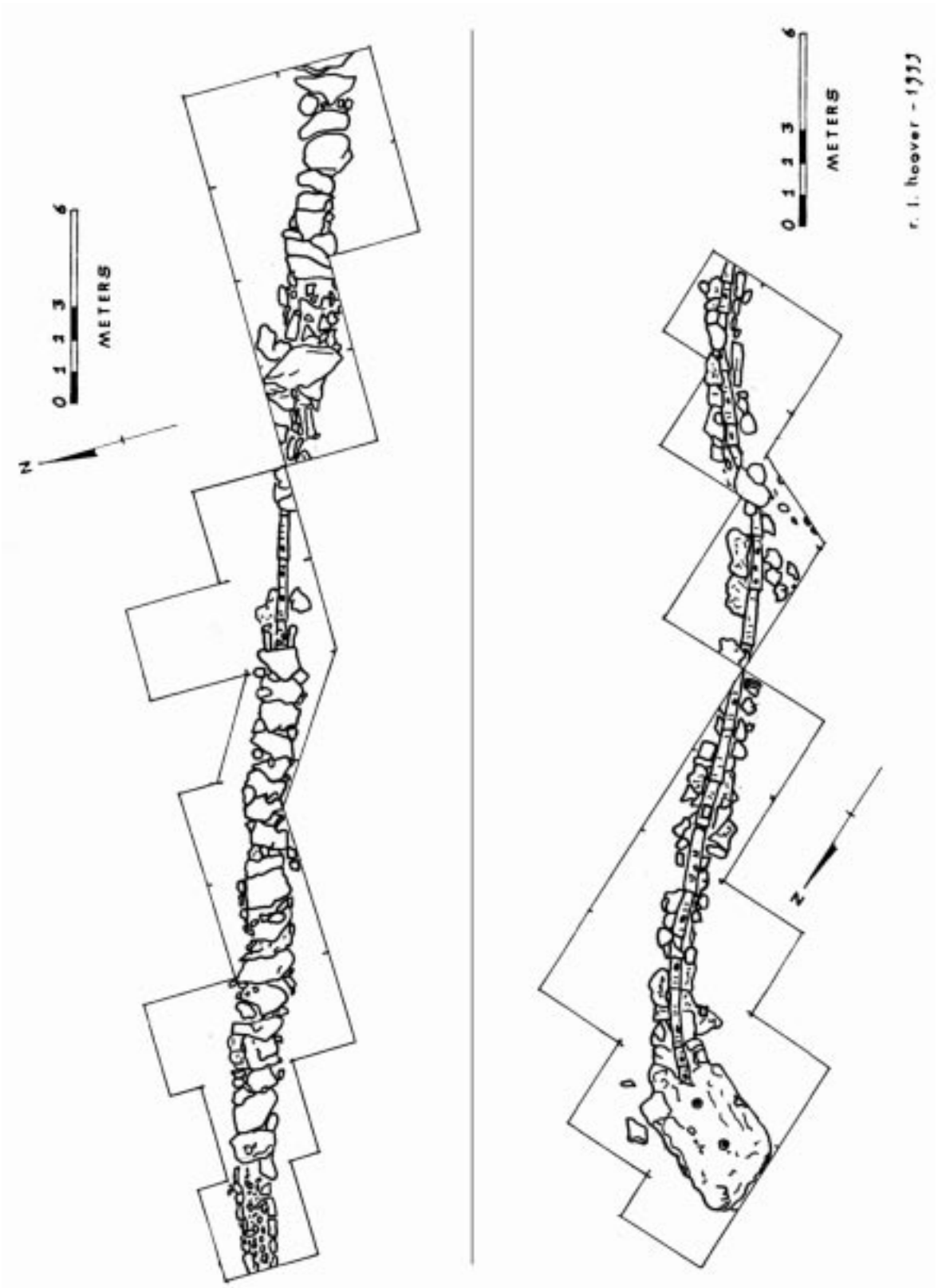

Fig. 6. Pipeline plan, La Pursima Mission, CA-SBA-520.

be the result of the collapse of Column #2 toward the southeast, but there is little cement mortar or structural evidence that Column #2 was ever completed.

The best interpretation of the rubble feature appears to be as a stockpile of building materials hauled in from elsewhere in the mission complex to construct the masonry columns. Locally available shale and sandstone, both as river cobbles and quarried stone, are the predominant construction materials. One block contained what appeared to be the marks of a mason's chisel. It is interesting to note that broken roof and floor tiles, broken mortars, and other recycled materials were part of the stockpile. Located between Columns #1 and #2, the stockpile was in a strategic position to be used in the construction of both columns. Builders were planning to make use of abundant materials from elsewhere in the mission complex, as well as, recycled broken artifacts, such as hopper mortar bases, for construction.

The Pipeline

Fulling mills, even those operated by wind, depend on a reliable water supply to wash the woolen textiles. Such a supply was insured by the construction of a ceramic pipeline from one of the mission ponds. The pipeline passed just south of the columns (Fig. 6). Water was carried down a slope past the site and deposited in the fields closer to the main mission complex. Such pipelines are a common feature of mission archaeology, consisting of tapered cylinders of fired ceramics that were socketed into each other and secured with Roman cement (quicklime). The flow of water through the pipes depended solely on the effects of gravity. The pipes were fitted together end-to-end so that water entered the large end of each pipe and flowed out of the smaller end. Individual pipes at the project site were up to 50 cm in length, which is longer than the average length that I have encountered at other mission sites. The pipeline had originally been carefully laid in a trench paved below, above, and on the sides with slabs of shale. Within this channel, the pipes had been carefully cemented together on a bed of sand (Fig. 7).

Several features of the pipeline are unique. Since the water in the pipeline had to drop several meters between its source at the millpond to the north and the

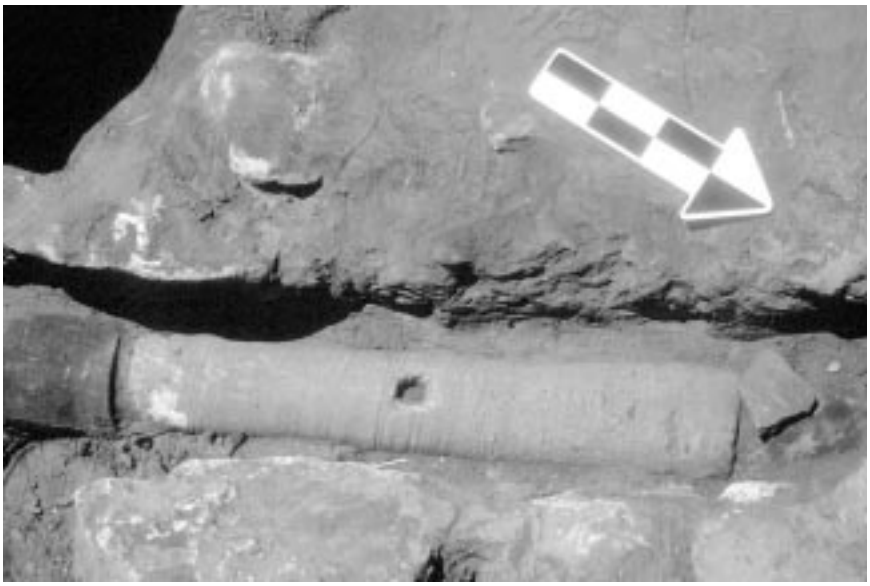

Fig. 7. The ceramic pipeline near the La Purísima possible windmill foundations consisted of interlocking sections of pipe laid on a bed of sand within a protective channel of boulders. In places, sections of the pipe had been later exposed and perforated to release pressure from the line.

site of the columns, the water was under considerable pressure by the time it reached the mill site. This pressure was exploited in several ways. A large block of cemented stone was discovered across the route of the pipeline in square G of 2E/4S. The pipe had actually been cemented into the block. Water entered through the pipe at the base of the block on its western site, then traveled upward under pressure and out the top of the block. It returned to a pipe flowing downward into the block and exiting at an elevation about 25 cm higher than its original point of entrance. Only pressurized water could be induced to flow uphill in this manner. The cement feature represents a pressure block (Fig. 8) supporting a kind of standpipe or surge tank (no longer extant), similar to those familiar to Roman engineers in Classical times (Hodge 1992: 241-244). These *colliviarae* apparently survived in Spain long enough to be introduced into Spanish California. These features have been interpreted by Old World archaeologists as devices to expose the pipeline water to the open air for water access, to relieve pressure, to release entrapped air from the pipe, to aerate water, or to make periodic pipe cleaning easier.

Fig. 8. Pressure block of “Roman Cement” contains two pipe openings on top which once led to a surge tank and could be used at the windmill at La Purísima.

Further evidence that the pipeline carried pressurized water can be derived from the condition of the pipes themselves. In numerous spots from 0E/4S to 3E/6S, the shale slab cover had been removed to expose the pipeline, and holes had been intentionally punched into the upper surface of the pipes. These would obviously reduce pipeline pressure and could also be used in pipeline cleaning. On or near most of these perforations are fragments of pipe tile which were placed over these openings as patches to regulate the escape of water and the pressure in the pipe. These patches were weighted with shale slabs and dirt to hold them in place.

Artifacts

Architectural Artifacts

Three types of fired ceramic tiles were found at the site and are all amply represented elsewhere at La Purísima. *Ladrillos* (floor tiles) are thick flat square tiles used for paving or construction. These average 4 cm in thickness and 30 cm on each side.

Tejas (roof tiles) are slightly curved and are of intermediate thickness, about 2 cm. They taper toward one end. Both *ladrillos* and *tejas* were formed of wet adobe clay in wooden molds. The *tejas* were additionally placed over a tapered wooden half-cylinder to give them their curved shape. Due to the inability of the Spaniards to absolutely control firing temperatures

in their kilns, some historic *tejas* and *ladrillos* have black center sections when broken and viewed in cross-section. Not all historic tiles have this feature, but no modern tiles do.

The third type of the tile was the *atanor* (pipe tile), a tapering cylinder designed so that the small end of one pipe could be socketed into the large end of its neighbor and secured with "Roman cement" (quick-lime). The pipes appear to be formed on a wheel around a central post. Walls are thin and the tile has a pronounced curve.

Ladrillos and *tejas* appear to have been mostly transported from elsewhere as broken fragments to be used in construction. *Atanors* formed the pipeline. Only representative samples of these objects were collected, as they are well-represented at La Purísima Mission and elsewhere in the archaeological record.

Metallic Artifacts

A few metal objects were recovered from the excavations. Most, if not all, appear to be 20th century artifacts most likely deposited by the CCC crews in 1938.

bent iron strapping with rivet holes	1E/1S Section D
clump of rusted steel wire	2E/2S Section F
rusted iron spike	2E/2S Section A
rusted wire fragment	2E/2S Section H
iron toggle	0E/1S Section C
iron spring	1E/0S Section G
iron S-hook	1E/4S Section E
square iron nail*	2E/3S Section C
brass pencil eraser holder	3E/3S Section H
rusted iron clump	1E/4S Section D

*Nail appears to be hand-forged and the only definite 19th century metal artifact from the excavations.

Glass Artifacts

These all appear to be fragments of beverage bottles of recent date.

molded glass fragment	3E/2S Section I
clear bottle glass fragment	2E/2S Section H
glass fragment	2E/2S Section H
glass fragment	3E/2S Section H
glass fragment	3E/2S Section H
glass fragment	2E/3S Section F
glass fragment	1E/4S Section D
brown beer bottle (Lucky Lager)	3E/2S Section C

Stone Artifacts

These items were often broken and intended to be reused at this new location for construction materials.

flat shale fragment	2E/2S Section F
hopper-mortar fragment, sandstone	2E/2S Section F
steatite bowl fragment	2E/2S Section F
ground stone	2E/2S Section C

Bone

A few fragmentary animal bones were recovered. None had been modified as artifacts.

cow rib fragment	1E/4S Section E
cow rib fragment	2E/3S Section F
bone fragment	2E/3S Section F
cow rib bone	3E/6S Section D
rodent leg bone	2E/2S Section H
mammal leg bone	0E/1S Section F

Shell

A single fragment of Pismo clam (*Tivela stultorum*) shell was recovered from 2E/2S Section E. It was unmodified.

Charcoal

Charcoal fragments were recovered from 2E/2S Section C, 2E/2S Section H, 1E/0S Section G, 3E/2S Section G, and 4E/2S Section G.

Interpretations

The two columns appear to form part of an unfinished platform for a mill ordered by Fr. Payéras in early 1823. Unlike the water-powered mills at nearby Mission Santa Inés (Fig. 9), this mill was intended to be powered by wind and was planned to be of the post type, a wooden mill that could rotate on a central post 360 degrees to take advantage of shifting winds. The mill appears to be the composite effort of people from several cultures. Ordered by the Spanish friar to industrialize the fulling of woolen textiles (fulling is the beating and washing of woolen textiles to create a more closely interlocking weave) construction of the foundation pillars was initiated by mason Terencio Ruiz in the best tradition of Spanish building technology. According to La Purísima Mission archivist Tenny Leary, Ruiz drew on the mission accounts from December, 1822, until July 10, 1823, when he appears to have left La Purísima Mission. The labor was provided by Chumash neophytes.

The wooden post mill was unfamiliar to the Spanish, who created elaborate but stationery stone towers, with only the cap and arms of the windmill rotating (Inesta and Suñer 1989) (Fig. 10). The wooden post mill (Fig. 11) was a northern European phenomenon (Beedell 1975; Skilton 1947; Stokhuyzen 1962). The most likely source for post mill construction was Joseph Chapman, a New Englander captured in Bouchard's raid on Refugio Ranch in 1818, who had been released from jail in order to build a water-powered fulling mill at Mission Santa Inés (O'Dowd 1997: 2-16; Hoover 1992: 48-66). He was familiar with the carpentry traditions of north European mills and may have come to La Purísima to construct the post mill.

Fig. 9. The Santa Inés mill complex, built in 1820-23, consisted of a fulling mill (lower right, 1822-1823), a large reservoir (left), a small reservoir (upper center), and a grist mill (upper right). The complex was powered by water directed through a ditch two miles in length.

Fig. 10. Mediterranean style windmills consisted of massive stationary towers of masonry. Only the cap and blades of the windmill could be rotated. This example is from Portugal.

Fig. 11. North European wooden post mill of the type familiar in New England and Russia. The entire mill body could rotate 360 degrees to take advantage of shifting winds. This example is reconstructed in Colonial Williamsburg.

Another possible source to build the superstructure were the three Russians whom Fr. Payéras brought back to La Purísima from Fort Ross in 1822. They were also familiar with windmills of the wooden post type (Middleton n.d.). So we have a structure begun by the Chumash, with Spanish stone foundations, and

a planned wooden body to be built either by an American or by Russians—truly a remarkable archaeological example of multicultural cooperation.

While water did not provide the motor power for the mill, it was still necessary for the washing of the wool. In typical Spanish style, the sections of interlocking pipe were cemented together and laid in a channel lined with large shale and sandstone slabs for protection. The drop in elevation from the source placed the water under pressure in the pipes, making it possible to raise the water in a cement pressure block, use it, and send it on its way from a higher elevation. The unusual feature was that some covering slabs had been removed and holes purposely punched into the tops of the pipes. These holes were patched with pieces of broken pipe tile which were held in place by the stones and earth on top. The Romans knew about this technique, and the knowledge was preserved in Spain through the Middle Ages to be introduced in simplified form to the California frontier in the 1820s.

The industrialization of mission wool production failed because of the death of Fr. Payéras in 1823, the Chumash Revolt of 1824, and the lack of support for the missions under the Mexican regime. Sr. Ruiz left before completing the stone foundations of the fulling mill, and Chapman moved south to become a prosperous entrepreneur. As a final footnote, Prokhor Egeroff, one of the Russian deserters, ended up in Mission Santa Barbara in 1824 and was a rebel instigator in the Chumash Revolt of that year. Fleeing with the rebels to the San Joaquin Valley, he caused the Mexican government a great deal of concern, as he was reportedly training ex-neophyte Chumash and Yokuts in musketry practice. But his interest in a married Chumash woman caused him to be killed by the ungrateful rebels while living in exile.

Conclusions

Excavations around the mysterious column at Mission La Purísima in 1998-1999 revealed the base of a second column with an associated pipeline feature. Many lines of evidence point to the columns as representing the initial construction efforts for a wind-powered wool fulling post mill. This evidence includes the presence of two columns intended to support the windmill; a carefully constructed ceramic pipe water supply, known to have been needed in wool fulling operations; the proximity of the column to Mission La Purísima; and historic documentation of the mission's 10,000 sheep the year mill construction was initiated, followed by a dramatic decrease in herd numbers the following year. At this same time, Joseph Chapman and three Russian deserters were present at Mission La Purísima. Fr. Payéras hired and paid an Hispanic stone mason to begin the foundation of the mill. A series of events conspired to end the experiment in textile industrialization. These events included the death of Fr. Payéras and the Chumash Revolt of 1824. California needed to wait another 30 years before it entered the industrial age.

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