Andean Past

Volume 8 Article 16

2007

Archaeological Recovery at Quebrada de la Vaca, Chala, Peru

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ARCHAEOLOGICAL RECOVERY AT QUEBRADA DE LA VACA, CHALA, PERU

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INTRODUCTION[1]

The site of Quebrada de la Vaca (PV77-3) is a few kilometers west (up coast) from the town of Chala in the Department of Arequipa on the south coast of Peru (Figures 1 and 2). It is also called Puerto Inca. Max Uhle visited Quebrada de la Vaca in 1905 (Rowe 1956:138). However, interest in the site developed following Victor von Hagen's decision to make investigations there an aspect of his study of the Inca road system (von Hagen 1955). Although the ruins were known locally, they were rediscovered by von Hagen during a reconnaissance flight over the Chala region in 1954.

Elements of the Inca road system were clearly visible as they came into the settlement. These, combined with the excellent overall condition of the ruins, made it apparent to von Hagen that further investigation would make a major contribution to his study of Inca roads. Because of its clear juxtaposition to both roads and the sea, as well as the extensive area of cultivatable land that surrounds it, the settlement at Quebrada de la Vaca played an important role in Inca procurement, storage, and distribution.

In contrast to the nearby site of Tambo Viejo in the Acarí Valley (Menzel 1959), Quebrada de la Vaca has a simplicity which suggests that its function was different, at least to some degree. Tambo Viejo was an important Inca regional administrative center, while Quebrada de la Vaca was not. It is likely that settlements in the Chala-Atiquipa region were satellites administered by an Inca hierarchy stationed at Tambo Viejo.

ARCHAEOLOGICAL INVESTIGATIONS AT QUEBRADA DE LA VACA

After Uhle's visits to Quebrada de la Vaca, the first serious archaeological work at this site was done by Dorothy Menzel and the present writer between 18 May and 3 July, 1954, as part of a cooperative project sponsored by von Hagen's Inca Road Expedition and the University of California Archaeological Expedition to Peru, 1954-1955 (Menzel and Riddell 1986; Riddell 1954; Rowe 1956:135-139; von Hagen 1955:16-

[1]*Editors' note:* a version of this article was presented at the 64th Annual Meeting of the Society for American Archaeology (1999). Fritz Riddell died on 8 March, 2002 (Kent 2005:16), before having the opportunity to revise this paper in response to peer review. It has, therefore, been expanded by editor Monica Barnes, primarily on the basis of Riddell's unpublished reports on Quebrada de la Vaca which he provided with the intention of publication in *Andean Past*. Unless otherwise indicated, present tense refers to 1954 when Riddell and Menzel worked together at Quebrada de la Vaca. The editors have not been able to resolve all discrepancies or vague statements in Riddell's reports. Readers should keep this caveat in mind. Riddell's reports are on file in the California Institute for Peruvian Studies' (C.I.P.S.) archives at the State University of California, Stanislaus. We thank Nancy Taniguchi, C.I.P.S. archivist and Brian Duggan (also at Stanislaus) for their help with illustration and referencing. Long-time C.I.P.S. member Grace Katterman helped coordinate various drafts. John C. (Chris) Schaller graciously allowed us to include his previously unpublished observations. Doris Kurella and Markus Reindel provided information on work by Uhle and by Disselhoff at Quebrada de la Vaca. We deeply appreciate Dorothy (Dolly) Menzel's support of the publication project.

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18, 206-207, 211-212, 218-219, 230, 232-233, 241, 245-252, 293, unnumbered plate).

Between 1967 and 1975 Hermann Trimborn and associates carried out investigations at Quebrada de la Vaca (Trimborn 1985, 1988/89). Although Trimborn was aware of our work at the site, our data were not available to him in printed form. In the late 1980s I corresponded with Trimborn, but his death prevented collaboration.

Trimborn and his team conducted a broad survey of the site, producing a measured site plan (Trimborn 1985: plan 3, 1988/89: plano 3). They also focused on its road system (Trimborn 1985: plans 1, 5, 1988/89: planos 1, 5). Menzel and I had concentrated on architecture and had also drawn up a plan. We used a lensatic compass, a metric tape measure, and a homemade stadia rod. Our limited time only allowed us to record the central portion of the ruins, including the nearby formalized, rectangular storage area. Both our original plan, and a later expanded revision, are included with this article (Figures 3, 4). Working almost two decades earlier than Trimborn allowed us to recover and record architectural details not available to him because natural erosion and human activities had taken their toll in the interval between our projects. In addition to mapping and recording architecture, our work centered on the excavation of a formal tomb, originally called a burial house. We also undertook several small test excavations.

Other scholars who have worked at the site, at least briefly, include Hans-Dietrich Disselhoff (1968:144-150, photos pp. 128, 137), Frédéric-André Engel (1973:278), Gary Urton (Urton 1990), and a Japanese team (Ishida 1961:251-253) who made a partial plan of the site which differs considerably from the corresponding sections of ours and Trimborn's plans (*ibid*: plan, p. 253).

Disselhoff, a member of von Hagen's Inca Road Expedition, returned to Quebrada de la Vaca in the 1960s, hoping to identify previously unknown Nasca sites. He searched for two weeks without success (*ibid*: 127, 144). He made a plan of the ruins (*ibid*: 145) and excavated in search of tombs (*ibid*: 146). Midden excavation revealed maize, potsherds, a sling made of human hair, sea urchin remains and plant fiber netting (*ibid*). Also recovered from the site were fragments of cotton textiles, guinea pig remains, and a spindle whorl (*ibid*:149). The only undisturbed find reported was a large ceramic jar covered with a potsherd, and part of an Inca wooden *kero* (*ibid*: 150). Material excavated by Disselhoff at Quebrada de la Vaca is in the Museo Arqueológico José María Morante at Arequipa's Universidad Nacional de San Agustín. Field notes and photographs relevant to Quebrada de la Vaca are housed in Berlin's Etnologisches Museum.

Frédéric-André Engel visited Quebrada de la Vaca in the early 1970s as part of his extensive survey of Peruvian coastal sites. He photographed it and made partial plans and elevations (1973:278, 1980: map XVII_B, site 140, 1981:26-27, 52, figure 25).

In 1982 Gary Urton visited the site several times, focusing on a complex of linear chambers and large enclosure which we have designated the Rectangular Storage Area (Urton 1990: figure IV.7). Although Urton acknowledged the storage functions of this portion of Quebrada de la Vaca, he postulated that the management of storage would have involved communal ritual activities:

> . . . I believe that the trapezoidal plaza at Quebrada de la Vaca was a public complex which was the setting for communal activities carried out by the *ayllus* within the area during pre-Hispanic and early colonial times.
>
> (Urton 1990:190)

Quebrada de la Vaca is now on Peru's ecotourism circuit (Isla and Del Águila 1993; López 1993; www.arqueologia.com.ar/peru/p-inca.htm, consulted 27 August 2006).

Architecture

From the beginning of our work it was obvious that this settlement was highly significant for the storage of agricultural and/or marine products. Both formal and common storage chambers were numerous and highly visible. Structures were made of field stones, probably granite, of a type commonly found in the region. For the most part the stones are rough, somewhat granular and friable. This building material contrasts with the most common building materials used at Tambo Viejo, stream cobbles and adobe bricks. The mortar used to bind stones at Quebrada de la Vaca appears to be made from midden deposits found at the site mixed with salt water. Consequently, the mortar is quite hard and durable once dry, and resembles salitre. There is possible evidence of burning in some areas. Perhaps this represents an attempt to purposely calcine the mollusc shell constituents of the midden to prepare a lime mortar.

Evidence for the special use of the site as a depot for the storage and shipment of regional products includes the numerous architectural features on the periphery of the settlement that we interpreted as corrals. Their number suggests that the Inca accommodated many cargo llamas within them. Apparently the Incas transported local products from Quebrada de la Vaca to other parts of the empire, and possibly brought in items not produced locally. Work by Howell and Kent (1991) supports our belief that such stone enclosures are corrals and gives a dimension to the study of the site that we were unable to provide in 1954.

Rectangular Storage Area

Of outstanding interest is the rather formalized storage area to one side of the habitation portion of the site which we called the Rectangular Storage Area. We made a detailed study of this structure in 1954, collecting volumetric data on its 17 chambers. This architectural feature stood to one side of the main habitation area (Figure 5). Later excavations by Trimborn's team revealed *algarrobo* (probably *Prosopis* sp.) seeds, ají (*Capsicum* sp.), corn cobs and quinoa seeds (Trimborn 1988/89:41). The Rectangular Storage Area certainly served as a storage facility, but it also may have been used for ritual activities, as suggested by Urton (Urton 1990:190-193; see also Trimborn 1985: plan 4, 1988/89: plano 4).

La Caleta. The nearby site of La Caleta has a similar storage area. There, a square approximately 30 meters on each side is defined by stone walls standing 1-1.5m high. About half of this compound is composed of nearly square stone-walled depressions. A local informant, José Grau, told us that in the late 1940s the chambers were roofed and capped by soil (Riddell 1954:59, May 22, 1954). A broad stone wall running from the sea bluff up a hill, then turning at a right angle back to the sea separates the storage area from the habitation zone. The site also includes a sort of truncated mound similar to what we have called temple mounds at Acarí. The mound seems to have once supported an important structure, but at present only a few outlines of stone walls remain. Apparently great devastation to this site occurred from about 1945 to 1954. When we were working at Quebrada de la Vaca it had already been scheduled to have an expansion of the Pan American Highway built through its center. In the past La Caleta was reached via the Inca highway (*ibid*).

Survey conducted by José Antonio Chávez y Chávez and John C. Schaller in 1989 (assisted by Wille Huashiramayo and Brian Schaller) and by John C. Shaller in 1999 (assisted by Nathan Parker), have revealed similar complexes at two other sites in the region, the Parara Depósito (PV78-13; UTM 582119E, 8251961N) and Chala Viejo Antiguo (PV78-2; UTM 585300E, 8257350N).

Parara Depósito. According to Schaller (personal communication with the editors 29 November, 2006) the Parara Depósito is less well preserved than Quebrada de La Vaca West (see below) but the general trapezoidal outline of the structure is still evident (Figure 6). It measures 40m north-to-south along the back wall and 20m along its south side. It is oriented west-to-east, facing west at 33.5°, thus also facing the Quebrada de Chala. The structure's rear is nestled into the sand hill immediately to its east. Unlike at Quebrada de la Vaca and Chala Viejo Antiguo, there is no apparent habitation zone surrounding the structure, although there is some other architecture, including small structures in front of it that probably served as above-ground storage units. There is evidence for similar above-ground storage units at the rear of the structure, but they have all collapsed.

Lines of rocks delineate four subdivisions of the complex on each side of the main entry pathway. The subdivisions range from 3.04m to 3.81m wide. There is a 3.35m space between the front of the structure and the rock line divisions. If such a line once existed at Quebrada de la Vaca it was obliterated before archaeological observations were made (*cf*. Urton 1990:185; Trimborn 1988/89:129) although there is space there for such a division.

Chala Viejo Antiguo. At this site there is an outline in stone which probably delineates another rectangular storage unit similar to those at Quebrada de la Vaca West, La Caleta, and the Parara Depósito. The above-ground portions of the walls are no longer standing.

Compound 7

The term Compound is used here to distinguish seemingly related units of architecture from other similar, often adjoining, and related units. For example, Compound 7 consists of House 7a, a yard, two storage pits, and a yard platform (Figure 3). All these elements seem to have an underlying unity and to be separate from neighboring compounds. It may be assumed that each compound was used by one nuclear or extended family. It is likely that the yard served as the outdoor work and storage area.

Compound 7 is the largest single compound at Quebrada de la Vaca. This can be explained, at least in part, by the fact that it is built on flat, open ground. Its construction follows a common pattern. The floor is of granitic sand mixed with midden. It is smooth but slopes gently upward toward the north and east sides. A typical platform, elevated some 15 or 20cm above the floor, extends for the full length of the compound's east interior wall. This platform probably delimitates a special use area, possibly for work and/or sleeping.

The walls of this compound are in good repair and have a sustained height of 1.8m from the present floor, except for the south wall which is around 1.5m high.

There are three niches in the west wall. The two northernmost niches are 70cm above the floor and the southernmost niche is 80cm above it. Such trapezoidal niches are common in these ruins and widespread in Inca architecture generally (Figure 7).

Two unmodified bones, now broken flush with the wall, appear to have extended out of the mortar between the southern and middle niches in the west wall. The southern bone was set at a height of c. 1m above the floor, while the bone north of it was c. 1.2m above the floor. Both bones appear to be camelid radio-ulnae and the bones were so placed in the mortar that the sweeping curve of the proximal end of this compound bone would provide an excellent peg from which to hang sandals, headbands, bags, ropes, harnesses, etc. which would not easily slip. Another camelid radio-ulna, now broken off at the wall face, once extended from the compound's west wall between the middle and northern niches. It is c. 70cm above the compound floor. To the north, beyond the third niche is another bone which seems to have served the same purpose. It, too, has been broken at the wall face, and may be a camelid tibia. Due to the paucity of suitable wood and the ready availability of camelid bones, the use of long bones in this way is not surprising. For a depiction of similar pegs in a similar position, but near a window see a drawing by Guaman Poma (Murra *et al.* 1987:817; Figure 8).

Through observation of wall junctions we determined that the walls of Compound 7 were constructed before the two-story structure at its southeast corner was built.

On the west wall of the southwest room off Compound 7, to the right of the doorway as one enters the room, are at least two protruding bones. The bone nearest the doorway is c. 80cm above the floor. The other is c. 1m above the floor. These bones appear to be radio-ulnae and are also positioned so that the natural curve of the proximal ends would provide a convenient hook. Other bones have also been incorporated into the mortar. Some of these bones, including relatively large camelid bones such as a scapula and a tibia in close proximity to the radio-ulnae described above may have found their way into the wall simply because they are elements of its midden-derived mortar.

Compound 9

The room at the north side of this compound is gabled, and has typical niches on the insides of the gabled ends. We have designated it as the North House or House 9a. Its niches measure about 25cm wide, 25cm deep, and from 25 to 35cm high. It is possible that three or four niches originally existed in the north wall of this gabled stone house, but stones have tumbled from this wall and the niches may have been destroyed.

The North House (House 9a) is in an excellent state of preservation and could be re-inhabited by replacing the relatively few fallen wall stones, and by putting on a thatch roof. On each inner side of the doorway two bones extend from the wall into the room. They do not now extend their full, original length, however, because one has been broken off flush with the wall, and the other partially broken back. As one passes out of the door, one can see another similar bone that, apparently, also extended from the wall until it, too, was snapped off at the wall face. Farther to the left of this broken bone a stub of a limb protrudes from the mortar. However, this limb has either been broken off, or has rotted away flush with the face of the wall. The bones seem to be those of llamas or other camelids. Such an unmodified long bone peg is also on the right side of the entrance as one enters of the room on the south side of Compound 9. This bone may be a camelid femur. All the protruding bones of the North House are about 1.2m above the floor. The one of the south side is c. 1.4m above the floor of the compound.

The floor of the North House is not perfectly level, nor is the floor of Compound 9. The floors are, of course, smooth, but tend to

slope with the natural terrain. The east end of the floor of the North House is elevated about 10cm. This was accomplished by placing a row of angular stones from one wall to the other across the house. This small stone row acts as a platform wall. This architectural feature occurs time and time again at Quebrada de la Vaca. Not only is this method of elevating a portion of a floor common in the houses, it is also common in the compounds themselves. Generally speaking, however, this fabrication of platforms or low terraces is more gross in the compounds. That is to say, the row of retaining stones in the compounds is usually larger and higher. Often associated with these rows of retaining stones in the compounds are stone columns that are square or rectangular in plan. Sometimes one, or sometimes more than one column is associated with the line of stones. It is reasonable to assume that these slightly elevated areas in the houses and compounds are areas of special use such as sleeping and/or work areas, or storage areas. In the cases where stone columns occur in conjunction one can assume that a matting roof was erected to provide shade.

In Compound 9 there is a platform area elevated about 20cm above the adjacent floor. Two stone columns, both now fallen, are situated with one face in line with the retaining stones of the raised dirt platform. The area between the columns is slightly higher than the compound floor, but a little lower than the platform area proper.

The east gable of the North House does not stand open and free, but has a sub-rectangular storage chamber built against it. The storage chamber is subterranean because the hill slopes up on the chamber's east side and refuse has intentionally or accidentally covered this structure up to its mouth at the top. The top of this structure is only slightly below the peak of the east gable of the North House. The house and storage chamber, however, do not have a common adjoining wall.

The location and approximate size of the underground storage chambers below the floor of Compound 9 can be observed in the plan of this structure. Strange as it may seem, there is no observable entrance to the West Room (House 9c). This would be understandable if the walls had tumbled to such an extent as to have obscured the entrance. This, however, is not the case because the walls, for all intents and purposes, still retain their maximum height, in some places 2 meters. Entrance to this room could be made by climbing over the wall, or by erecting a stile, or similar device. Just why this room may have been abandoned, if indeed it was, is not clear.

There is a second gabled room at the southeast corner of this compound. Unlike the North Room this room is slightly smaller and has no niches in the walls. Like the North Room, however, the Southeast Gabled Room (House 9b) is in an excellent state of preservation, although the dirt floor has a large crater left by looters. If the floor were smoothed, a few rocks put back into the walls, and a thatch roof erected, this room would be as good as it was four hundred years ago. The pit dug by looters has exposed the base of the wall at the doorway on the north side of the Southeast Gabled House.

There is a threshold of several flat, angular stones in the doorway of the North House. It is c. 10cm above the floor of the compound, but it is at the level of the house floor. The stone columns noted in this compound are constructed in the same manner, that is, they have the same type of bonding as the doorways. The Southeast House does not have platform areas on its floor.

EXCAVATIONS

Middens

The middens at this site are situated so as to indicate the method by which they accumulated. The inhabitants simply walked to the end of a street and dumped their refuse at the edge of the site. The two major streets of Quebrada de la Vaca run more or less north-south. There is no inner street which goes from the bottom of the village, up the slope, to the top. Such passage, however, was accomplished by paths on either side of the village. At the northeast end the midden has collected in four terraces. The deposit is terraced because the two streets are not on the same level, so each terrace represents refuse dumped from one street level. This accounts for the two lower terraces. However, the two upper terraces were formed by the people who lived three-quarters of the way up the village slope, and by those who lived at the top.

A major midden deposit occurs immediately west or in front of the village. Refuse was thrown off and over an escarpment approximately 6m high. A retaining wall had originally been built along the top of this bluff but was finally all but covered by the accumulating trash. Underground storage chambers were constructed in the flat across the bluff, and appear to have penetrated the midden. Midden probably continued to accumulate after their construction.

Immediately in front of Compound 1 there is another fairly deep midden (possibly 1 to 1.5m deep). Its existence seems due to the fact that a street goes by this compound on the north and the south. The refuse from Compound 1, and those compounds immediately adjacent on either side and behind (up slope) was deposited here. Spanish pottery is found in this midden.

Our first attempt to excavate a midden occurred when a netted bag was noted protruding from a small hole which had been dug by a looter. To remove this bag the deposit above it was troweled away and screened. In the small excavation made during this operation a quantity of textile material was recovered. The trench reached a depth of about 30cm, and was 50cm square. We recovered a representative collection of shells. However, animal bones were scarce, and fish bones almost non-existent. Potsherds were common but were, for the most part, brown utility ware. The excavation yielded one fragmentary rim of a bowl or plate in the Acarí style (Menzel and Riddell 1986:10) and a quipu string. Organic material such as llama (?) wool, corn cobs and husks, as well as leaves, sticks, and twigs were common. Cotton, lucuma, corn kernels, and squash seeds were fairly common. Also recovered were a tubular bone bead, two pieces of copper tied together, a gourd bowl fragment, and a possible wooden plug.

We began Test Trench 2 at the base of a midden slope with the intention of cutting into the deposit until the earlier habitation refuse was encountered. This earlier midden was capped by the last occupation residue. The purpose of Test Trench 2 was to determine the composition of the midden. It was of banded refuse, *i.e.* mollusc shells, corn cobs, husks, and stalks, textile fragments, cordage and string, potsherds, ashes, straw, and broken and unbroken cobbles.

The exposed face of the midden slope was highly indurated because the salts in the soil attract moisture. The salts recrystallize and form a rock-hard face. It has been thought that this face may have been part of an earlier midden deposit, but the test cut indicated no cultural or physical differentiation beyond the hardened face.

After proceeding for about 1m into the slope, we encountered the outside face of a retaining wall about .5m high, built in the same style as the rest of the ruins (Figure 9). Its interstices were filled with organic matter and other refuse. It had been built atop an earlier wall of angular, unmortared stones. We exposed the face of the wall from its top to below its base, a distance of about 40cm. The wall seems to have been built to retain midden and was buried by the disposal of garbage and subsequent downward drift of the midden from the slopes above it.

Just below the base of the wall and 5cm out from its face we found a gourd bowl with a diameter of c. 20cm. It was resting in the mouth down position (Figure 10). The gourd contained a small, rectangular cloth bag made from an old blanket or similar cloth (Figure 11). The cloth was tied up with cord. The bag held fossilized sea urchin spines, a strand of human hair bound with cotton thread, tufts of human hair, three small, dark, water worn pebbles, and two fragments of greenstone, a copper ore. Beneath the bag was a section of cane split lengthwise so that a bag could be stuffed into the hollow cane (Figure 12). The pieces of cane had been re-fitted together and bound with a string of human hair. We sent these associated artifacts to the Museo Regional de Ica with the rest of the Quebrada de la Vaca collections (Appendix 1). Investigations in 1990 provided the details given here.

In the southeast corner of Compound 15 we troweled an area 1 x 1.2m to obtain a sample collection of potsherds and plant, fish, and animal remains. At a depth of c. 25cm we encountered a layer of tan beach sand. It was several centimeters thick and was probably the floor level of the partitioned area of this compound. Above the sand layer was a coarse deposit of organic material and dry midden refuse. We filled a number of specimen bags from this excavation but no further identifications were made of this material. We found a less coarse midden deposit below the sand layer. It was less rich in potsherds and in larger organic materials. The base of this stratum was not reached after digging some 25cm into it.

QUEBRADA DE LA VACA WEST

Our greatest effort other than mapping the site was the exposure, recording, and removal of well over one hundred mummy bundles from a tomb at the area of the site we called Quebrada de la Vaca West. That portion of the site is across the playa on the other site of the cove from Quebrada de la Vaca. It has much the same configuration as Quebrada de la Vaca proper. However, the remains of three rectangular sepulchers, or burial houses, built upon platforms were on the west side (Figures 13-19). All had been vandalized in the past. It appeared to us that the first depredations came shortly after the arrival of the Spanish. Below the burial houses, to one side, to the right as one faces the bay, are three rectangular *chullpas* or burial towers, architecturally similar to storage buildings also called *colca-kuna* or *depósitos*.

The large tombs are also constructed like *depósitos*, but are bigger, each with an entrance in the broad site, accessible from the front of the platform. The interiors are arranged like habitation houses with trapezoidal niches at mid-height all around the walls. They differ from dwellings in having stone roofs and small entrances.

All of the *chullpas* and large tombs contained many burials and appear to have been used exclusively as sepulchers. For purposes of recording we numbered the large tombs consecutively, one through three, from right to left as one faces the bay, and from the uppermost to the lowermost.

Tomb 1 (Burial House 1)

Tomb 1 (Figures 14-16) was the best preserved of the three large tombs. It was built of a poor quality granite. It appears to have contained fewer individuals and grave goods than the others and was, therefore, treated more gently by looters. Robbery took place mainly through the roof. The central part of the roof caved in, leaving its stone beams on the floor inside.

This tomb faces east at an azimuth of about 45 degrees, and thus each day receives the first rays of the rising sun. The flat stones which form the eaves of the tomb are set in mud mortar. The stones above are not.

Tomb 2 (Burial House 2)

We selected Tomb 2 (Figures 17, 18) to excavate. It was also built of granite and still in very good condition, even though it had probably been looted by the Spanish when they first came to the region. All the mummy bundles of Tomb 2, except those of infants, had been ripped open and all valuables had been removed by looters. However, during the course of the slow disintegration of the tomb, fine silt, soil, and sand from the roof sifted onto the mummy bundles before the heavy stone beams fell on top of the remains. I began excavation by removing the numerous fallen roof and wall stones and the 15 to 30cm layer of silt, soil, and sand. At this point I came upon masses of textiles. Protected by the silt, soil, and sand layer, the bones were in an excellent state of preservation, and not one skull was broken by the collapsed roof stones.

The front of this structure faces east on an azimuth of 90 degrees. The back interior wall has five shelf niches at mid-height. The end walls each have two. The interior of the front wall has one niche on the left as one enters and probably had one on the right, but damage to the wall has obliterated it. A portion of the back wall is built against the rock outcrop which occurs here. The inside of the back wall, however, is flat and no evidence of the base rock is visible from inside the tomb. The platforms around the tomb seem to have been constructed to provide a level area upon which to build it the sepulture.

The burials were in the form of tightly flexed bodies dressed in their clothing and wrapped in a blanket or blankets and sewn up into compact mummy bundles. These bundles were seated side-by-side on the floor until the floor space was filled. We estimate that there were at least 100 such mummy bundles. We have good reason to believe that originally there were numerous fine pots, textiles, personal artifacts, and jewelry of metal, stone, bone, and wood with these mummy bundles. Strewn about by looters were bones, clothing, and small specimens of little or no value to the looters. Every burial seems to have included one or more small textile bags for coca, sling stones, etc. All of these bags have a knife rip in them. The looters were looking for gold and they obviously found it. We encountered a very few small pieces which were probably sewn to clothing as sequins.

In removing the mummy bundles we made every effort to keep all elements of each bundle together. However, because of the vandalized nature of the material it was not always possible to be sure what textiles were associated with which bones. Nevertheless, in many instances there was sufficient cohesion that valid observations could be made as the mummy bundles were removed from the burial house. The fragility of the textiles, as contrasted to the excellent preservation of the skeletal material, necessitated the separation of the clothing and other artifactual material at the site and its transportation to the laboratory in the Museo

Regional de Ica for storage. The textiles remained there and a study of them was initiated in the early 1990s by Grace Katterman (see Katterman 2007). Unfortunately, the skeletal material was sent to the University of Cusco where it was used as a teaching aid. The whereabouts of this outstanding collection are unknown, but we presume it has been lost. After completing our excavations we refilled the tomb with sand, silt, and soil.

Although the textiles from Tomb 2 are, for the most part, extremely fragile, they form a corpus of material from a single tomb spanning a short period during the Inca reign, and extending briefly into the Conquest period. Furthermore, these textiles, in many instances, can be associated with a particular individual. For these reasons, Katterman's study of these textiles has an added interest and value.

Tomb 3 (Burial House 3)

Tomb 3 also faces directly east. It had been so badly vandalized that only its base remained. Its stones had been thrown over the side of its platform and downhill. The outline of its wall bases and the platform upon which it was built is still visible, so we could determine its approximate size and orientation. It was of about the same size as the other two large platform tombs. Three steps led up to the platform (Figure 19). Its roof beams are approximately 1.5m long. Its limestone blocks had the following dimensions:

Stone Nº	*Length, cm*	*Width, cm*	*Height, cm*
1	84	38	14
2	–	53	20
3	–	40	20
4	–	58	25
5	82	30	22
6	60	36	10
7	88	65	10

The size range and proportions of these blocks are similar to those of the adobe bricks at Tambo Viejo in the Acarí Valley and other Inca sites in the region.

We were able to recover a few fragments of Cusco Inca pottery which suggested that the tomb had held the remains of high status individuals and thus provided a greater incentive to looters looking for valuables. It was probably looters who had almost completely destroyed the tomb. Although all three tombs were impressive, only this one had been built of dressed, white fossiliferous limestone blocks. They were not, however, used exclusively and were not of the same size or degree of finish.

Three small chullpas *below Tomb 1*

To the right, below and quite close to Tomb 1 are the remains of burial chambers no more than half the size of the large tombs (Figure 20). There were no internal niches or supporting platforms with stairs. The topmost *chullpa* faces east and has an entrance in one of its broad sides, but the lower two face north and have entrances in their narrow sides. Only one has its entrance preserved in its entirety. It has a double lintel with a recess. That is, the inner, lower beam rests partly on stones of the corbelled wall of its sides, and partly on the entrance stones. The front and higher lintel roofs the entrance proper. This gives a neat, decorative effect. An entrance platform, a small, stone-paved apron, is directly in front of the entrance.

In so far as we could tell from their looted burials, their contents seem to have been similar to those of the larger tombs. For example, we found pieces of a finely-made blackware plate, part of an Inca-type cooking pot handle, knotted strings which may have been part of a quipu, a gourd plate, a small knotted bag, part of a sling, parts of a small, well-made, light and

dark brown and red weft stripe bag, remains of wrappings, a strand of hair wrapped tightly with string; two camelid cervical vertebrae; a very slender spindle with bits of light brown and dyed red camelid wool in the middle, part of a larger spindle, two needles, parts of five others, two thorn pins, bits of cut cane, a pair of copper tweezers, and a shell disc bead.

CONCLUSIONS

Our investigations in 1954 revealed that the settlement at Quebrada de la Vaca was in the process of construction when the settlement was abandoned. In fact, a corollary series of chambers immediately to one side of the formal Rectangular Storage Area was nearly complete when work on them ceased. It may be assumed that construction was halted by the arrival of the Spanish. The dynamics of the situation are rather clear. The Inca established a settlement along the cove at Quebrada de la Vaca, but we cannot be sure whether the people involved were *mitimaes* (members of a mita) or local people whose work was commandeered by the Inca. In any event, the growing of crops in the extensive terraces between Chala and Tanaka provided a quantity of agricultural products that had to be processed, stored, and shipped. The numerous corrals, as well as the main roads and lateral branch roads that lead to, or are in the vicinity of the settlement, provide clear evidence for robust economic activity at Quebrada de la Vaca and the nearby Late Horizon settlements of La Caleta, Taimara, Aiparipa, Ocopa, Moca, Maucayacta (also called Maycayacta and Pueblo Viejo), and Cahuamarca (Figure 1).

The region under discussion is a *lomas* or fog vegetation zone. Those inhabiting it could never be certain of nature's bounty. In rainy El Niño years the *lomas* plants form a green carpet down to the ocean and can provide sustenance for grazing animals such as llamas. There is also enough moisture for limited agriculture. However, one must question the stability of such a system over a protracted period. While it is true that marine resources could still be processed, stored, and shipped even when agriculture was not possible, that activity might not be sufficient to support the construction of such an extensive number of formal and informal storage areas.

What was being grown on the terraces? I have discussed the water distribution system and the crops grown during the second half of the twentieth century with the people living in Atiquipa, the center of the extensively terraced region. To the degree possible these fields are still in use. This is done by channeling what rainfall occurs onto the terraces. If there is too much water at any one time care is taken to channel the excess off without creating erosional gullies. Where possible, canals from nearby quebradas are used to direct whatever water may flow down them by building small diversion dams. This type of farming I call "Opportunity Agriculture" (Riddell and Hunt 1992). The extent of the planted fields depends upon two factors, the availability of water and a labor force. Although not as extensively as during Inca times, the terraced fields between Chala and Tanaka are still used to grow many of the same crops as were cultivated under Inca rule.

Our excavation of one formal tomb at this settlement suggests there was a dichotomy in the disposal of the dead. Many mummy bundles were housed in conical, dome-shaped *chullpas*, while others were placed in the more formal rectangular tombs. Gold in the form of small paper-thin rectangles was found in limited quantity with the burials from the rectangular tomb we excavated. This suggests a royal prerogative. The gold laminae had been placed over the orbits of the deceased, and often adhered to their head cloths (See Katterman

2007:219, 222). Because the other tombs of a less formal nature were not investigated it is not known if this same prerogative existed for the people buried there. With our limited investigations, however, it appeared to us that burial dichotomy would suggest a bi-level social stratification of the population at Quebrada de la Vaca. The detailed study of the textiles from Tomb 2 at Quebrada de la Vaca West may shed light on the people who lived and died there at a critical time in Inca history.

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APPENDIX 1 - LIST OF COLLECTIONS MADE AT QUEBRADA DE LA VACA IN 1954 BY DOROTHY MENZEL AND FRANCIS A. RIDDELL

Page numbers refer to pages in Frances Durocher's List of Collections made by the University of California, Berkeley, in the 1950s and 1960s (60 pages). Copies are available from the California Institute for Peruvian Studies (CIPStudies.com). The Collections are stored in bags by box number at the Museo Regional de Ica, Peru.

LOCATION	PAGE	BOX/BAG NO.	ITEMS
Test trench 2	20	22-8	ceramic
Compound 15	20	22-9, 11	ceramic
Test site, in mortar	20	22-10	ceramic
Arenal	20	22-12	ceramic
Test trench 2, midden	21	23-4	ceramic, lithic
Trench 1	21	24-1	ceramic
Trench 1	21	24-2	ceramic osteological, lithic, inorganic, botanical, metal
Burial house 2, disturbed	22	25-2	ceramic, metal, organic
Burial house 2, infant	26	33-6	ceramic, textile
Burial house 2, infant	26	33-7	ceramic, textile, malacological, botanical, osteological
No area specified	27	34-2	ceramic (14)
Camp, mortar of wall	27	34-7	hammerstone
Camp, surface	27	34-10	ceramic (15)
Midden, floor surface	28	35-9	wooden artifact
Burial house 2	33	43-1	leather, slings, spine
Burial house 2	33	43-3	textile
Tent site, surface	34	44-8	ceramic (44)
Test trench, midden	34	44-10	malacological
Compound. 13, below	35	44-14	ceramic (5), malacological, vegetal, textile
Test trench 2, midden	35	45-2	lithic (5), textile (bag), vegetal, other organic
Test trench 2, midden	35	45-5	ceramic (15)
Test trench 2, midden	35	45-8	malacological, vegetal, copper
Test trench 1, 0-25cm	35	45-7	vegetal (68)
Burial House 2	35	45-11	textile (5), vegetal, other organic
No area specified	36	46-1	textile (1)
Trench 1	36	46-5	ceramic (3), lithic (4), malacological, osteological
Test trench 1	36	45-10	textile, organic
Cut 1, level .25cm	36	45-12	textile, bone, malacological
Burial House 2	37	48-1	inorganic (lime)
Surface	38	48-15	lithic (8)
Tent site, surface	39	50-1,4	ceramic (70), (26)
Surface	39	50-2	ceramic (31)
Surface, room floors	39	50-3	ceramic (39), vegetal (3)
Compound 15	39	50-5	malacological (28), osteological (12)
Area of *chullpas*	40	50-6	ceramics (35)

Tent site, midden surface	40	50-8	vegetal, textile (5)
Surface	40	50-10	lithic (2)
Compound 15	40	50-13,16, 18	ceramic (11), (36), (11), vegetal
Tent site	40	50-14,17	lithic (2), ceramic (32)
Burial House 2	41	51-7	lithic (6 sling stones)
Tent site, surface	41	51-9, 11, 12, 15	lithic (1), (5), (5), (5), mineral (1)
Surface	41	51-16	ceramic (8)
Tent site, surface	42	52-5	ceramic (27), lithic (5)
Compound 15	42	52-9	ceramic (64)
No area specified	42	53-2	lithic (1)
Surface	43	53-6	textile (cordage)
Compound 15	43	53-10	osteological, other organic, malecological
No area specified	43	54-1	ceramic (38)
Surface, habitation	44	54-12	lithic (3)
Tent site, surface	44	54-13, 15	lithic (1), (7)
Tent site, surface	44	54-16	ceramic (74)
Trench 1	44	54-17	vegetal, other organic
Chullpa area, surface	47	57-8	ceramic (26)
Burial house 2 vicinity	48	58-6	ceramic (10 rims)
Tent site, surface	49	59-3	lithic (4)
Surface	54	63-8	ceramic (53)
Burial house 2, surface	54	63-9	ceramic (6), lithic (1) metal (2)
Burial house 2, below	54	63-10	ceramic (139), spindle whorl
	54	63-11	lithic (16)
Tent site, surface	55	64-7, 8	lithic (21), (1)
Tent site, surface	55	64-9	ceramic (21)
House 3, surface	55	64-10	ceramic (60)
Trench 2, midden	55	64-11	osteological, vegetal
Surface	55	64-12, 15	lithic (1), ceramic (2), textile
Test area, *chullpa*	55	64-13	ceramic (53)
Burial house area	55	64-14	ceramic (18)
Main site/storage	55	64-15	textile
Tent site, surface	56	65-8, 9, 10	lithic (11), (2), (7)
Vicinity, Burial House 3	56	65-11	ceramic (9)
Burial House 2	56	65-12	ceramic (131)
Tent site, surface	56	65-13	ceramic (1, +clay mold)
Burial House 2	56	65-14	vegetal (corn)
By set of 3 burial houses	56	65-15	ceramic (1)
Compound 15	56	65-16	vegetal
Tent site, surface	56	65-17	textile, organic
Tent site, surface	56	65-18	ceramic (48)
Chullpa near storage area	57	68-1	osteological (2), vegetal (5), ceramic (2) textile (3)
Central burial house	57	68-2	textile, ceramic (3), art, metal
Chullpa	57	68-4	osteological (4), vegetal (5), lithic (1)
Surface	57	68-5	ceramic (11 rims)
Midden deposit	57	86-6	ceramic (1), textile (rope)

APPENDIX 2 - FEATURES ENUMERATED ON 1990S PLAN OF QUEBRADA DE LA VACA (SEE FIGURE 4)

Compound 9:

1. Niches in the interior east and west ends of the North Room of Compound 9. The niches in the west gable end are c. 1.1 meters above the floor.
2. Camelid cannon bones projecting from wall at a height of 1.2m above floor. These bones are unmodified, but have been weathered and broken with the passage of time.
3. Tree limb segment in the wall mortar. It seems probable that this limb, with a diameter of c. 5cm, once extended a short distance out from the wall to serve as a peg from which things could be suspended. It has a height of 1.6m above the floor.
4. Remains of a stone pillar, probably used in the original support of a ramada.
5. Stone pillar with a remaining height of c. 2.5m above the compound floor. All the pillars, or columns, at this site appear to be constructed in the same style as the doorways, although not necessarily with a long, rectangular stone foundation beam.
6. Originally there must have been a doorway at this point in the wall. It has been carefully filled in with stone and mortar to conform with the style of construction.
7. Another doorway which has been filled in was doubtless the original entrance to the West Room of Compound 9. The job of filling in this doorway perfectly matches the general style of construction.
8. Gable ends of the Southeast Room of Compound 9.
9. Wall outline of stones at ground level.
10. Fallen wall with a present elevation of c. 50cm above the house floor surface. The wall may have originally been about 1m high.
11. Collapsed storage chamber associated with room northeast and adjoining Compound 9.

Compound 8:

12. At this point there appear to be several steps leading from the corridor into Compound 8. Fallen stones from the adjoining walls have covered this area.
13. Although this area, too, is obscured by fallen wall stones, there is a suggestion of a doorway at this point.
14. Three wall niches 70-80cm above the floor.
15. Two unmodified bones, now broken flush with the wall, appear to have extended out of the mortar in the west wall of Compound 7 about 1m above the floor.
16. Two protruding bone pegs: one is 80cm and the other is 1m above the floor.
17. A stone and mortar bench about 40cm high is of the same constructions as the walls. This stone bench may have been a place for people to sit beneath the ramada held up at one end by the row of rectangular-to-square (in plan) stone columns (see Feature 18).
18. South and west of Compounds 6 and 7 there is a hallway outside the walls. Along the outside edge of this walk are a number of typical columns (see Feature 5). Most of these columns have fallen, but originally they probably supported pole frames for a thatched, or otherwise covered, ramada. It can only be supposed that all the columns at this site were of sufficient height to allow head clearance for the inhabitants, probably 2 m.
27. This is another filled-in doorway, similar to Features 6 and 7.

Compound 6:

19. Another unmodified bone apparently used as a peg. It is 70cm above the floor.
26. Due to the collapsed condition of the walls in this area it could not be definitely established whether a doorway existed here or not. Various indicators such as a lack of stones suggest a former doorway.
28. Stone peg extending from wall c. 10-15cm at a height of 1.2m above floor.

Two Story Platform:

20. Unmodified bone protruding from wall at a height of 60cm above the floor.
21. Bone extending from the mortar at a height of 70cm from the floor.

22. Unmodified bone in wall at a height of 70cm above floor. Commonly these bones have been broken or weathered to such an extent that they are flush with the wall, or only slightly protruding. These bones are quite often situated beside doorways.
23. Wall niche 1m above floor.
24. Wall niche 70cm above step (*i.e.*, at elevation 2.8 m).
25. Although the top portion of the wall has collapsed there seem to be indications in the form of points of weakness (*i.e.*, greater wall collapse) that as many as four wall niches originally were in this wall.

Compound 1 (Figures 21, 22):

29. A storage chamber constructed below the floor and beneath the wall. Access to the mouth of the chamber is possible due to a recess, or niche, in the wall. The mouth of the chamber is c. 50cm above the floor level, and presumably was capped by a circular flat stone. As with so many of the subterranean bottle-shaped storage chambers, the aperture is pentagonal and about 40cm across. Large storage jars could not be taken in or out of such storage places.
30. Two wall niches c. 1m above floor.
31. Three wall niches c. 80cm above floor.
32. Two wall niches, one superimposed upon the other. The lower niche is 75cm above the floor, and the upper 1.35m above the floor.
33. Two superimposed wall niches. The lower is 75cm above the floor, the upper is 1.25m above the floor.
34. Two wall niches 90cm above the floor.
35. Two wall niches across the room from Feature 34, also 90cm above the floor.
36. One wall niche 1m above the floor.
37. Two wall niches 90cm above the floor.
39. Two wall niches 90cm above the floor.
40. Stub of wooden peg, or branch segment, in mortar of wall. It has rotted away until flush with the wall surface, c. 1.1m above the floor.
41. Another wooden peg in a similar condition as Feature 40. It is also about 1.1m above the floor.
42. The remains of two wooden pegs, or branch segments, one on either side of a doorway at a height of 1m above the floor. All these wooden pegs, or pieces of limbs or branches, have a diameter of around 5cm. This is true for all such specimens noted at this site.
43. Two steps lead up to a flat, sub-rectangular platform area, which has been divided by a row of angular stones, allowing one of the divisions to be elevated over the other. This type of division is found in many of the compounds, and in a number of the rooms. The elevated sections may be from 10 to 30cm above the other. This platform area may have been used as a place upon which products of the sea such as seaweed and shellfish could be laid out on mats and dried in the sun. The western division is c. 10cm higher than the eastern division.
44. Four wall niches, two in each gabled end of the Southwest Room in Compound 1. These niches are from 1.4 to 1.5m above the floor of the room.
45. A stone peg which projects from the wall beside the doorway to the Southwest Room in Compound 1 is c. 60cm above the floor.
46. A recess in the wall to allow access to a subterranean storage chamber (Compare with Feature 29).
47. Stub of a wooden branch at a height of 90cm above the floor.
48. This unmodified bone in the mortar of the wall was probably used as a peg for suspension of equipment. It is 1.1 m. above the floor.

Compound 3:

49. *Batan* (lower grinding stone) on floor.
50. Another grinding stone on floor.
51. A third grinding stone on floor.

Compound 4:

38. Two wall niches at east gabled end of room at a height of 90cm above the floor.

52. Wall niche c. 70cm above floor.
53. Approximate location and size (in plan) of a typical stone column. It had fallen, so its height and other exact measurements could not be obtained.

Compound 12:

54. A stone column with three unmodified bones appearing on three faces of the column. These bones all were about 1m above the floor.
55. Another of the typical unmodified bones which seems to have been placed in the wall during construction to provide a peg from which ropes, bags, etc., could be suspended. It is 1.25m above the floor.

Compound 10:

56. This feature seems to be a pillar or buttress for the adjoining wall. The column was not constructed at the same time the wall was, therefore, the two do not join, but merely rest one against the other.

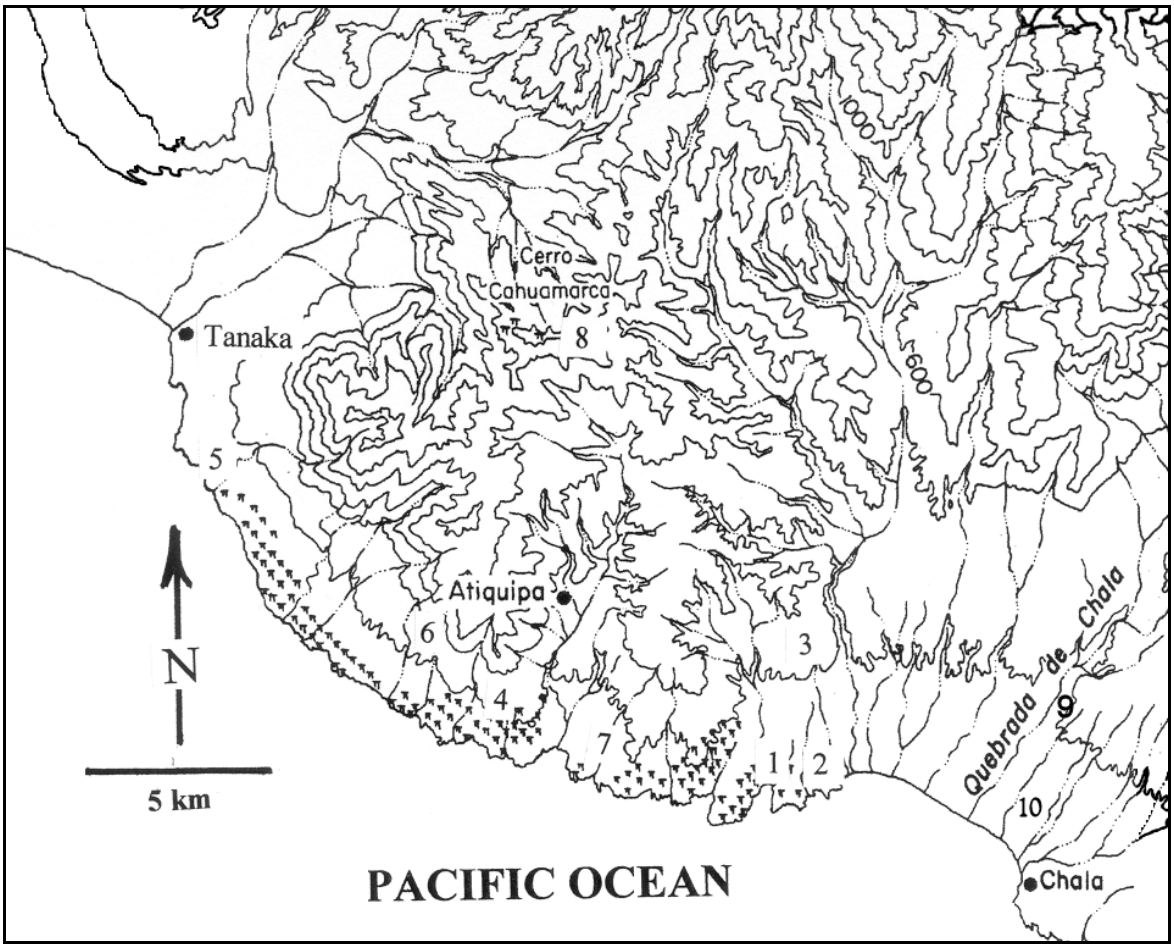

Figure 1. Map of the Chala-Atiquipa region with sites indicated: 1. Quebrada de la Vaca; 2. La Caleta; 3. Taimara; 4. Aiparipa; 5. Maucayacta (Maycayacta or Pueblo Viejo); 6. Ocopa; 7. Moca; 8. Cahuamarca. 9. Chala Viejo Antiguo. 10. Parara Depósito. Symbols on or near the coast indicate archaeological ruins.

Figure 2. The ruins of Quebrada de la Vaca looking south. For scale note the small white rectangle in the upper left corner. It is the excavators' tent (photograph by F. A. Riddell, courtesy of the California Institute for Peruvian Studies).

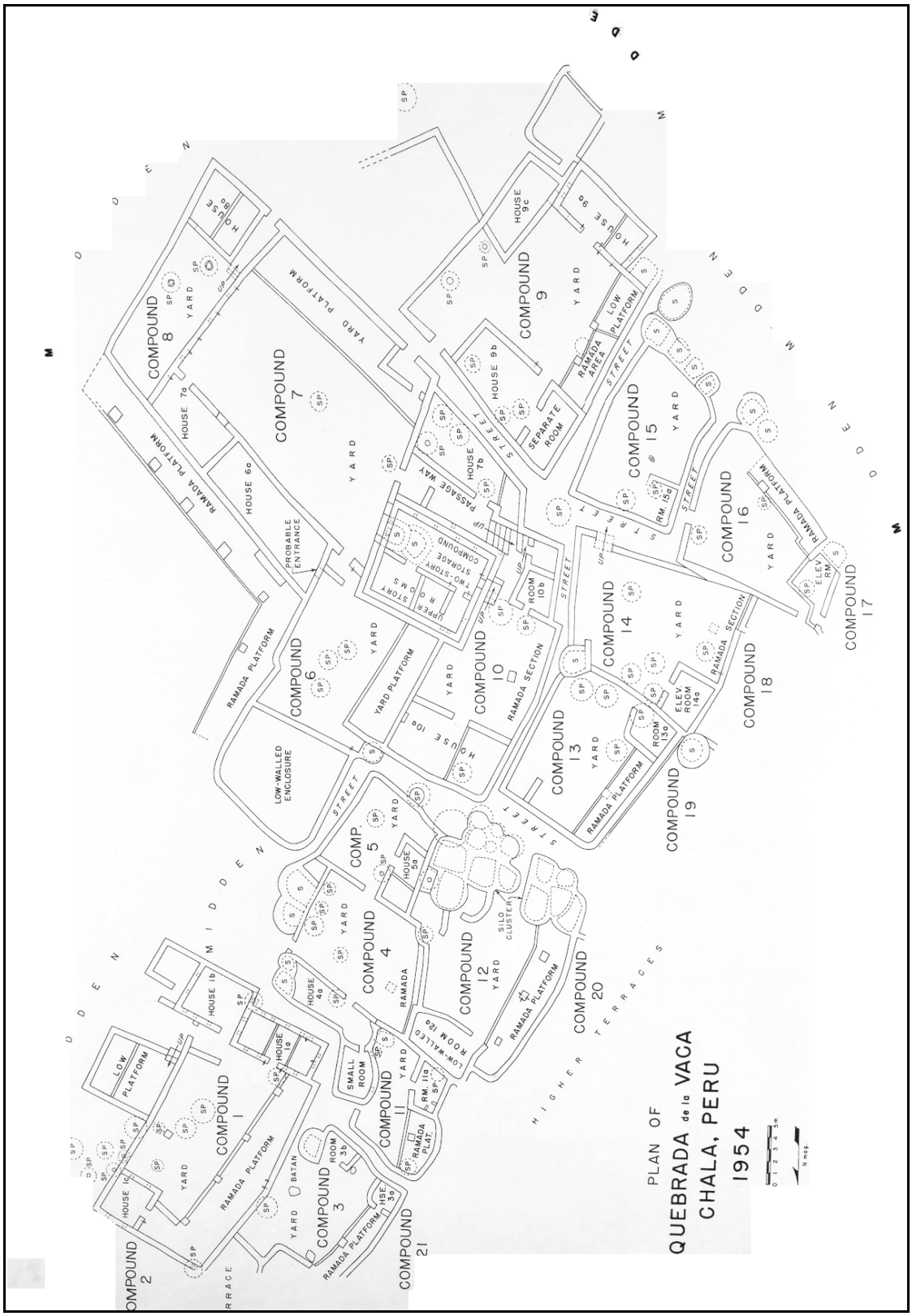

Figure 3. 1954 Plan of Quebrada de la Vaca by Riddell and Menzel. Reduced from an original measuring 125 x 90cm. Midden surrounds the southern and eastern compounds.

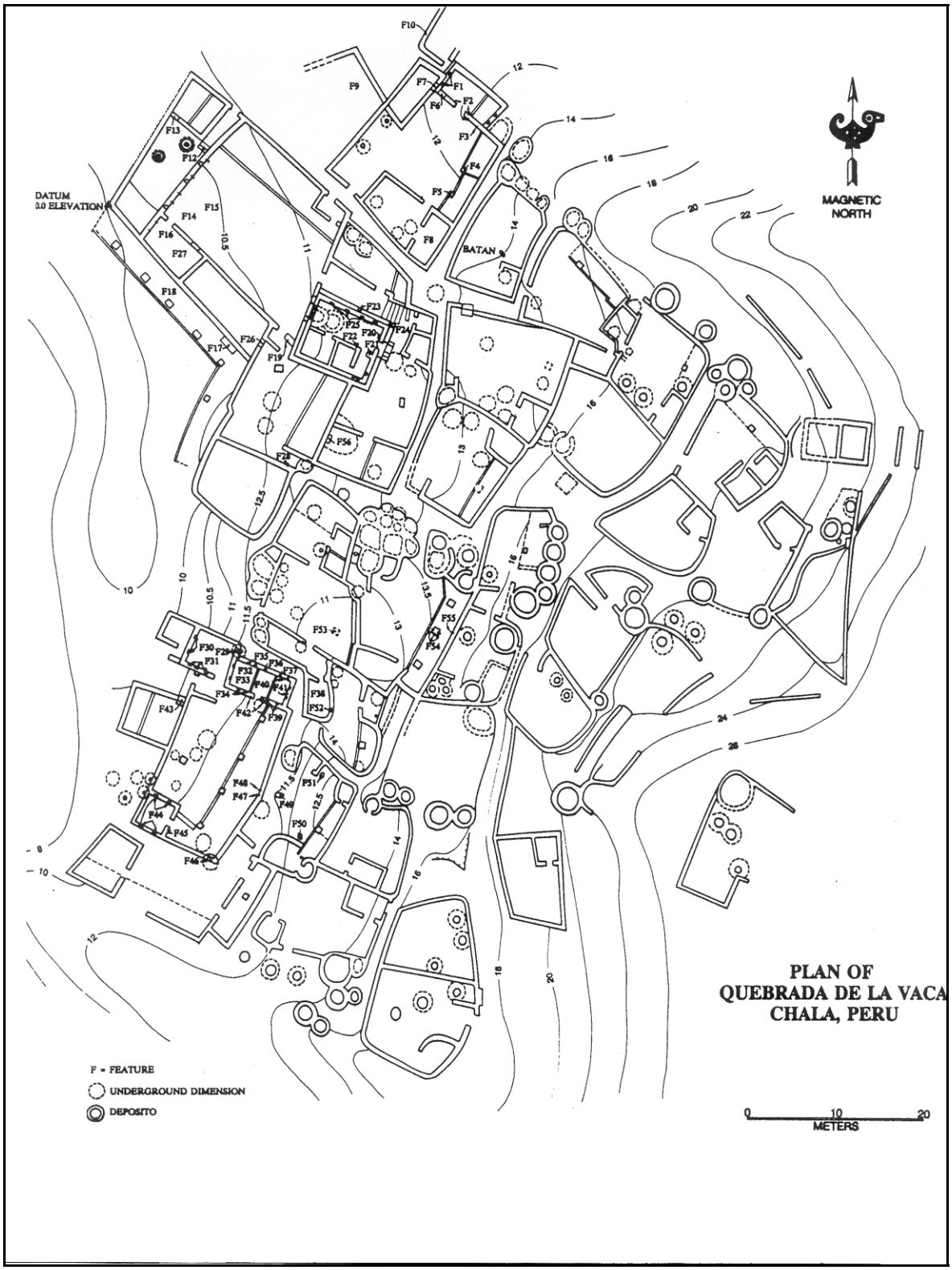

Figure 4. Plan of Quebrada de la Vaca by Riddell and Menzel, as expanded and modified in the 1990s. See Appendix 2 for explanation of feature (F) numbers.

Figure 5. Quebrada de la Vaca. Chullpas *are in the foreground. The Rectangular Storage Area is in the distance at the viewer's upper right hand corner (photograph by F. A. Riddell. 1954, courtesy of the California Institute for Peruvian Studies).*

Figure 6. Parara Depósito (photograph by John C. Schaller, 1999).

Figure 7. Trapezoidal niche at Quebrada de la Vaca (photograph by F. A. Riddell. 1954, courtesy of the California Institute for Peruvian Studies).

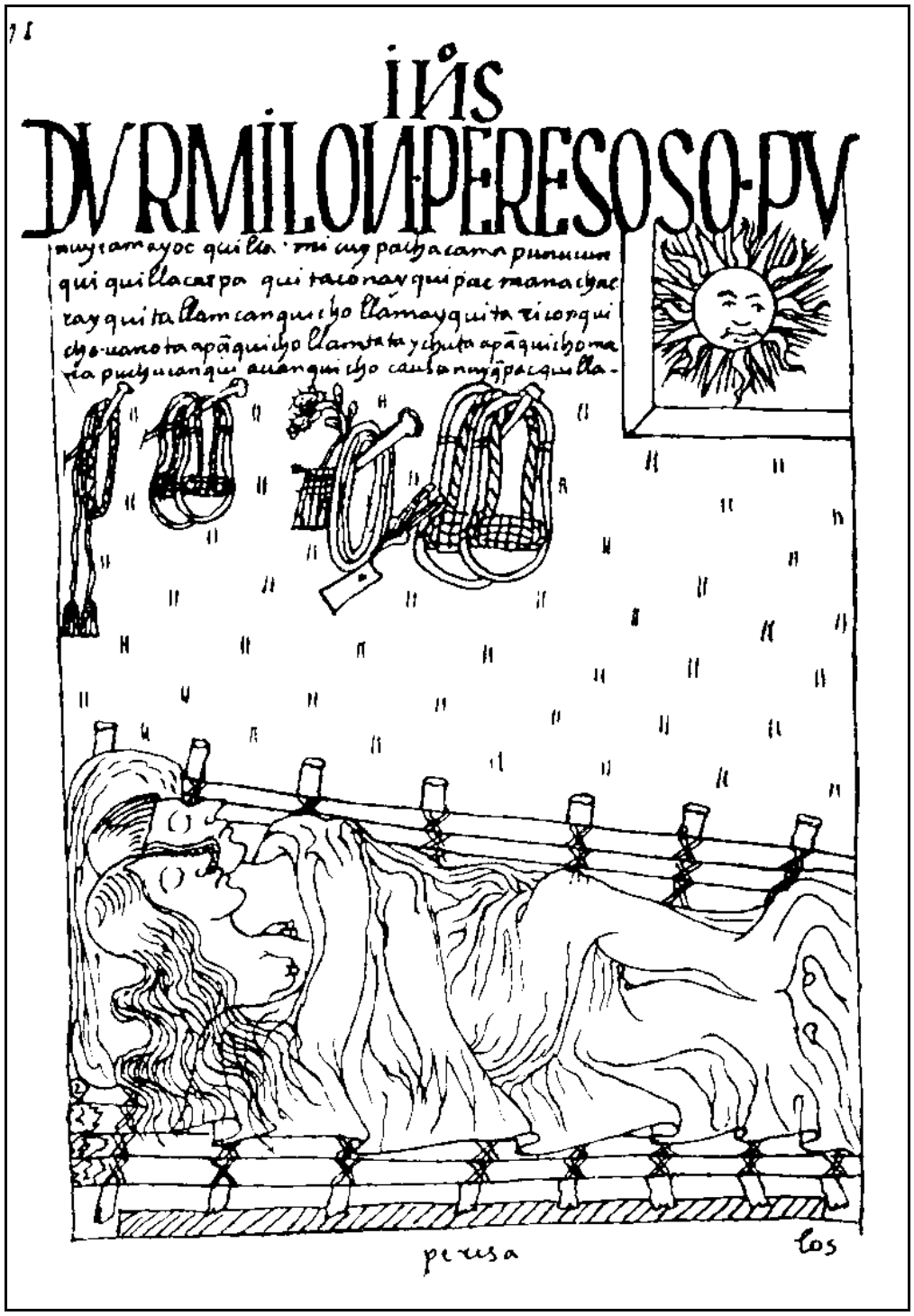

Figure 8. Pegs used to support small personal objects in an Inca/early colonial home (from Murra et al. *1987:187).*

Figure 9. Test Trench 2, Quebrada de la Vaca. Note low retaining wall beneath midden (photograph by F. A. Riddell, 1954, courtesy of the California Institute for Peruvian Studies).

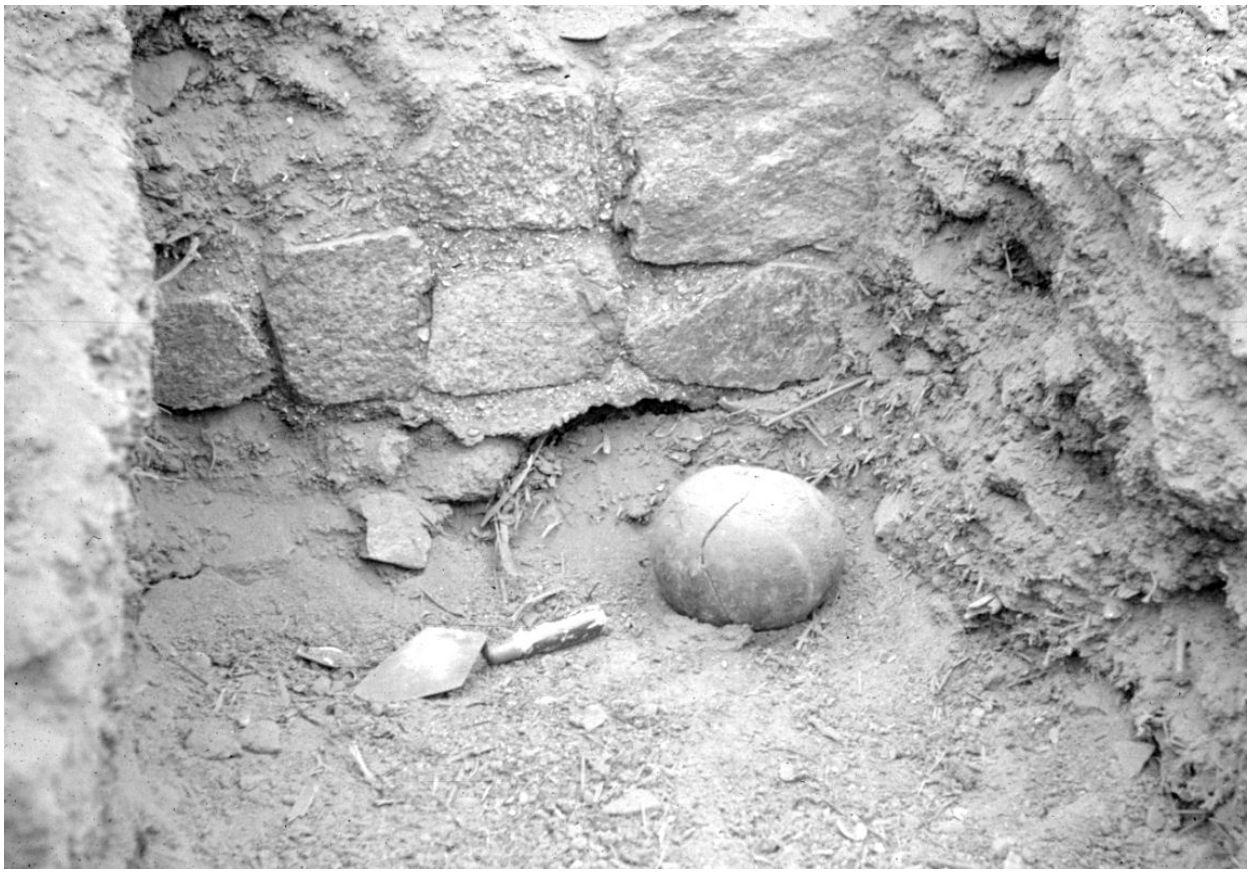

Figure 10. Test trench 2, Quebrada de la Vaca. Gourd bowl. See Figures 9-12 (photograph by F. A. Riddell. 1954, courtesy of the California Institute for Peruvian Studies).

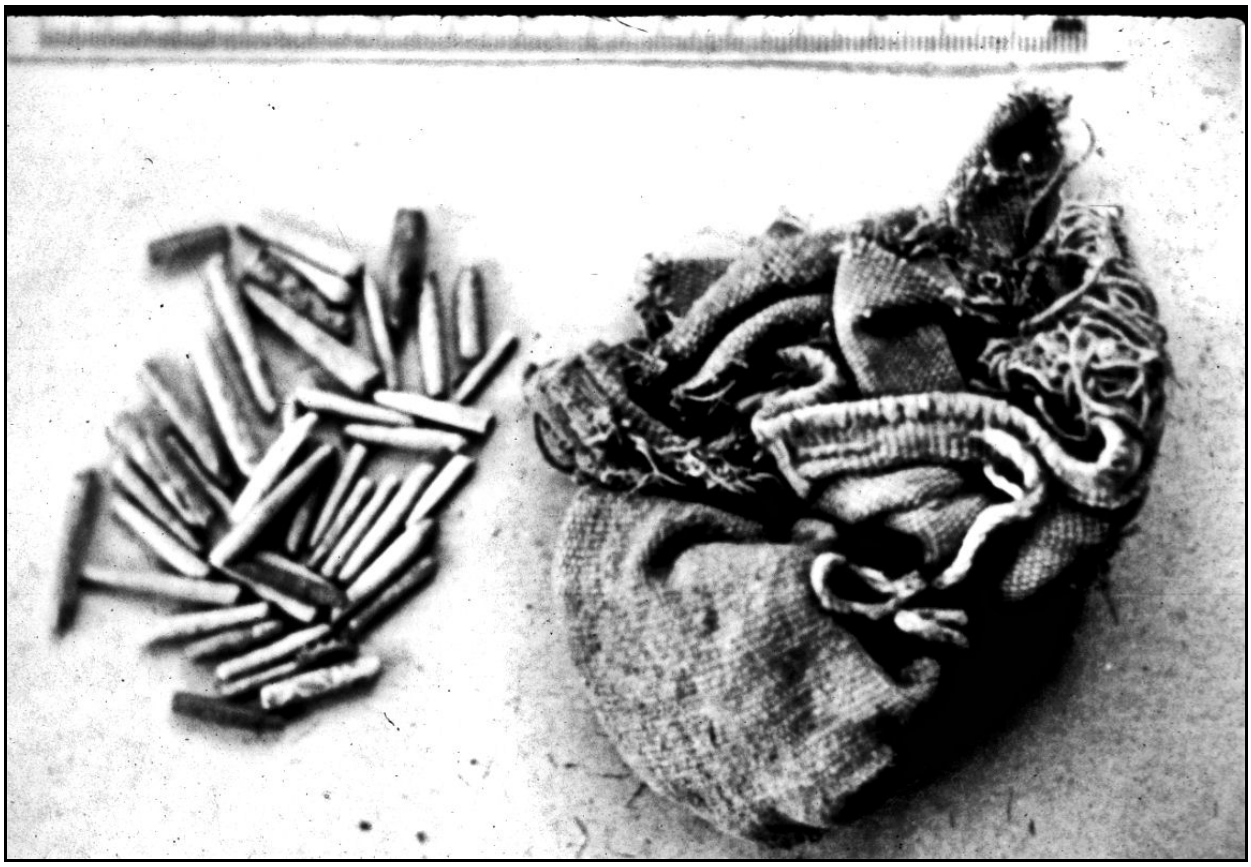

Figure 11. Test trench 2, Quebrada de la Vaca. Bag and sea urchin spines found within gourd bowl. See Figures 10, 12 (photograph by F. A. Riddell, 1954, courtesy of the California Institute for Peruvian Studies).

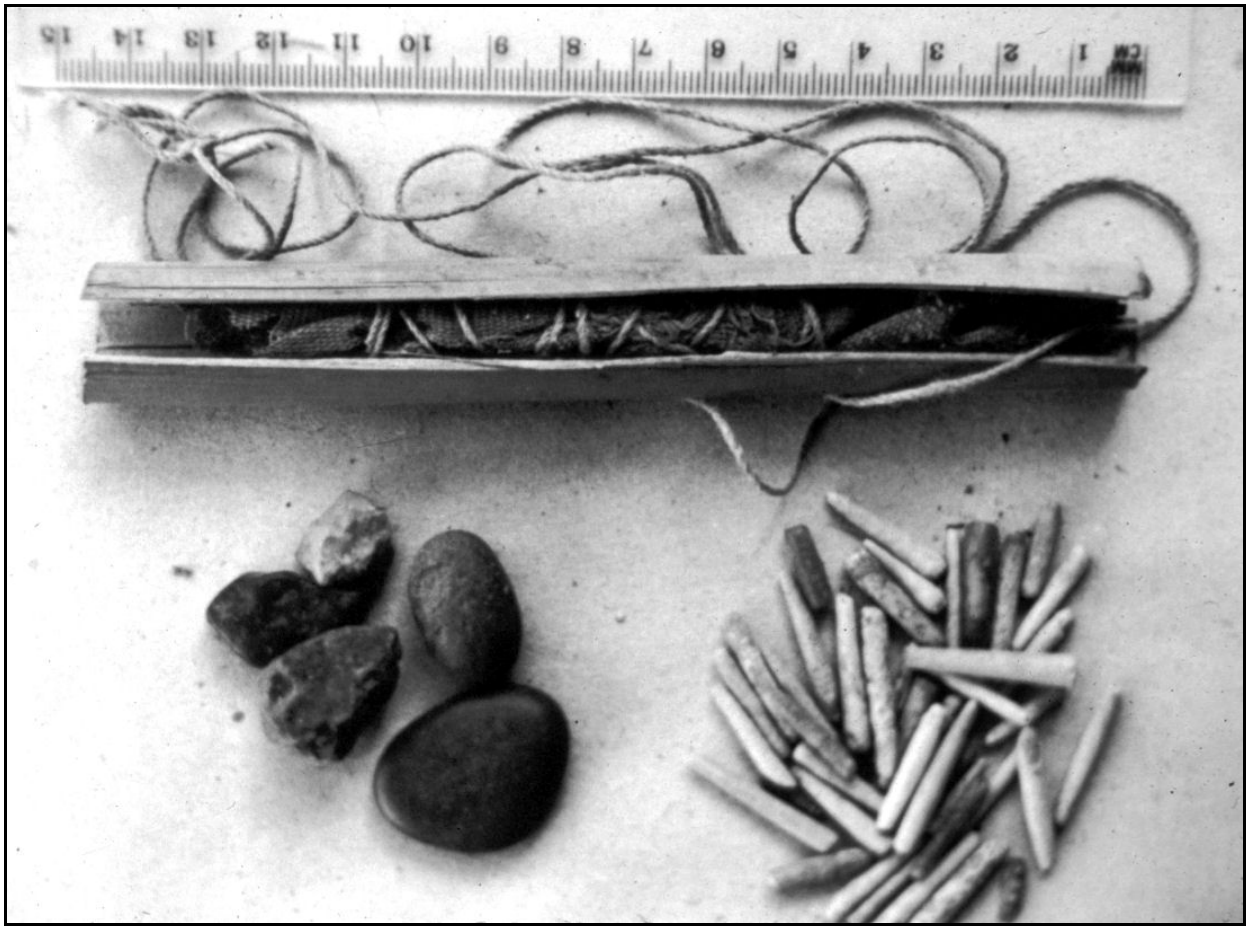

Figure 12. Test Trench 2, Quebrada de la Vaca. Partial contents of bag shown in Figure 11. At the lower left are three small, dark, water-worn pebbles and two fragments of greenstone, a copper ore. At the lower right are fossilized sea urchin spines. At the top is a section of cane split lengthwise so that a bag could be stuffed into it. The bag shown in Figure 11 also held a strand of human hair bound with cotton thread and tufts of human hair (photograph by F. A. Riddell, 1954, courtesy of the California Institute for Peruvian Studies).

Figure 13. Tomb 1 (Burial House 1) at Quebrada de la Vaca West, looking east (photograph by F. A. Riddell, 1954. courtesy of the California Institute for Peruvian Studies).

Figure 14. Another view of Tomb 1 (Burial House 1) at Quebrada de la Vaca West (photograph by F. A. Riddell, 1954. Courtesy of the California Institute for Peruvian Studies).

Figure 15 Tomb 1 (Burial House 1), Quebrada de la Vaca West. A few of the roof's stone lintels were still in position in 1954. See Figure 13 (photograph by F. A. Riddell, 1954, courtesy of the California Institute for Peruvian Studies).

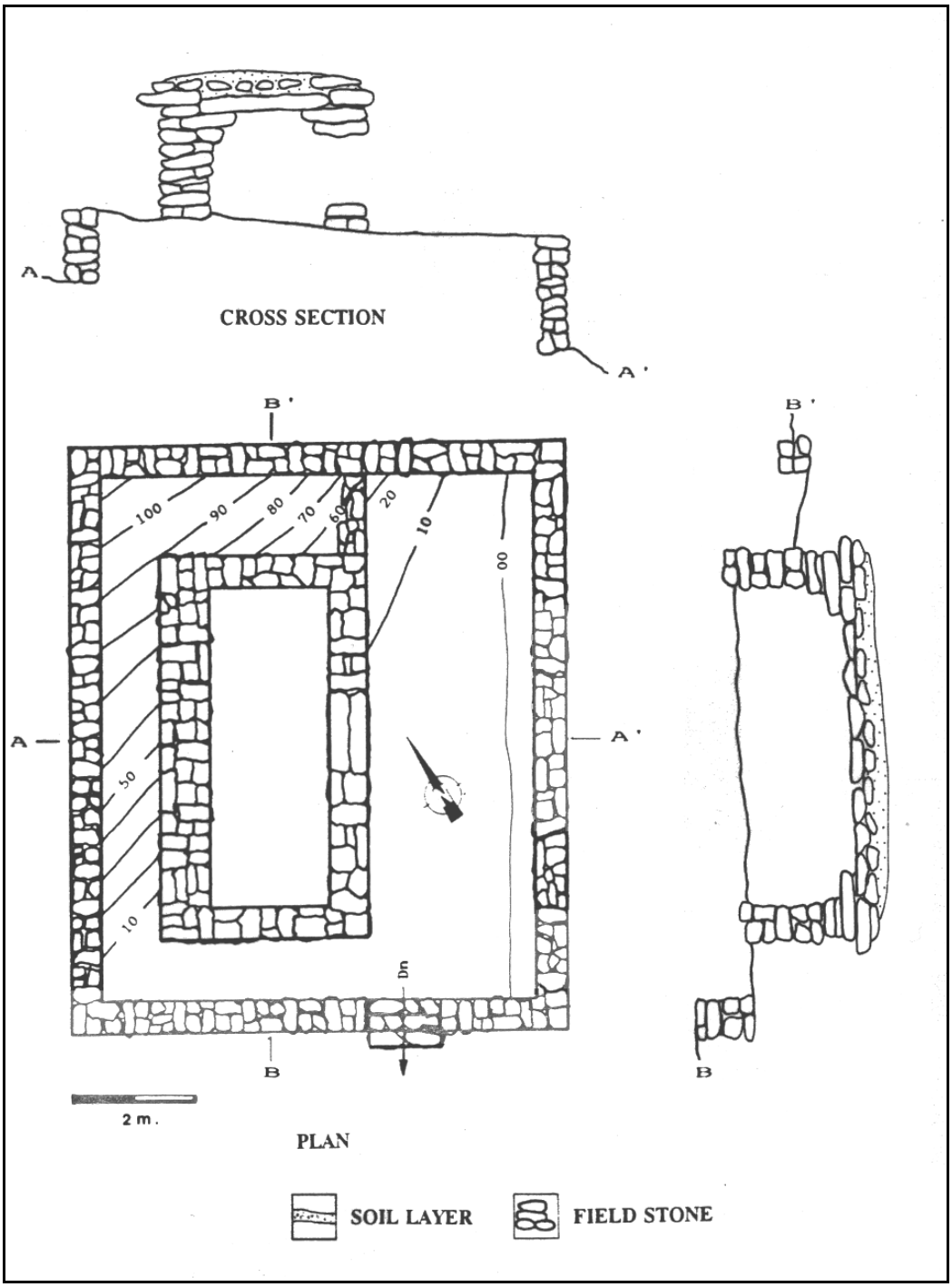

Figure 16. Plan and cross-sections of Tomb 1 (Burial House 1), Quebrada de la Vaca.

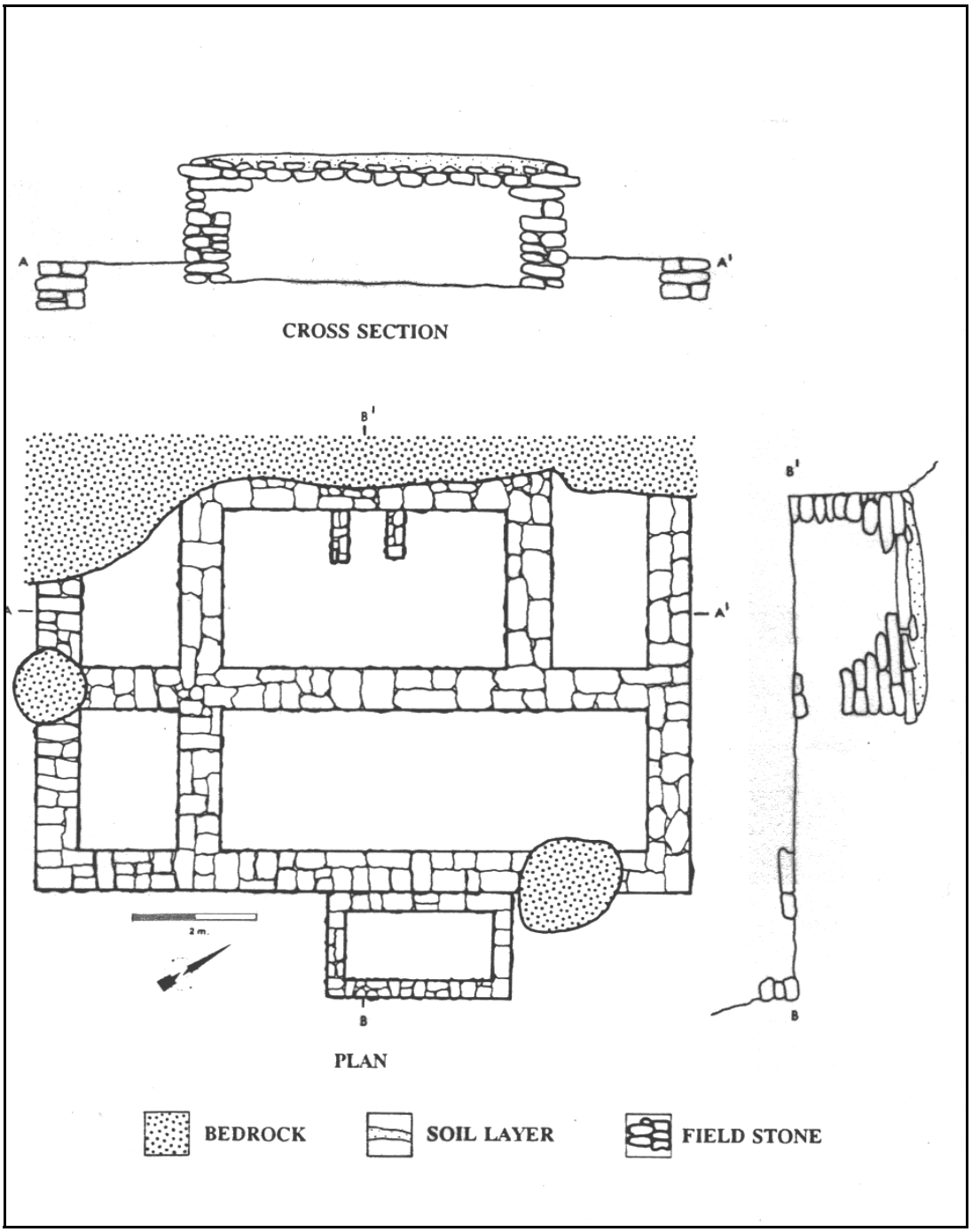

Figure 17. Plan and cross-sections of Tomb 2 (Burial House 2), Quebrada de la Vaca West.

Figure 18. Interior of Tomb 2 (Burial House 2) after excavation. Note fill line on walls (photograph by F. A. Riddell, 1954, courtesy of the California Institute for Peruvian Studies).

Figure 19. Stairway, Tomb 3 (Burial House 3), Quebrada de la Vaca West (photograph by F. A. Riddell, 1954, courtesy of the California Institute for Peruvian Studies).

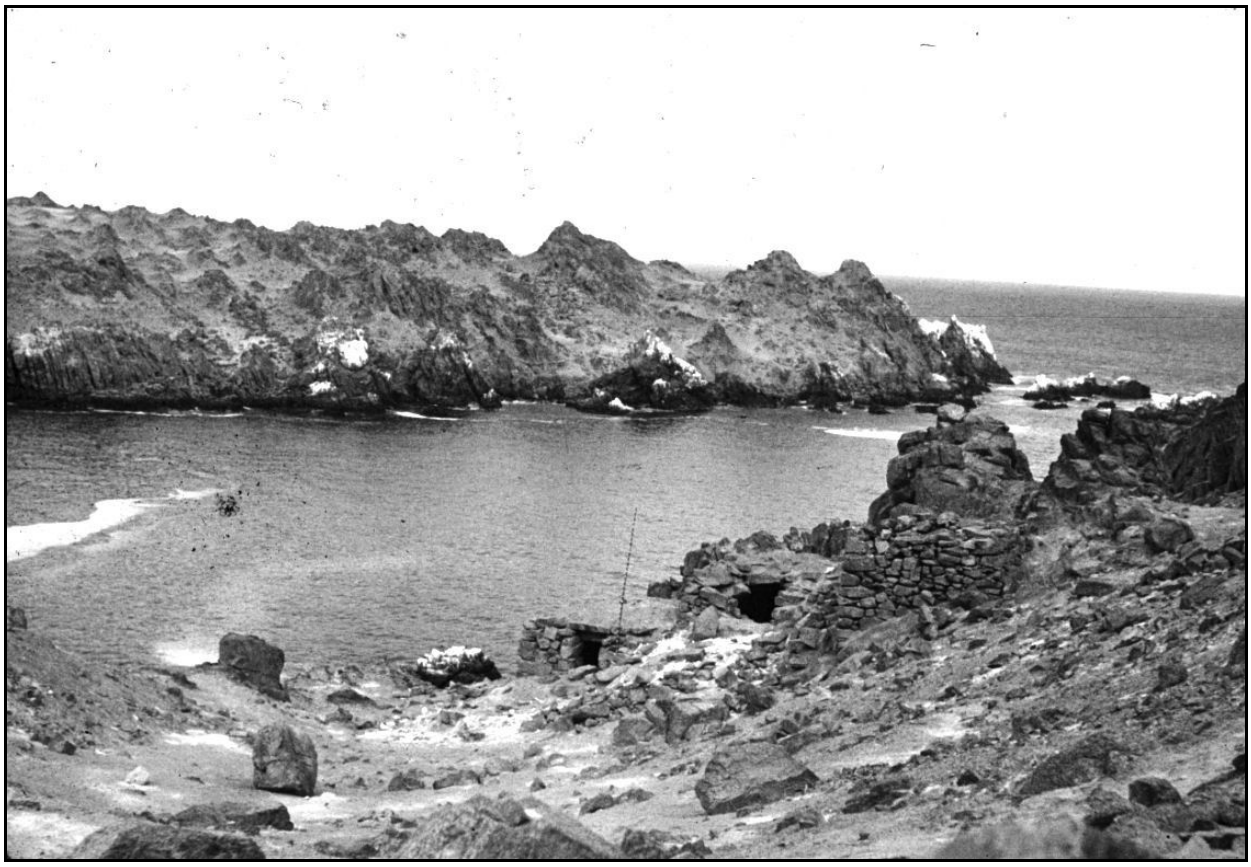

Figure 20. Small burial houses at Quebrada de la Vaca West (photograph by F. A. Riddell, 1954, courtesy of the California Institute for Peruvian Studies).

Figure 21. Compound 1 (foreground), Quebrada de la Vaca (photograph by F. A. Riddell, 1954, courtesy of the California Institute for Peruvian Studies).

Figure 22. Compound 1, Quebrada de la Vaca (photograph by F. A. Riddell, 1954, courtesy of the California Institute for Peruvian Studies).