

A DATED SEQUENCE OF BUILDING AND POTTERY AT LAS HALDAS

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Although Las Haldas has been long known as an important Preceramic and Early Horizon site, its history remains obscure. The later phases of its architectural history were somewhat clarified by the brief period of work described here, since changes in structural techniques were found which can be approximately dated by radiocarbon and related to developments in pottery. The architectural history has implications for the social history of the Chavin period on the coast and is indicative of relations with other areas.

The site lies directly on the Pacific shore about 30 km. south of the Casma Valley and 333 km. north of Lima. Las Haldas provides abundant evidence of its architectural history without excavation, since the three later periods of construction are largely visible on the surface. All structures visible on the surface were mapped using a transit, compass and tape (fig. 1). The only constructions not mapped were a large number of superficial walls one stone high on the northwest flank of the site, a few small constructions which are probably small temple platforms east of the main part of the site, and the avenue 60 m. wide following the axis of the Main Group (Structures 1-6) inland toward the northeast for 2 km. in the direction of the Casma Valley. Four profiles were also measured (figs. 2-4).¹

Radiocarbon Determinations and Construction Periods

Although about a meter of preceramic debris covers the sterile sand throughout the site, our excavations revealed no evidence of preceramic construction. Frédéric Engel has informed me that subsequent excavation in what is labeled Structure 1 on the map did reveal a deeply buried preceramic structure. Engel had earlier published a radiocarbon age determination of 3800 ± 80 B.P., NZ-370-2 (1850 ± 80 B.C.) for preceramic culture with cotton at Las Haldas.²

All of the structures shown on the map lie on strata bearing ceramics and thus date from the Initial Period and the Early Horizon. Six excavations were made to study the architectural history and to relate it to the pottery.³ Five other excavations which had been made by previous visitors to the site were still open and they were also studied. Those excavations have been reported by Rosa Fung Pineda and by the University of Tokyo Expedition of 1958.⁴

The preceramic and ceramic levels join without any intervening layer throughout the site, which suggests that pottery was not developed by the local preceramic people, but was introduced already fully developed. The University of Tokyo expedition dated the initial ceramic levels at Las Haldas to 3580 ± 130 B.P., GaK-607 (1630 ± 130 B.C.) by a single radiocarbon measurement.⁵ The plausibility of that date is increased by a measurement of 3430 ± 80 B.P., Tx-631 (1480 ± 80 B.C.) which we obtained

from burned Tillandsia plants lying 1 m. above the floor dividing the ceramic from the preceramic levels in our Cut 1. Tillandsia are among the few plants which grow near the site today, which suggests that Las Haldas had a climate and vegetation 3500 years ago which were similar to those of today.

With the introduction of ceramics the record of building begins with walls of broken stone laid in mud mortar and mud plaster floors. The mortar was not made of specially selected clay, but of the ordinary earth used to make adobes. The earliest construction we found consisted of a floor of hard yellow mud set directly on a preceramic deposit in Cut 1, with the lowest course of a double-faced wall set on top of the floor at one edge. That wall had been destroyed when a later building was put up, about 1480 B.C., more or less, judging by our radiocarbon sample. A meter of fill was put down over the original floor and a rectangular mud floor 4.70 m. wide was laid with a double-faced rubble-cored wall at each end. Cut 1 (fig. 5) shows evidence of four campaigns of building and the beginning of the mounding up of the Main Group.

Preceding these constructions is a largely hypothetical period of preceramic building which ended about 1650 B.C. The known buildings which follow can be divided into three periods on the basis of changes in structural techniques. The periods can be roughly dated by radiocarbon assays: a period in which mud was used for mortar and floors from about 1650 to 900; a brief period, perhaps no more than ten years (900-890), during which a hard gray-white granular "concrete" was used for mortar and floors; a short period during which the site was abandoned, followed by a period during which single-faced free-standing walls were used for small structures on the surface, dated about 880 to 500 B.C.

Construction types based on loose rock fill sealed in mud and mud-mortared stone were used for the major part of the building which appears on the map. Two ash lenses gave radiocarbon determinations which bracket this phase. A sample taken by me from the base of the ash lens lying on the mud floor which seals the preceramic deposit under the Main Circle (Structure 6) gave a determination of 3140 ± 80 B.P., Tx-648 (1190 ± 80 B.C.). That would seem to date the beginning of the main period of building visible on the surface since the Main Circle is the focal point of the Main Group. Another ash lens is found on the surface in the stairway between Structures 4 and 5, evidently associated with the terminal period buildings on the surface in that area. (The stairway was not cleared, so its width was not recorded on the map.) The carbon sample from the base of the terminal period deposit gave an age determination of 2830 ± 70 B.P., Tx-632 (880 ± 70 B.C.). That is a plausible date for the beginning of the terminal period, and it may be taken as falling after the close of the short period in which concrete mortar was used, which ended building in the Main Group.

This date conflicts with recently published readings taken by the University of Tokyo expedition in 1969. Two samples from the stairway between Structures 4 and 5 gave readings of 3600 ± 95 B.P. (about 1650 B.C.) and 3150 ± 90 B.P. (about 1200 B.C.).⁶ I cannot explain the discrepancy

between these dates and those reported here. Although the dates remain insecure, the sequence of construction types is not in doubt and the midden is clearly posterior to the period of building in mud mortar.

The constructions in concrete mortar were left unfinished, one of them abandoned with the mason's stake and string still in place, which suggests a sudden and hasty departure (fig. 9). Walls of the terminal period rest on a bed of sterile windblown sand which is variable in thickness, but averages about 10 cm. The sterile sand implies a period of abandonment prior to reoccupation of the site about 880 ± 70 B.C., a date based on an age determination run on carbon from fires of the terminal period. A long series of assays with results running from 780 B.C. to 410 B.C. has been taken from radiocarbon samples pertaining to the terminal period.⁷

Architectural Types

The periods during which mud mortar and concrete mortar were used, which I shall call here periods 2 and 3, show two characteristic types of building: the temple platform with courtyard and the sunken circle. Eighteen similar platform structures were mapped. The name "temple," which has become traditional, is used in the absence of any obvious utilitarian function. All of them, with the possible exception of Structure 1, appear to have been roofless platforms which orient between north and east. The stone-walled chamber atop Structure 1 may have had a roof, although there is no surviving evidence of it. A series of platforms or a stairway give access to the top platforms of all the temples. A rectangular courtyard as large as the total dimensions of the temple mound lies in front of the temple in the typical examples such as Structures 22 and 28. Structure 18, a small, irregular temple resting directly on the surface, may carry the type into the terminal period (or period 4), but that dating has not been proved. There is considerable variety in the details of these platforms and their forecourts, but there is enough consistency so that a type can be defined.

Some of the temple platforms are oriented toward sunken circles, of which there are two at Las Haldas: the Main Circle (Structure 6) and the West Circle (Structure 16). The Main Circle seems to be the focal point of the whole Main Group and at least one temple (Structure 15) is directed toward the West Circle. Structure 11 also was probably intended to point toward the West Circle since its stairway is angled toward the circle. The circles show no evidence of ever having had higher walls or roofs, and the only use of which we can be certain is that of holding a large fire, evident in the ash pile in the Main Circle. A small pit, possibly a fire pit, is found at the center of the West Circle, but there is no other evidence of the presence of fire in that circle. Both circles were built of broken stone laid in mud mortar.

Platform fill and the floors and walls which seal it underwent technical changes which show continuous development in architectural practices. If they could be dated and shown to be common practice they might serve to define phases or periods. The examples which follow are

too few to do more than indicate trends.

Platform fill

Platform fill underwent labor-saving changes during Las Haldas' history. The early levels of building revealed by Cut 1 show the use of earth fill, which is dense and compact. In upper levels the fill changes to stone, which is loose and relatively unstable. No precise date can be assigned to this change, but the stone fill seems to have come into use after about 1190 B.C. on the radiocarbon time scale. There is no evidence of the way in which the earth fill was transported, but the stone fill was carried in nets or loose baskets made of knotted reeds, which were often cast into the fill with their loads. The reeds were probably not available locally; the nearest source now seems to be the Casma Valley.

It appears that the fill beneath Structure 1 may total about 40 m. in depth, of which at least the upper 4 m. are of loose broken rock. Our Cut 5, at the front of Structure 1, shows broken rock in reed nets as fill behind walls laid in concrete mortar, of the period about 900. A cut made by some earlier investigator into the southeast wing of Structure 2 reveals broken rock in nets in the upper 2 m. of fill, but a lower level of fill was made of smooth rounded beach boulders, also in reed nets. Waterworn stone was favored as a fill material by some preceramic builders, as at Rio Seco⁸ and Kotosh,⁹ and it is found in the fill of the Moxeke temple in the Casma Valley. The waterworn stone layer was definitely laid by pottery-using people at Las Haldas, but it suggests the survival of an old tradition.

Floors

Mud floors were sometimes specially colored by the addition of pigment or perhaps by the choice of a strongly colored natural earth. The earliest floor in Cut 1, for example, was yellow. The mud floor of the sanctuary on top of Structure 1 was a strong earth red. Only traces of it exist now since it lay directly on the surface. The floors were irregular in thickness, averaging 2 or 3 cm., but the surfaces were smooth and they may have been polished originally.

A concrete floor was found in just one place, on the stairway in Structure 3. The usual technique for stair construction was followed there: a rough construction in stone with mortar and a thick surface of mortar applied as a finish. The stairway of Structure 21 was similarly constructed but presumably represents an earlier period, since mud was used for the mortar and the finish coat (fig. 8). The concrete of the later period, which is harder than mud but not so hard as modern concrete, was given a white surface on the stairway in Structure 3.

No floors are known in buildings of the terminal period. Since the buildings are on the surface, weathering may have destroyed constructed floors, or they may have used just the natural sand as floors.

Walls

Until the terminal period the double-faced wall was the common type of free-standing wall. Walls were set on the ground or on a floor without any foundation. Double-faced walls had a rubble core, and the stones were set in mortar. Most of the stones were laid perpendicular to the line of the wall to give the wall strength, and a fairly smooth surface was obtained. Single-faced walls, which are far more numerous, were used for revetments of building platforms. There is no evidence that any of the walls were ever plastered over, in contrast, for example, to the earlier structures at El Paraiso, Chuquitanta.¹⁰ If a surfacing were used one might have found traces of it on the mud-mortared façade wall of Structure 3, but it was definitely absent there (fig. 10).

A variant wall type used during the period of mud mortar was built of natural basalt blocks quarried in the cliffs on the shore just northwest of the site. Blocks about one meter high were set upright, separated by a band of smaller broken stones. Structures 7 and 21 (fig. 8) show this type of revetment. These are simple versions of the decorated revetment at Cerro Sechín, nearby in the Casma Valley, and might be compared with the wall of the Qalასasaya at Tiahuanaco.

We know that the builders of the period of concrete mortar used stakes and string to lay out their walls, since a stake and string were found still in place for the reconstruction of the front (northeast) stairway of Structure 1 (fig. 9). The builders there were making a special effort to achieve a smooth surface, placing some stones longitudinally in the wall. An unusual feature is the construction of a double-faced wall, about a meter thick as usual, as a revetment flanking the stairway.

Structures 1, 2 and 3 are the only ones in which concrete was used, and the two largest constructions in which it is found were both left unfinished, those being a new front wall on Structure 3 (fig. 10) and a new stairway and entrance to Structure 1 (fig. 9). The stairway of Structure 1 was partly built, but its left end was no more than raw fill. Similarly, the flanking wall of the stairway had been completed to a length of about 2 m., but scarcely begun beyond that point. The new façade wall of Structure 3 had been built to about 1.30 to 1.50 m., less than half the height of the mud-mortared wall behind it, from which it was separated by a narrow gap of about 50 cm. These unfinished works mark the end of monumental construction at Las Haldas. The work appears to have been dropped suddenly and the site abandoned, as noted earlier.

It evidently remained unoccupied for only a short time to judge by the small amount of sand which accumulated over third-period buildings before the walls of the terminal period were laid. Walls of that period are usually just one stone deep, forming ragged lines in the sand. They look like the work of impoverished survivors occupying a famous ruin. They form small enclosures within Structures 3, 4 and 5. These small buildings are the only ones which look as if they might have been domestic. Since they show no evidence of having been semi-subterranean, they

must have had higher walls and presumably roofs. Adobe and reed mats might have been used, but there is no trace of them today.

The Pottery

Two excavations, Cut 1 and Cut 3, produced significant samples of pottery. By far the larger sample, 1084 sherds, comes from Cut 3, which was undertaken in the hope of finding a stratified sample of ceramics. Cut 3 measured 1.5 x 3 m. and was located in the level area between Structures 20 and 26, about 80 m. southeast of the walls of Structure 3. Six natural levels were excavated before the preceramic layer was reached at 196 cm. depth. The pottery was classified in terms of twelve traits. I have been able to analyze only a part of the sample from Cut 1, 244 sherds from Levels 3, 4 and 5, but that analysis tends to confirm the conclusions suggested by Cut 3.

The mixing of early and late types in some levels can be accounted for by the fact that the soft sand of the site has been churned repeatedly by building projects. None of the levels in either cut was entirely sealed by floors, so an absolute segregation of the periods could not be expected. Such churning accounts, for example, for a single wide-necked bottle rim in the late Level 3 of Cut 1 and a single narrow-necked bottle rim in the earliest level of Cut 3. The general picture of the development of pottery types at Las Haldas emerges when one disregards those anomalies.

Table 1 summarizes the findings of Cut 3 with some comparative data from Cut 1 interpolated at the appropriate levels. The common vessel forms were neckless jars (called ollas here to distinguish them from cylindrical vessels listed as jars), globular bottles with restricted necks, and simple bowls with slightly flared, vertical or inward-curving walls. Round bases are the only ones found, no definable foot appearing on any vessel. The stirrup spout did not appear (fig. 11).

Variations in the rims of ollas were particularly noted. The "fold-under" rim, in which the rim was smoothed by folding under the edge of the clay without working the folded part into the interior wall, appeared only in the deepest levels. Rims in which the folded part had been well incorporated into the inner surface, which we call "round rim," were common in all but the surface level, but were most common in Level 5 of Cut 3. The most highly worked rim form, in which the rim was smoothed and given a very sharply defined bevel on the lip of the olla, appeared in every level. The largest number was in Level 4, but the percentages were highest in the two levels nearest the surface, and on the surface it was the only olla rim found. That Las Haldas pottery developed toward more perfect finishing is implied by these findings.

The jar form runs throughout the sequence, but was most common in the middle levels. Its form shows no obvious changes, the rim being slightly rounded with well defined corners where it meets the inner and outer surfaces in all levels.

The vessel form which shows the most dramatic change is the globular bottle, which (despite the appearance of one narrow neck in Level 6) appears to have developed from wide-necked in the earlier periods to narrow-necked in the later. This development is confirmed in Cut 1, (again despite one wide neck in Level 3). The deepest ceramic level of Cut 1 held two wide-necked bottle fragments, and narrow-necked bottles appeared in higher levels. The change halved the width of the neck, from a range of 6 to 10 cm. diameter down to 4 to 4.5 cm. The narrow-necked bottle is a standard Chavin form. The gap in the bottles in Levels 3 and 4 of Cut 3 makes it appear that one type went completely out of use before a new type came into use. To refer to a development from one form to the other implies that they are connected in the sense that they fulfilled the same need, but all that we can be sure of is that these simialr forms were not in contemporary use.

The decorative techniques found most commonly at Las Haldas are punching, which may be confined to zones bordered by incised lines (i.e., "zoned punching"); incising, in which category I have included lines of all widths; and painting with red and metallic black, which has the appearance of graphite. Incising and the combination of incising with punching were popular in the earlier periods, to be slowly superseded by painting, which was absent in the lowest level and came in as an addition to zoned punch designs. In the surface level the two paint colors appeared separated from each other for the first time, on vessels which were solid red or solid black. The trend from plastic decoration of the surface toward a polished colored surface is quite definite.

Figurines were represented in Cut 3 by just one fragment, but four fragments of figurines were found in Cut 1 in the same late level (III) which held narrow-necked bottles. All of the fragments show the same type: solid bodies with upraised arms, legs separated by a groove, fingers and toes indicated by grooves or notches, eyes marked by an incision, and long incised lines to show hair down the back. No clothing or ornament is shown. Although none is complete, they appear to have been about 10 cm. tall. The type is so far known only locally.

Conclusions

Las Haldas is of interest because it was inhabited for such a long time, and during periods which have been plausibly dated by eight radiocarbon assays. Earlier interest has centered principally on the preceramic and initial ceramic periods.¹¹ There has been a tendency to consider the temples at Las Haldas examples of the architecture of the Initial Period; Lanning, for example, puts them in a group dated between 2000 and 1500 B.C.¹² But there is probably little on the surface which dates before 1200, and likewise only the meager terminal remains which date after 900. The discussion here centers on the period from 1200 to 900, which falls within the Early Horizon or Chavin period.

We cannot follow Gordon Willey's advice of many years ago to study only the "representational aspect of the Chavin style, the feline motif and its combinations,"¹³ for those are too rare at Las Haldas.

There is no stone sculpture at the site and only one potsherd definitely shows a Chavin feline. That sherd, from Cut 2, has the distinctive lower lip and corner of the mouth of a grimacing feline with fangs from a thick blackware effigy vessel or hollow figurine. It is technically at home at Las Haldas and reassures us that there is indeed a Chavin component in the site, but it makes it clear that we must seek the manifestation of the style in things other than representations.

Since we studied only the architecture and the forms and decorative techniques of the pottery, we can only point out the widely shared features of those arts, widely shared features being the basis of the Chavin "horizon style."

The most interesting architectural features are the sunken circles. Donald Thompson has informed me that other examples are known in the Fortaleza and Huarmey valleys and excavations at Chavin de Huantar in 1972 brought to light a similar, but more elaborate, example.¹⁴ The Chavin de Huantar circle has four stairways, rather than the two of both Las Haldas circles, and stone reliefs ornament the walls, rather than the plain stonework of Las Haldas. How old the Main Circle at Las Haldas was when the fire burned on its floor about 1190 (\pm 80) is unknown, but only one floor lies beneath the ash. The semi-subterranean circular plaza is an early or middle Chavin structural type. I suspect that deeper excavations at other Chavin-related sites, particularly in the Casma Valley, would produce more examples of the type.

Although three fairly distinct ceramic styles can be defined, there are strong elements of continuity between them. The earliest is characterized by wide-necked bottles, neckless ollas with fold-under or round rims and garlands of zoned punching around the shoulder, and bowls with punched designs which sometimes show post-fire red paint preserved in the punch marks. These elements can be found in practically all the very early pottery of the north and central coasts and the adjacent highlands, notably at Chavin de Huantar and Kotosh, although the Las Haldas pottery appears to be simpler and less fine than the best early pottery of those two sites. I think 1630-1190 might date the style, those dates being taken from the radiocarbon assays and being intended to stand only as round numbers. This style accompanies the early mud-mortared buildings which began the ceremonial center, but it probably antedates most of the construction visible on the surface.

The middle style is characterized by textured surfaces made by incision, punching and modeling, often with fired red and metallic black paint. Olla rims were round or beginning to be beveled. Vertical-walled jars with round bases were a popular form, and the narrow-necked bottle completely replaced the wide-necked form. Figurines were made during one phase of this period; 1190-900 may be taken as a general dating. Although the pottery of Pallka published by Tello is richer in variety of forms and decorations, notably in the presence of stirrup-spout bottles and flat-based forms, it certainly manifests the same general style.¹⁵ The presence at Pallka of elements found in the earlier Las Haldas style, such as wide-necked bottles,¹⁶ shows the same continuity found at Las

Haldas. Filleting and other relief additions are found in both of the earlier periods at Las Haldas and those features are also found at Pallka. The Cahuacucho and Gualano phases from the Casma Valley, defined by Collier, may represent the same kind of continuity, despite the absence of decorated pieces in the former.¹⁷ This middle period of Las Haldas pottery accompanies the constructions visible on the surface which form the great temple complex, and may be considered a middle Chavin manifestation

The third style, which I believe accompanied the terminal occupation and should date about 880-500 B.C., shows a continuity of vessel forms but a new preference for sharply beveled rims on ollas and polished bottles painted in one color, either red or metallic black. Collier's Patazca Phase from the Casma Valley,¹⁸ for which he accepted a date of 342 ± 80 B.C. based on a radiocarbon measurement on a sample taken from a wooden lintel at Chankillo, sounds like a similar style.¹⁹ This later style at Las Haldas is a late Chavin style. Although there is a consistent local tradition, which the churning of the deposits tends to exaggerate, the changes in the forms and decorations of the pottery show that the site was occupied for a long time.

The continuity of the cultural material in the excavations is interrupted by just two definite breaks, one at the meeting of the ceramic and preceramic levels, which appears to document the meeting of two groups of people with separate technical traditions, and the hiatus of about 900-880. The hiatus ended the building of large ceremonial structures at the site, but the continuity of ceramic types through the surface levels indicates a reoccupation of the site by people carrying on the earlier traditions in a later style. Human agents, rather than a natural disaster, seem to have caused the hiatus, for there is no evidence of widespread destruction or deposits indicative of flood or earthquake. Although the returning inhabitants represented a late Chavin culture, they left no remains rivalling late Chavin art and architecture at other centers. Perhaps the decline of Las Haldas holds clues to the cultural processes which led to the eventual decline even of Chavin de Huanatar.

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NOTES

¹This work was done under my direction from October 31 to November 11, 1967. It was sponsored by the Instituto de Agricultura Precolombina of the Universidad Agraria, directed by Dr. Frédéric Engel, for whose support and assistance I am grateful. Participants were Bernardino Ojeda, archaeologist; Apolonio Lino, foreman; Isaac Peralta and Crisóstomo Ayala, laborers, and Mario Linares, cook. All excavated materials were deposited in the Instituto de Agricultura Precolombina in Lima.

²Engel, 1966, p. 82.

³The six excavations were as follows:

Cut 1 lay 16 m. southwest of the lower (northeast) corner of Structure 4, outside the courtyard and abutting the wall. Ojeda supervised the work and recorded the results. The cut measured 9 x 3 m. and ended in sterile sand at 5 m. depth.

Cut 2 was the clearing of slumped soil and sand from the stairway of Structure 21. Maximum depth was 90 cm. The deposit was removed in two artificial levels. The upper 20 cm. contained sherds, textile fragments of cotton, and a lump of red pigment. The lower level, 10 to 70 cm. thick, contained fewer sherds but of the same types as above, and a fragment of anthracite mirror.

Cut 3 was located about 80 m. southeast of Cut 1; it measured 1.5 x 3 m. The pottery is analyzed in the text and is the only material from these excavations for which an analysis has been completed. Preceramic levels were sampled down to sterile sand, but cotton string was the only artifact recovered.

Cut 4 revealed the reconstruction of the façade wall of Structure 3 facing into the courtyard of Structure 4. The cut was 1 m. wide and ended at the floor of the courtyard.

Cut 5 was the clearing of slump to expose the stairway of Structure 1 and revealed the unfinished construction of the stairway. Additional stairs must exist, but they were not sought. This cut was refilled to protect the ancient stake and string which were found in place.

Cut 6 was on the interior, against the east wall, of the sanctuary of Structure 1. It revealed the original mud floor directly on the surface, and the cut was terminated in loose rock fill at 3.5 m. depth. Whatever earlier structures may exist in that area are covered by a thick layer of loose rock fill, sometimes in loose reed nets. The excavation was refilled.

⁴Fung Pineda, 1972; Tokyo Daigaku, 1960. The earlier excavations which were evident in 1967 consisted of (1) a trench to sterile soil across the Main Circle (Structure 6) made by Rosa Fung Pineda; our

radiocarbon sample Tx-648 was taken from this cut; (2) a trench to floor level across the midden in the stairway between Structures 4 and 5; our radiocarbon sample Tx-632 was taken from the base of this midden; (3) a cut into the top of the eastern flanking platform of Structure 2; (4) a shallow test pit measuring 1 x 1 m. in the courtyard of Structure 6 outside the Main Circle; (5) a shallow 1 x 1 m. test pit in the center of Structure 7.

⁵Tokyo Daigaku, 1960, p. 518.

⁶Matsuzawa, 1974.

⁷Seven radiocarbon samples have been taken from deposits of the terminal period: Tx-1011, taken by me, at 2730 ± 70 B.P. (780 ± 70 B.C.); GaK-606, taken by the University of Tokyo (Tokyo Daigaku, 1960, p. 518), at 2680 ± 150 B.P. (730 ± 150 B.C.); NZ-211, taken on the surface by Engel (Engel, 1966, p. 88; Fergusson and Rafter, 1959, pp. 232-233), at 2500 ± 100 B.P. (550 ± 100 B.C.); and four samples taken by the University of Tokyo in 1969 and published by Matsuzawa (1974): Pit 1/no. 3 at 2690 ± 150 B.P. (740 ± 150 B.C.); LH-Bex, Layer 9 at 2590 ± 80 B.P. (640 ± 80 B.C.); Trench D, Layer 4 at 2520 ± 60 B.P. (570 ± 60 B.C.); and Trench A, Layer 2, upper part, at 2360 ± 90 B.P. (410 ± 90 B.C.). All of these readings seem reasonable for the terminal occupation.

⁸Lanning, 1967, p. 70.

⁹Izumi and Sono, 1963, p. 67.

¹⁰Engel, 1967, p. 49.

¹¹For example, Lanning, 1967.

¹²Lanning, 1967, p. 189.

¹³Willey, 1951, p. 134.

¹⁴Kauffmann Doig, 1973, p. 186.

¹⁵Tello, 1956, pp. 36-46.

¹⁶Tello, 1956, figs. 9j, 14a.

¹⁷Collier, 1962.

¹⁸Collier, 1962.

¹⁹But Edward Lanning, who has examined both Casma and Las Haldas sherds, writes me (May 25, 1968) that none of the Casma styles is present at Las Haldas.

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TABLE 1

Summary of Ceramic Development

Trait	Cut 1 Level		Cut 3 Level		3		4		5		6	
	1	2	3	4	55-82	82-117	117-154	154-196				
Depth in cm.	0-35	35-55	--	55-82	--	82-117	117-154	--	154-196			
Total sherds	24	97	189	109	42	165	426	--	263			
Plain body sherds	15	79	128	91	--	140	367	--	241			
Olla, fold-under rim	0	0	0	0	--	0	1	4	3			
Olla, round rim	0	5	16	8	17	9	38	5	7			
		(5%)		(7.2%)		(5.4%)	(8.8%)		(2.6%)			
Olla, beveled rim	2	5	3	3	7	7	3	--	3			
	(8%)	(5%)		(2.7%)		(4.2%)	(0.7%)		(1.1%)			
Jar rims	0	1	1	1	2	4	3	--	1			
Bottle, wide neck	0	0	1	0	--	0	2	2	1			
Bottle, narrow neck	1	2	3	0	2	0	0	--	1			
Red and graphite paint	1	2	1	5	5	3	2	--	0			
	1 red	2	1	5	5	3	2	--	0			
	1 graph.											
Punched	0	1	1	0	1	2	7	2	0			
Zoned punch	0	0	3	1	6	0	4	--	4			
Incised (no punch)	0	1	1	1	2	1	1	--	2			
Figurine	0	1	2	0	0	0	0	0	0			

Percentages given are based on the number of sherds in that level.

Sherds in Cut 3, Levels 3, 4 and 5 which have both red and graphite paint and punching or zoned punching have been counted in both categories.

In Cut 3, Level 3 one of the five painted sherds had zoned punching.

In Cut 3, Level 4 one of the three painted sherds was also punched.

In Cut 3, Level 5 both of the painted sherds also had zoned punching.

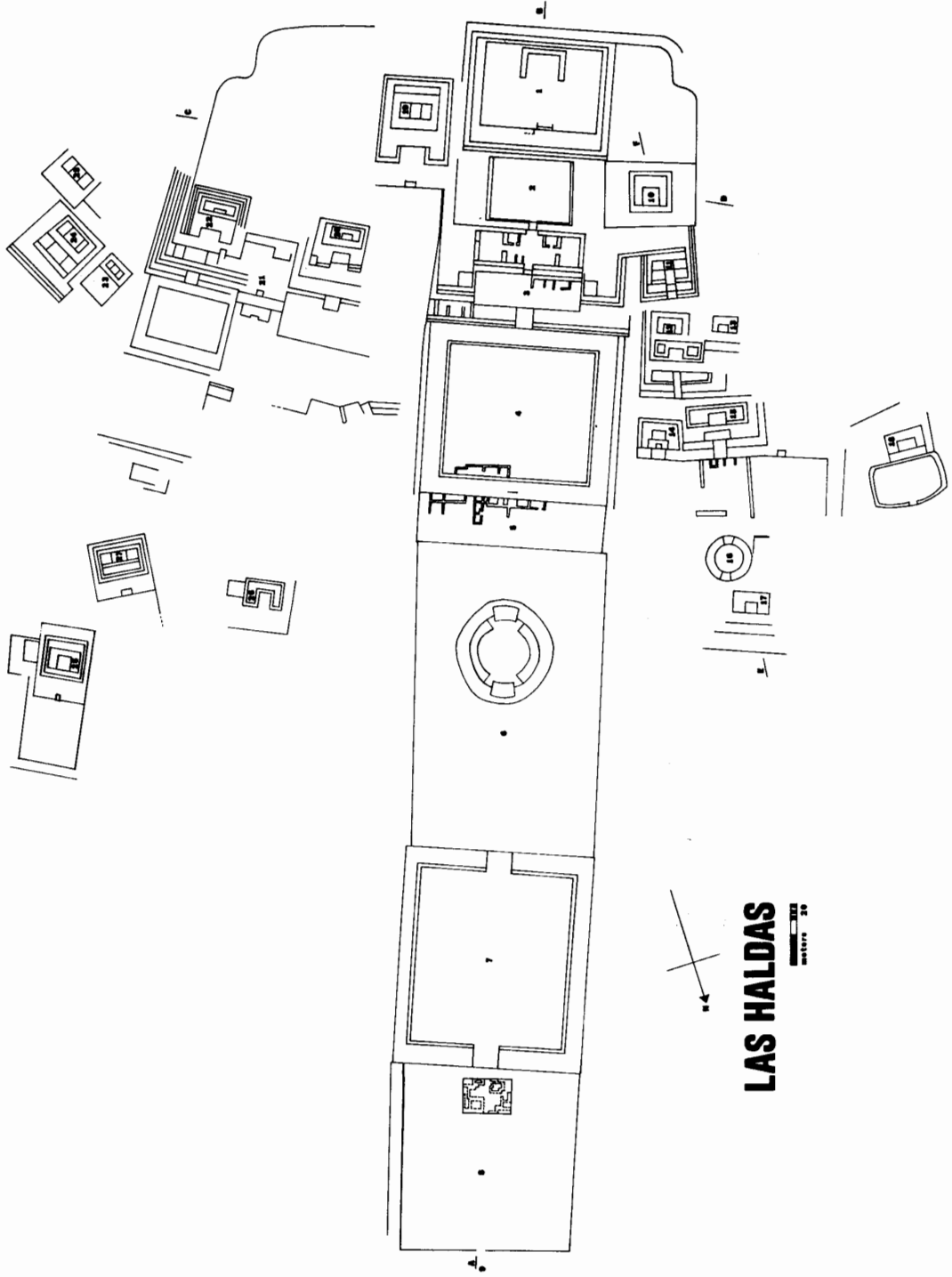


Plate XXXVIII. Fig. 1, map of the ruins of Las Haldas.

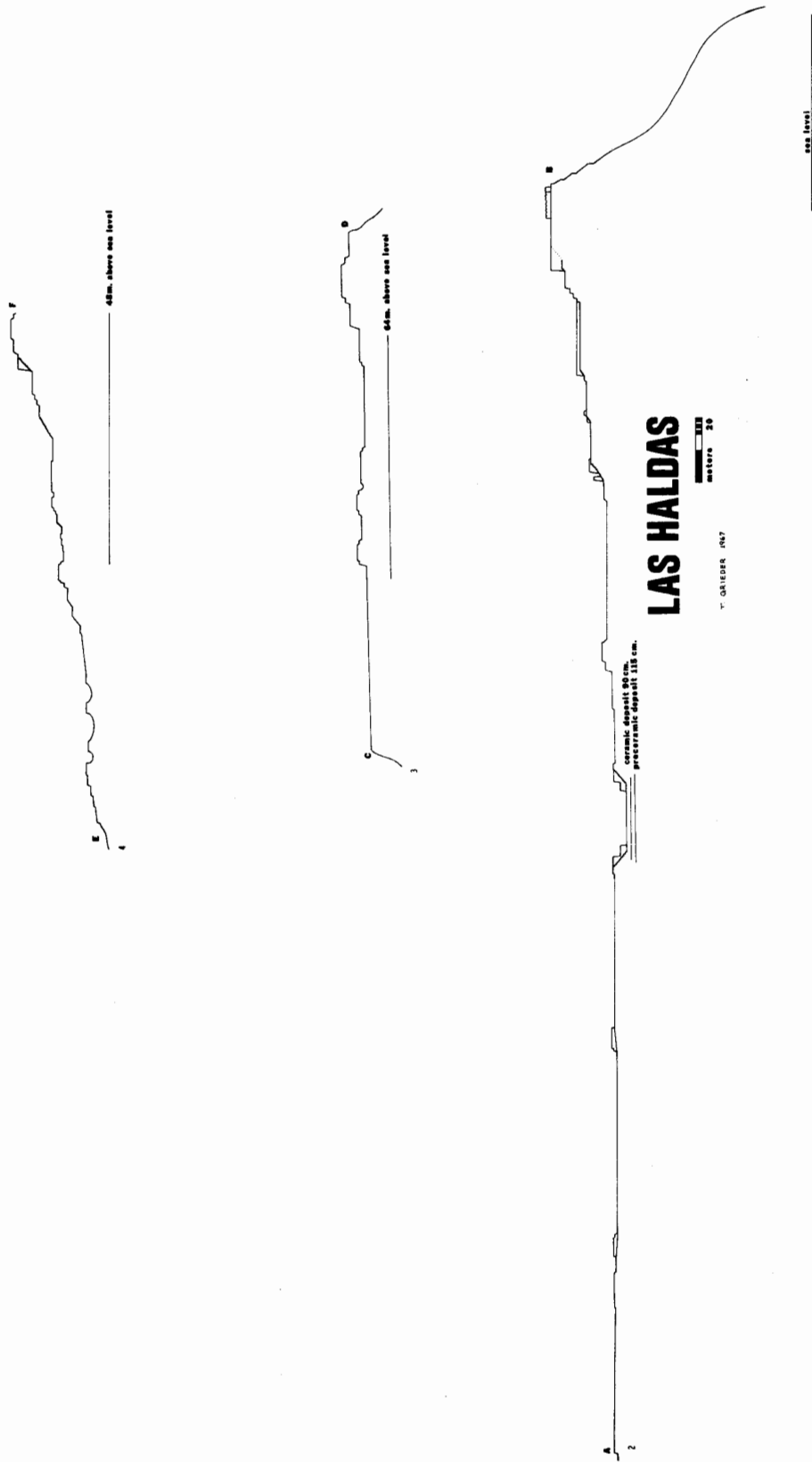


Plate XXXIX. Figs. 2-4, three profiles of the elevation of the ruins. Each profile fits the map (fig. 1) between the letters which identify the profile.

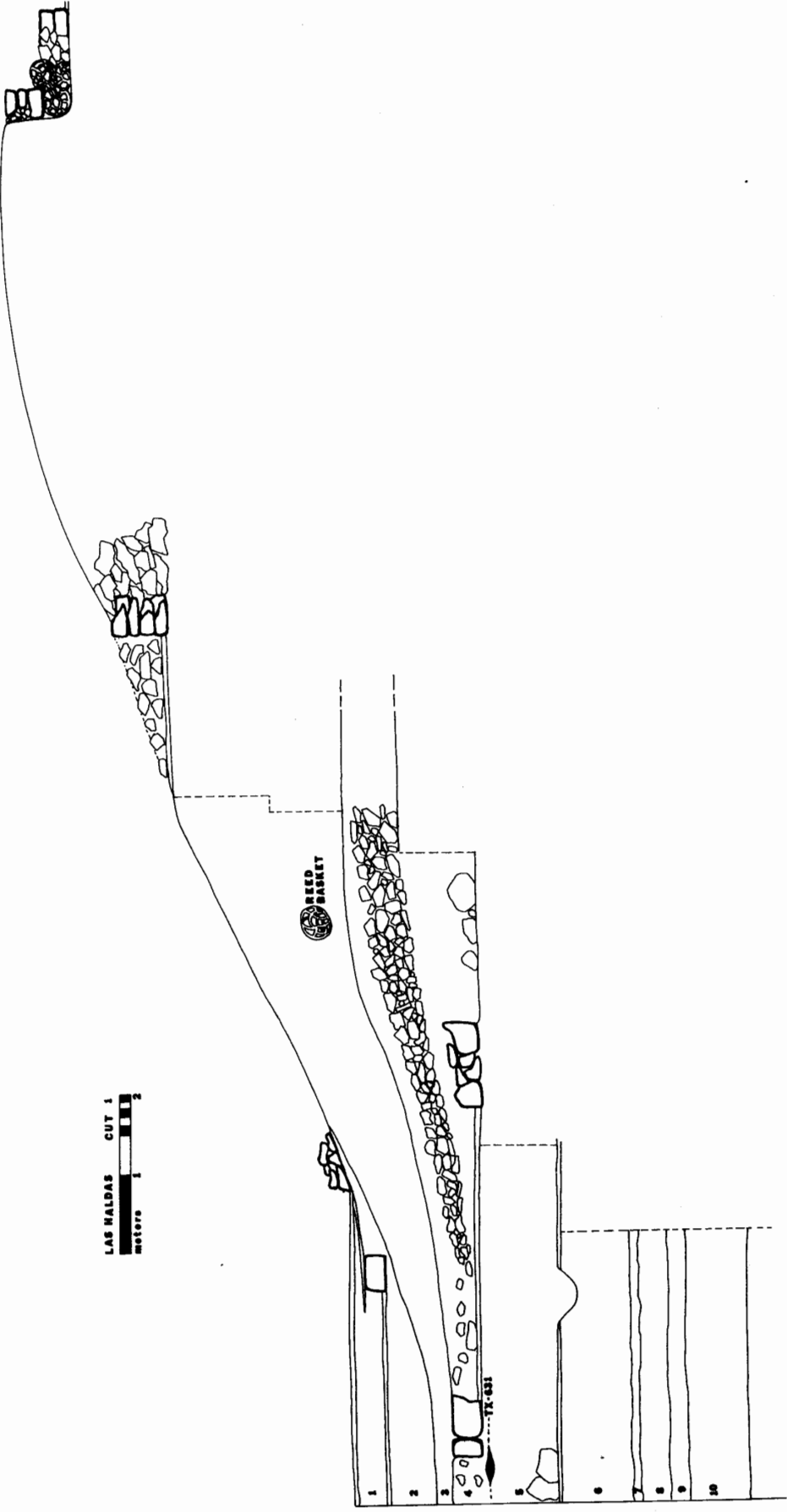


Plate XL. Fig. 5, longitudinal section of Cut 1, excavated by Bernardino Ojeda, after his drawing. Previously published in Engel, 1970, fig. 4. Key: Levels 1-5 are ceramic and 6-10 are pre-ceramic. Level 1, superficial walls, yellow mud floor with stone marking the position of a wall, and windblown sand. Level 2, windblown sand. Level 3, sand and a reed basket containing rock fill. Level 4, sand and a layer of stone fill, and a hard mud floor with walls at both ends. Level 5, lowest level containing ceramics, sandy soil above a yellow mud floor with a pit through the floor (radiocarbon sample Tx-631 from burned Tillandsia leaves gave a reading equating to 1480 B.C.±80). Level 6, highest pre-ceramic level, ashy soil. Level 7, shell. Level 8, ashy soil. Level 9, brown soil. Level 10, ashy soil ending in sterile sand.



Plate XLI. Fig. 6, view of the site from Structure 1 toward the north-northeast showing Structures 1-8.



Plate XLII. Fig. 7, view of the Main Group (Structures 1-3) from the West Circle (Structure 16), looking south; fig. 8, Structure 21, revealed by Cut 2, a stairway of stone laid in mud mortar flanked by walls of vertical slabs separated by smaller stones; the tape shows 1 m.



Plate XLIII. Fig. 9, Cut 5, showing the unfinished reconstruction of the stairway onto Structure 1 using concrete mortar. The mason's stake and string remain in the corner (lower left center). The stairs on the right were left incomplete; on the stair is a reed net for fill stones (right center). The tape shows 1 m.

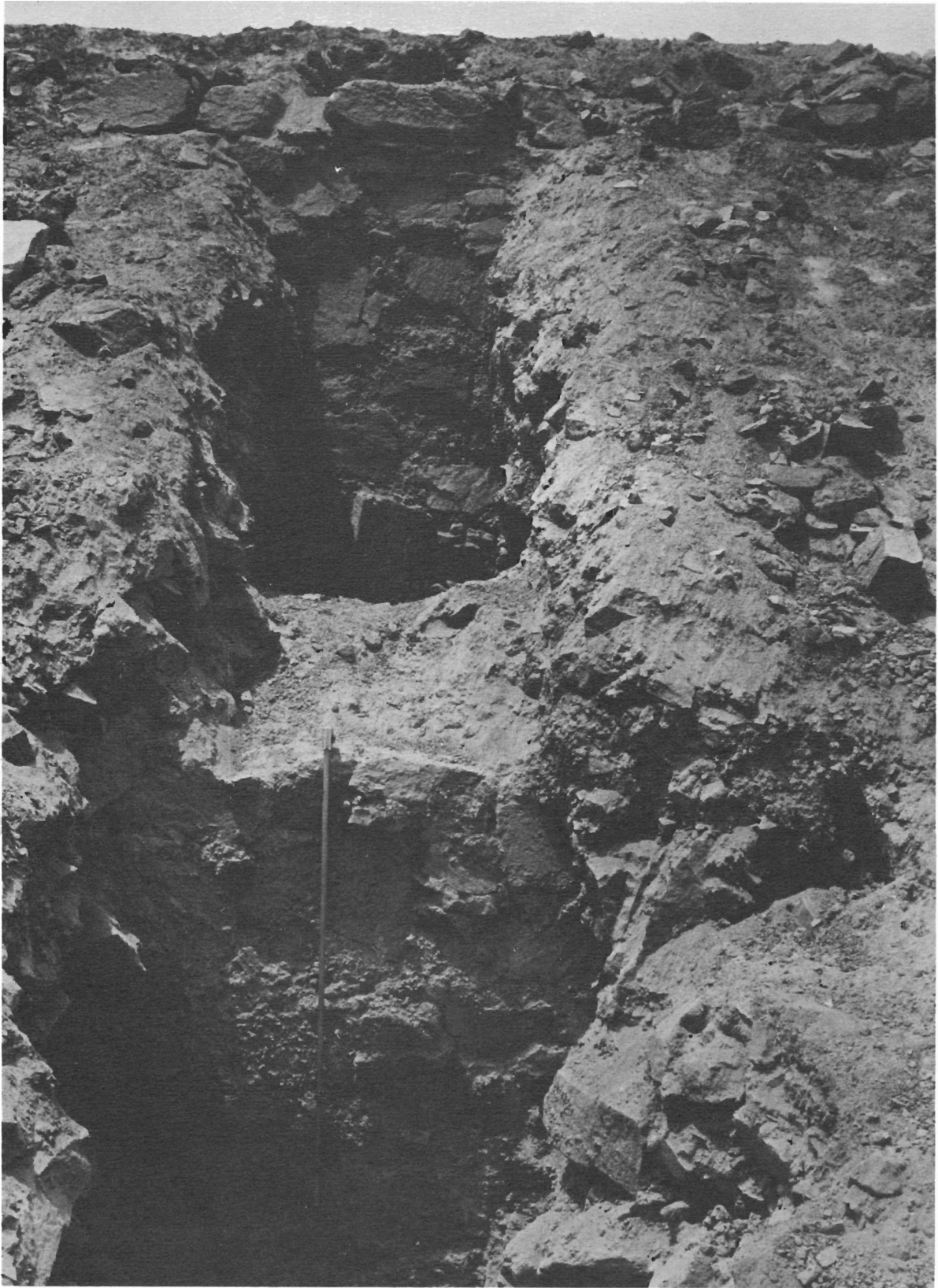


Plate XLIV. Fig. 10, Cut 4, showing the earlier mud-mortared façade wall of Structure 3 at the top and the later concrete-mortared wall under construction in front. The tape shows 1 m.

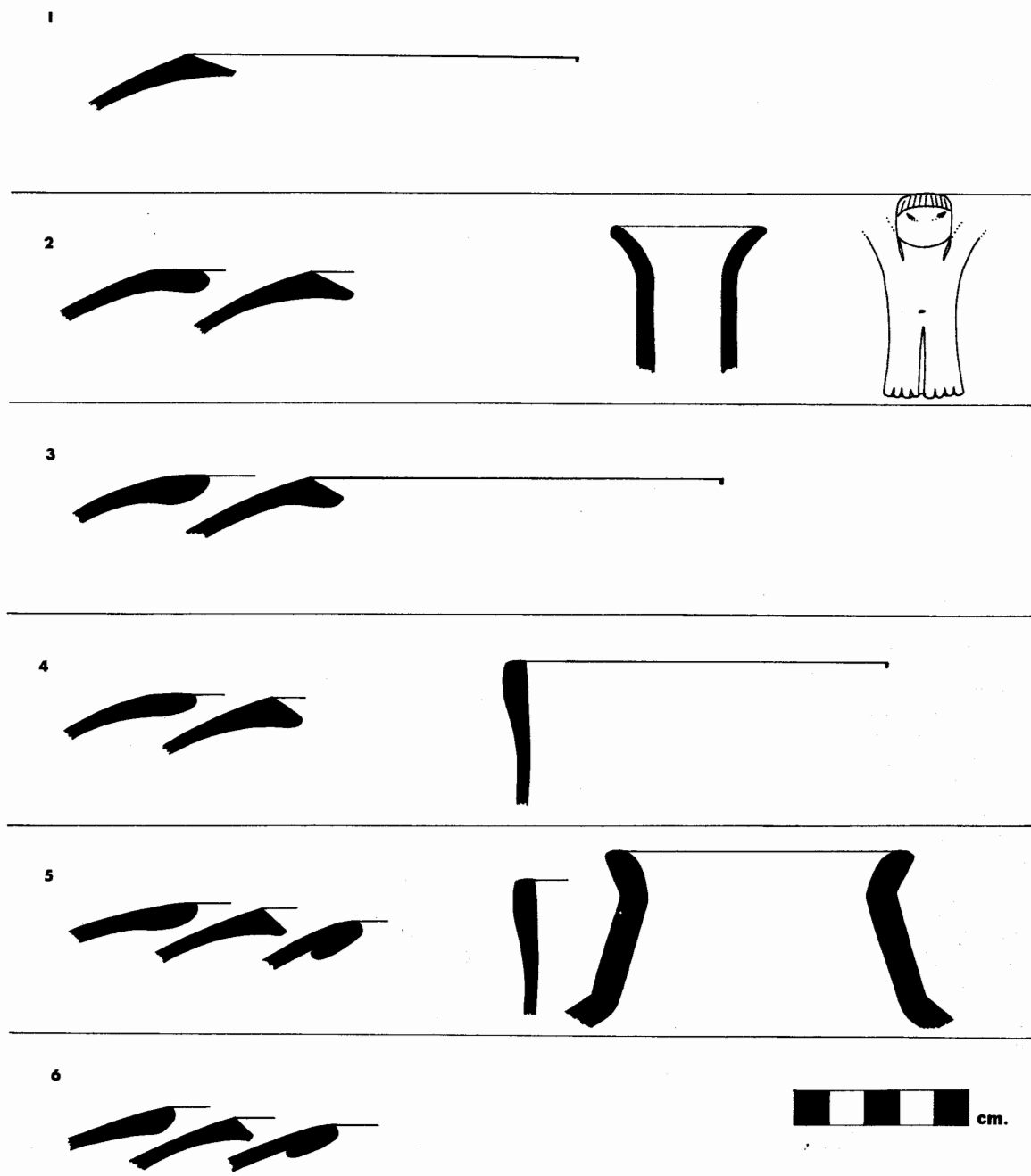


Plate XLV. Fig. 11, summary of the ceramic forms from Cut 3, by level.