

THE SIGNIFICANCE OF PIKILLAKTA

IN

ANDEAN CULTURE HISTORY

By

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## 1 - Background

In 1964 I received a Fulbright Teaching Fellowship to the University of Cuzco for the period from April 1-December 15. Although my major activity was teaching, some time was spent in archaeological research. My primary area of interest has been Mesoamerican archaeology, and I have recently completed an intensive survey of the Teotihuacan Valley in Central Mexico similar to that completed by Gordon Willey in the Viru Valley on the north Peruvian coast. One of the major objectives and problems of the Teotihuacan Valley project was the investigation of the relationship between archaeological remains and socio-economic institutions of past cultures. The abundant documentary data provided by 16th century writers on Aztec culture was used as a control. Badly needed was more comparative data from an area of equally complex ancient cultures. One of my major objectives with respect to the research in Peru, therefore, was to familiarize myself with Andean archaeology, especially Inca, since the same degree of documentary control is available for the Inca as for the Aztec.

My research consisted of brief field trips to known major sites in various areas in Peru and intensive survey in the Cuzco Valley. With respect to the former objective a great number of sites were visited, but such trips were necessarily limited by teaching obligations. As a result many more sites were visited in the Cuzco area than elsewhere. The intensive survey of the Cuzco Valley was intended as an amplification of earlier surveys by Rowe (1944) and Chavez Ballon. The valley is extraordinarily rich in archaeological remains, especially Inca, and only a small percentage of sites was examined.

The Cuzco Valley is drained by the Huatanay River, a tributary of the Vilcanota. In common with many Andean valleys, it is wide near the source and has therefore much more bottom land and riverine terrace for cultivation near Cuzco than down valley. Even in the upper valley the amount of level land is severely limited, as the abundant remains of terraces of the Inca Period testify.

Approximately 30 kms. down valley from Cuzco and only 2.3 kms. above the junction of the Huatanay with the Vilcanota the valley widens. Near the village of Huacarpay is an extensive, shallow lake that apparently formed as a result of geological uplift that blocked the exit of the river and diverted it into a new channel. Following this event the river cut a new valley. Between the old and new valleys and overlooking the lake is a high undulating ridge that rises several hundred meters above the valley floor.

On the summit of this ridge and at an elevation of approximately 3,200 m. above sea level is located one of the most extraordinary sites known to this writer in either Peru or Mesoamerica. The site, locally called Pikillakta, is distributed over 50 hectares of terrain and laid out with geometric precision. The ruins of approximately 700 buildings are observable from surface survey. All are constructed of split stone and earth and many are of monumental size. The most impressive features about the site are its formal planning and extraordinary degree of preservation, with some standing walls up to 8 meters high. Even in areas of severe destruction the bases

of walls are detectable on survey without excavation. Superficial examination of the site gives one the impression of a planned town with great plazas, a grid of streets, approach avenues, and a regular grid pattern of residences. There are several peculiarities about the site, however, that on second thought do not fit this interpretation at all. It looks too thoroughly planned, has too little a variety in building plans, and too few streets for it to be classifiable even as a planned town. There are large areas of the site with no access streets and the few streets present seem to have little connection with "residential" areas. What appear as rectangular block residences, on close examination, have more the appearance of high walled enclosures. The most extraordinary and puzzling fact about the site however is the nearly complete absence of surface pottery. Altogether some 35 days were spent on the site. A grand total of perhaps 50 sherds were collected, most of which were modern. In several areas the site is badly pitted, down to and below floor levels. Even the pile of debris left in these clandestine excavations yielded no occupational remains.

The characteristics of the site briefly noted above have intrigued many people, lay and professional, but the literature on the site is surprisingly scant.

## 2 - Methodology

My research at Pikillakta included both survey and excavation. Most of the time was spent in constructing a map of the site. The Servicio Aerofotografico Nacional of the Peruvian Army kindly provided the author with a set of 1:25,000 photos of the Cuzco Valley and an amplification of the site itself at a scale of 1:4,000. The latter served as the base for the map. Each of the structures that appears on the aerophotos was examined on the ground. In the case of each of the structural units located west of Avenue C, between 15 minutes and 1 hour was spent measuring and recording all surface remains. The heights of walls were measured by eye and horizontal measurements were either taken by a 50 meter tape or paced off. No surveying instruments were available. I make no pretense to precision in the absolute measurements but the map does provide a good impression of the plan.

As implied previously there is much standing architecture at Pikillakta; and most building plans are visible. In some areas, however, destruction has been heavy and plans can only be estimated. The regularity and monotonous repetition of plans at the site are of course a considerable help in such cases. The northwest quadrant and center of Area 2 are very badly pitted; and few standing walls have survived the activity of searchers for treasure or building materials. Entire walls have been removed down to ground level and below. Also the ruins have been used for cultivation and grazing in recent times; local farmers have opened doors in some of the walls to facilitate the movement of people and animals, and sealed off ancient doorways to convert portions of the site into corrals. In the case of such corral construction they used stone from the ancient buildings. Harth Terre was misled by some of these recent alterations of plans.

Where visible walls and doors are constructed of loose rock I have assumed they are recent; when the stone is bonded with earth I have assumed they are ancient.

The Patronato de Arqueologia de Cuzco has also complicated the problem of surface survey in its attempt to clean and dress up the site. A high percentage of the buildings are rectangular enclosures with narrow corridors in each side and large interior patios. Patronato housecleaning involves primarily collecting wall debris from the patio and heaping it along the interior of the enclosure thus covering the remains of inner walls. As a result surface mapping in some buildings is impossible.

The area east of Avenue C was very rapidly examined over a three day period. Although time did not permit detailed examination, I was able to at least classify all structures using the typology to be presented below.

Along with survey, small excavations were conducted at Plaza A in Unit I and Plaza C Unit A. The major purpose of the excavations was to acquire a ceramic sample for dating. A by-product of the excavation were further data on construction techniques. The excavations were conducted in these two units because of their apparent distinctive architectural characteristics. The excavation was conducted in connection with an archeological field school for 4th and 5th year students from the University of Cuzco.

### 3 - Architecture of Pikillakta

#### General Characteristics of the Site

The reader is referred to Figure 1 to clarify the following discussion. The site appears on the aerophoto as a huge rectangle 700 m. N-S by 600 m. E-W. Two wide avenues approach the site from the north and south. Each approach avenue communicates with a peripheral street that borders the site along parts of the north, west, and south sides of the rectangle. This concept of an avenue or street delimiting the site and portions of the site is a basic feature of Pikillakta planning. Two internal avenues, A and E, cross the site and divide it up into three rectangular divisions each nearly 700 m. long (N-S) and measuring in width 160, 210, and 220 meters. I will refer to these divisions as Areas 1, 2 and 3, respectively.

One of the impressive achievements of the builders of the site was their capacity to adjust the plan to the undulating terrain. The surface of the plateau is exceedingly uneven; yet by means of filling in depressions, elevating floors and constructing terraces they managed to lay out a site of extraordinary regularity of plan. The amount of subfloor construction at Pikillakta staggers the imagination.

Approximately half of Area 1 is composed of an enormous plaza (380 x 140 m.). The surface is undulating and apparently was not altered artificially. Most of the balance of Area 1 is composed of several large empty walled areas.

Area 2 is architecturally the most complex of the three. A street (6th Street), running east-west, splits the area into two rectangles of unequal size. The northernmost area, 2 B, measures 210 x 200 m. It includes two large empty enclosures, three rectangular buildings and over 500 small rooms arranged in perfectly straight rows along a grid of streets. The remainder of Area 2 consists of a huge rectangle (520 x 210 m) that is the nucleus of the site as a whole. It has the most complex plan and greater variation in architecture than any other area of the site. Most of the structures fit into our classification of "rectangular buildings." They vary in size but all have the appearance of enclosures with central courts surrounded by narrow corridors.

Area 3 is composed entirely of rows of such rectangular buildings, all the same size. This portion gives one the impression of a later addition. It lacks the complexity of Area 2; the peripheral streets do not extend along the north and south sides of the area, and the east-west walls are not aligned with those in Area 2.

### Construction Techniques

The site provides the distinct impression of a single great building project. Areas 1 and 2 were undoubtedly built first and the original plan may not have included Area 3. Area 2A consists largely of rectangular buildings and all have common walls. The preservation is so good in many parts of the site that one could write a history of the stages of construction of the site from surface survey alone. In Area 2A, for example, the buildings are arranged in straight rows and the east-west walls of each row of buildings were constructed first, as single long walls, running the width of the area. After these were erected, the exterior north-south walls were added for each building, and finally its interior corridor walls were constructed last.

Construction at Pikillakta involved four basic materials: wood, split stone, earth and gypsum. No true cut stone construction, so diagnostic of major highland Andean sites, was noted, although stones used in doorway construction are roughly trimmed into blocks. The percentage of stone to earth in the walls is very high, rather similar to the proportion of brick to concrete in modern construction. The best construction data were derived from the two excavations, and they will be summarized briefly first.

Plaza A, Unit I - Facing Plaza A on the east side, near the southeast corner, an unusual structure was noted in survey. It was unusual in its small size, relative isolation from and lack of integration with the large units so diagnostic of the site, and in the presence of three very large niches on the east wall. These niches were located in the center of the wall, about 1.28m. apart and were approximately 86 cm. wide. Their original height could not be determined, since the upper portion of the wall had collapsed, carrying part of the niches with it. They were at least as high as they were wide. They are therefore considerably larger than the wall niches found commonly on the site and obviously had some specialized function.



Before excavation the building appeared as a small U shaped enclosure, with three walls on the north, east and south sides, and open to the west where it faced Plaza A. Traces of walls and distribution of debris suggested the presence of narrow corridors of the standard Pikillakta type on the east and north sides. The area that excavation later revealed as a patio and Rooms 2, 3 appeared as a completely levelled surface with no indications of rooms.

The excavation was initiated along the west side of the west wall of Room 1. This trench uncovered a beautifully preserved stairway of at least five steps (the upper section is destroyed). Following the excavation of the stairway, the doorway and the southern half of Room 1 were excavated to floor level. In all excavations the debris was removed in arbitrary levels. Following this, Room 2 was completely excavated to floor level. In the balance of the excavation narrow trenches were dug along walls to obtain data on the building plan. In some cases such probing trenches were only 50 centimeters deep. As a result of the excavations the plan in Figure 2 emerged.

Surprising was the discovery of the stairway and Rooms 2 and 3 since there was no indication of structure on the surface. The depth of the floor and the level surface of the area before excavation suggests intensive destruction, filling in, and levelling off. The plan turned out not to be unusual at all but is instead typical of rectangular buildings at Pikillakta. It is distinctive only in the small size and in the presence of external doorways. Basically it consists of a small patio surrounded on four sides by narrow, corridor-like rooms. Each room communicates with the patio by means of a doorway; there are no doorways from room to room in the portion excavated. There were two external doorways, one in the center of the west wall, the other in the north wall near the northwest corner.

The measurements taken here are more precise than those taken in the survey, so I am presenting them in tabular form below:

Entire Building	Meters	
north-south interior. . . .	10.95	(stone to stone)
east-west interior. . . .	12.8	(stone to stone)
Room 1		
north-south interior. . . .	10.95	(stone to stone)
east-west interior. . . .	2.13	(plaster to plaster)
doorway width . . . . .	1.36	(plaster to plaster)
wall thickness-east wall. .	.85	(stone to stone)
wall thickness-west wall. .	1.04	(plaster to plaster)
Room 2		
north-south interior. . . .	2.27	(plaster to plaster)
east-west interior. . . .	4.23-4.33	(plaster to plaster)
doorway . . . . .	1.36	(plaster to plaster)
wall thickness. . . . .	.9	(stone to stone)

## Room 3

north-south interior. . . .	10.95 . .	(stone to stone)
east-west interior. . . .	2.25 . .	(stone to stone)
north doorway width . . . .	1.59 . .	(stone to stone)
west doorway width. . . .	1.42 . .	(stone to stone)

## Room 4

north-south interior. . . .	2.13 . .	(stone to stone)
east-west interior. . . .	6.5 . .	(approximately)
doorway width . . . .	1.45 . .	(stone to stone)
south wall thickness. . . .	.85 . .	(approximately)

## Patio

north-south interior. . . .	6.5 . .	(stone to stone)
east-west interior. . . .	9.4 . .	(stone to stone)

The original height of the walls of the building could not of course be determined with accuracy. The best data are from the east wall of Room 1 where walls were preserved to a greater height than elsewhere. From the floor the highest point of preserved wall there is 4.6 m., so this was the minimal height. Since the interior space of the room was filled up to a height of two and a half meters with the debris of the collapsed roof and walls, the original height was undoubtedly greater. For reasons to be made explicit later, I feel that the original wall height was approximately 5.6 m. Walls at Pikillakta are typically wider at the base and are reduced in thickness at the top. They seem vertical to the eye however and do not show the distinctive batter of Inca walls. The floors were cleared of debris in Rooms 1, 2 and the east end of the patio. In Room 1 a small pit, 25 centimeters deep, was excavated to obtain data on floor construction. Judging from this excavation and that of Plaza C Unit A, the floors were constructed as follows. The surface of the floor was covered by a thin white layer of gypsum plaster, no more than a few millimeters thick. This plaster was applied over a stucco layer 4 centimeters thick of hard packed tan earth, heavily impregnated with gravel and powdered gypsum. Below this was a layer of hard compact homogeneous earth. No deep pits were excavated in the building; but pot hunters' pits elsewhere suggest that below this a deep layer of loose rock fragments made up the sub-flooring.

The walls were constructed primarily of roughly tabular-shaped split stones laid horizontally in a mortar of reddish brown earth (similar to the earth found in agricultural fields near the site). A thick layer (4-10 centimeters) of earth stucco, tempered with straw, was then applied over the stone to achieve a relatively even surface. Over this was applied, at least over the lower portion, a thin wash of gypsum plaster. Traces of the earth stucco were noted on walls as high as 160-170 cm. above the floor, but in no case did the plaster occur above 90 cm. The upper edge of the plaster is undulating and uneven and varies from 60-90 cm. above floor level. It is very possible therefore that the gypsum plaster was applied only to floors, stairways and the lower courses of the walls. In the stairway, for example, the plaster covers the treads and risers of the steps, but on the adjacent wall it is applied only to the height of the steps, or a few centimeters above them. (see Fig. 8 c). Whenever applied, the plaster is very thin and does not even hide the unevenness of the earth

stucco surface below it. (see Fig. 8d ). The surface of the plastered walls is very similar to whitewashed adobe walls in Peru and Mexico today. The fill of the steps of the stairway is composed of a conglomerate of earth, gravel and powdered gypsum similar to the upper floor level.

One of the distinctive features of walls at Pikillakta is their extraordinary height. The height suggests two and possibly three-storied structures. This hypothesis is further confirmed by the presence in most of the well preserved walls, of a ledge on the interior wall. Where absent, such ledges are probably buried by debris. Two types may be defined. One is a true ledge made by varying the thickness of the wall; the other consists of a row of flat, slab like projecting stones (see Fig. 4). They always occur in the interior walls of corridors and face directly across the long walls of the corridor from each other. Their appearance suggests a function as supports for wooden floors in a second story structure. In the case of unexcavated buildings, they may be located near present day ground levels, or as high as two meters above it. This is probably the product of variation of depth of debris on the floors and possibly of differential fill from two or three storied structures. In Unit I the ledge occurs on the east and south walls of Room 1 and south wall of Room 2. They were probably absent from the west wall of Room 1. In the other walls they are either destroyed to a point below the level of the ledge or are buried in debris. In Room 1 the ledge is located between 2.5 and 2.6 m. above the floor; in Room 2, 2.9 m. Another possible function may be as added support for the earth stucco layer. The fact that they occur only on interior walls (and in survey several exterior walls were noted with preserved stucco), consist of only a single line of stones, in a few rare cases two, and project at least 20 centimeters from the wall surface (the stucco is usually only 4-5 centimeters thick) all argue against this interpretation. Furthermore, in some corridors, especially those going down slope where the floor has to be adjusted to the slope, the line of stones is stepped.

The stairway excavation supports my idea that they are roof supports. The stairway, extrapolating the missing steps, ends exactly at the level of the projecting ledge. Furthermore on the interior south wall of the structure immediately above the stairway we found traces of gypsum plaster curved to meet the junction of the last step with the wall. The curve is exactly at the level of the projecting ledge (see Fig. 8c ).

In the excavation of the stairway there was unmistakable evidence that the patio floor and stairway were rebuilt. Curiously the older stairway was in excellent condition, and was apparently never used. Why they rebuilt it is a mystery, perhaps they miscalculated its height and it needed further elevation. The niches, on the basis of this reconstruction, were located on the second floor of the building.

A second excavation was conducted in Unit A of the Plaza C complex. The site of the excavation was selected because of the almost unique plan of the complex. Plaza C is a large central court, 50 m. long (east-west) by 30 m. wide (north-south) flanked by rectangular lateral courts to the north and south. The lateral courts probably had a single narrow corridor on each side. On the west side the central court was flanked by two parallel narrow corridors.

To the east the plan is very complex. Surface survey suggested the presence of four rows of narrow corridors divided by transverse walls into five units. Each of the corridors in each unit seemed to be divided by other transverse walls into three nearly square rooms making a total of 12 rooms, or 60 in all, the only known concentration of rectangular rooms of this size on the site. Unit A, the central unit, was partially excavated and the result altered somewhat my impression of the plan. The excavation revealed an east-west entrance corridor, without transverse walls, that crosses the center of the unit from west to east. It communicates with the central court to the west by means of a stairway and to the east enters a back corridor or alley. It is probable therefore, that this innermost corridor lacks transverse walls, and served as a communication artery running along the east side of the entire complex. Unit A, apparently consisted of an entrance corridor, 6 square rooms, a back corridor from which one entered the adjacent units and the rooms of Unit A. Surface survey also suggested the presence of an alley or corridor running along the north and south sides of the lateral court that may have entered directly this east communicating corridor. In other words Plaza C complex probably had a peripheral traffic artery serving as the primary access route to the various units. Possibly the other four units on the east side did have 12 rooms as the survey suggested and Unit A served as the only entrance from the central court. Only further excavation can establish the plan definitely.

Unlike Unit I the walls of this corridor were nearly all destroyed down to ground level. After clearing off the debris from the floors of the entrance corridor and a portion of the back corridor, the preserved walls had a maximum height of only 2.0 m. above the floor, so that evidence of a second story was not preserved. The wall and floor construction was similar to that of Unit I and again the gypsum plaster was limited to the basal portions of the walls. The doorways were narrower, measuring 1.2 and 1.0 m. wide between plastered surfaces. The central corridor was 2.15 m. wide (plaster to plaster) and the back or peripheral corridor 2.4 m. (stone to stone).

One unique find in the Unit A excavation was a great quantity of thick slabs of pure gypsum. They varied in thickness between 4-7 centimeters, were very hard, and light in weight. One side was always very well smoothed off, the other quite rough. The texture was granular, homogenous, and in cross sections they appear laminated. In several cases chunks of earth, 10-15 centimeters thick, were found adhering to the rough side. All of the gypsum slabs were found in the entrance corridor.

One of the major archaeological problems of Pikillakta architecture is the technique of roofing. Inca roofs in the same geographical region are typically thatched and steeply gabled. I believe that the roofs at Pikillakta, with the exception of the small rooms in Area 2 B, were flat and constructed of masonry resting on wooden beams. On the floor of the entrance corridor of Unit A, the building debris was neatly stratified in two levels. The lower level, resting on the plaster floor, consisted of a hard compact mass of earth and gravel similar to the conglomerate that makes up the upper level of the floor. This layer was 80 centimeters thick in the Unit I excavation and about half as thick in Unit A.

Scattered through the upper 20 centimeters of this deposit in Unit A was a heavy concentration of broken slabs of gypsum. The upper level of the debris consisted primarily of loose rock, undoubtedly from the collapsed upper walls. In Unit I there were no slabs of gypsum. In the case of Unit A the roof was probably constructed of a layer of gravel, earth and powdered gypsum placed over a network of wooden beams and poles and capped by a thick layer of gypsum. In the case of Unit I the roof may have been surfaced with a thin layer of plaster.

The overall techniques of construction at Pikillakta have an extraordinary resemblance to Mesoamerican architecture and contrast sharply with Inca methods. The resemblance is particularly close to Prehispanic architecture in the Basin of Mexico. Similarities include rough stone and earth walls, earth-gravel stucco, flat roofs and use of calcium-based plasters. There are of course striking differences; the narrow corridor-like rooms and multistory construction would look odd in Central Mexico. In Mexico slaked limestone was used in stucco and plasters, in Pikillakta gypsum was apparently used. My understanding is that gypsum, unlike limestone, does not require burning to use as a masonry material. Some of my Cuzqueno colleagues and students felt that flat roofs would not be serviceable in the Cuzco area because of the heavy rainfall. Modern and Inca houses are characteristically gabled. However, the annual rainfall in Cuzco is comparable to much of the Central Mexican Plateau (600-900 mm.) where flat masonry roofs of this type were and are used. The use of gypsum stucco and plaster could be a case of substitution for the lime plasters and stuccos used in Mesoamerica and in both areas made flat roofs possible.

The basic characteristics of architecture revealed by excavation are probably typical of the site as a whole. Walls bordering on the Great Plaza and major streets are thicker and have larger stones than interior walls of buildings. The amount of gypsum used is not ascertainable from survey; but otherwise the characteristics are similar. One feature found very commonly in the preserved walls in the southern part of Area 2 and all over Area 3 are rows of small rectangular niches in the walls. These niches occur always on interior walls, in single rows, and the rows vary in their vertical position with respect to the ledges. The modal size is between 25-35 centimeters high and 15-25 centimeters wide and the modal distance between niches varies from .8-1.2 meters. In most walls they are true niches set into the walls 5-10 centimeters; in some walls they pierce the wall completely. The latter may be cases of recent alterations. At any rate their function is problematical. In some buildings they occur on one wall, with a ledge or row of projecting stones occurring on the opposite wall. In other buildings either ledges or niches are present on both walls and in a few cases a single wall may contain both. In several examples of the last the row of niches is located immediately above the ledge but I have noted cases in which the row of niches was 20-50 centimeters above the projecting ledge. They might have served to contain the ends of second story floor beams and in some buildings have been made instead of the projecting ledge. The case of both on the same wall, separated by 50 cm. of vertical space, however, is difficult to explain, except perhaps as a change of plan. The niches are much too small to have served as storage places.

### Types of Structures

On the basis primarily of ground plan, I am classifying the structures at Pikillakta in the following categories:

1. Communication Arteries
  - a. Approach Avenues
  - b. Peripheral Avenues and Streets
  - c. Internal Avenues and Streets
2. Great Plaza and Entrance Complex
3. Great Enclosures
4. Large Rectangular Buildings
  - Type A
  - Type B
5. Small Rectangular Buildings
  - Type A
  - Type B
6. Plaza Complexes
7. Small Conjoined Room Complexes

In this report I am calling north-south arteries avenues and east-west ones streets. The avenues are designated with letters, the streets with numbers. In several cases descriptive adjectives rather than letters and numbers are being used. Streets and avenues are rare at Pikillakta and this rarity presents one of the most puzzling features of its plan, the traffic pattern. For convenience I have classified streets and avenues into three basic categories: approach, peripheral and internal.

Approach Avenues - There are two approach avenues. Perhaps a better term might be highway. One avenue enters the site from the south. It can be traced for at least 600 m.; after which it may have followed the course of the modern highway. It is used today as the main entrance into the site. Both approach avenues were apparently bordered by high walls similar in construction to building walls. The walls along the South Approach Avenue are in very poor condition but they were at least 2.0 m. high to judge from preserved remnants. The avenue was 7.5 m. wide near the entrance into the Great Plaza. All measurements of street and avenue widths on the site should however be considered as approximations because of variations in preservation and in the original plan. The approach avenues are considerably wider than internal streets and avenues. The South Approach Avenue enters directly into the Great Plaza and communicates directly with the South Peripheral Street near the entrance into the Great Plaza.

The North Approach Avenue is even wider, in several places 10 m. wide, and is bordered by walls with a minimal preserved height of 4 m. It runs north for a distance of perhaps 500 m. and then ends abruptly at the edge of a steep slope overlooking the Laguna de Huacarpay. Its purpose is puzzling. No structures were noted along either side or at its terminus. The final 200 m. is bordered by a single wall along the west side. It communicates with the North Peripheral Street rather than directly into the site.

Peripheral Streets - The South Peripheral Street, after communicating with the South Approach Avenue, runs along the south edge of the site for approximately 300 m. then turns at right angles and enters Avenue E, the major north-south street. It apparently did not continue east along Area 3. The street climbs a steep slope for the first 80 m. and a stairway was constructed to facilitate the ascent. It might rather be called a flight of terraces since the steps are very wide (only 16 steps over a linear distance of 60 m.) and high (varying between 50-80 cm.). There was apparently no direct means of access from it to Avenues A, B, or C. There is even a possibility that it did not communicate with Avenue E at the junction. The walls bordering the North Peripheral Street to the north are considerably thicker than that of buildings (1.5 m.). The width of the avenue varies between 4-5 m.

The North Peripheral Street is approximately 9 m. wide and runs west from a point of junction with the North Approach Avenue, to the northwest corner of the site where it makes a right angle turn, continues along the west edge of the site for 300 m. and dead ends. This west branch may not have had an external wall and possibly appeared as a terrace. The North Peripheral Street possibly communicated directly with Avenue A but this is uncertain since debris covers the evidence.

Internal Streets and Avenues - Five definite internal avenues can be defined on the site. Avenue A completely traverses the site and with Avenue E is one of the two major north-south arteries. Over most of its length Avenue A appears as a narrow terrace, one of the entrance complex terraces; its northern segment however was bordered by high walls. It did not have an entrance into the South Peripheral Street and possibly lacked one into the North Peripheral Street as well. It did, however, have a great number of doors along its east wall that communicated with the Entry Complex.

Avenue B is a narrow alley only 2.0 m. wide that runs from 1st Street to the Entry Court (but there is no entrance into the latter), back (east) of the Entry Corridors and isolates them from the tier of Buildings 3-10, 86, 83, 84. There are no exits from the street into any of these structures. On the north side of the Entry Court it continues, paralleling the Entry Corridor Complex and finally ends at the northwest corner of Building 69.

Avenues C and D are almost equally narrow (2.2 and 2.1 m. respectively); D has a length of only 60 m. Neither has entrances into any of the building complexes. They communicate with each other, however, by way of 3rd Street.

Avenue E is a major north-south thoroughfare. It runs the entire length of the site, starting at the South Peripheral Street, and ending at 8th Street on the north end of the site. It has exits into 4th, 5th, 6th, and 7th Streets and is therefore, a key avenue for east-west traffic movement. The avenue varies from 3-4 m. in width and because of its length, straightness, and lack of obstructions, is the most imposing traffic artery on the site. It separates Areas 2 and 3, and was a major route to Plaza A and the Small Conjoined Room Complexes. At three places (at Structures 34, 38, 40), the width was reduced by constructing a cross wall with a narrow gateway. The gateway was presumably closed by a wooden door. The main purpose of these gateways would seem to be to control access to 4th Street - the main entrance to Plaza A from the east.

There are no streets comparable in length to the two avenues, E and A. All but 7th or 8th Streets are as narrow as building corridors (the modal width of which varies between 2.0-2.6 meters). It is even possible that they were roofed. If they were, they were not storied since the walls facing them all lack either niches or ledges. 1st and 8th Streets are peripheral to the site and run parallel to the North and South Peripheral Streets, being separated from them only by high stone walls. 1st Street communicates with Avenue A and B but has no direct access into Avenue E or the South Peripheral Street, or to any of the buildings aligned along it. Furthermore, it has crosswalls without gates near the corner of each of the adjoining buildings so that it could not have really functioned as a street.

8th Street does have direct access to Avenue E, possibly, but probably not, to A. It was the mode of ingress to the Small Conjoined Room Complexes B, C, and E.

2nd and 3rd Streets are short local arteries that provided access into only a few units, and 4th Street served as a route of communication to Plaza A.

5th Street crosses Area 2 and connects Avenues A, E, and B. 6th Street provided access into Small Conjoined Room Complex A and 7th Street crosses Area 2.

From the data presented above, it seems evident that the street - avenue system in both plan and function is very unlike those in towns. In towns and cities the primary functions of streets and avenues are to facilitate the movement of traffic - accessibility is the primary objective. At Pikillakta they do so only in a very broad and limited sense (for example, Avenue E, 5th, and 7th Streets permit one to move from one side of the site to another). On the contrary, at Pikillakta one has an impression of a conscious planned effort to restrict and contain movement; some streets and avenues seem rather to function like walls, to delimit and define sociological divisions of the site.



Even in the northern part of the site, in the area of the Small Conjoined Room Complexes where a grid of true streets occurs somewhat similar to that of a residential community, access was carefully controlled and each complex has peripheral arteries. Group A, for example, consists of 149 small conjoined rooms arranged in rows along ten streets. The entire complex was bordered by peripheral arteries and they, in turn, by high walls. There is only one access to the group, from 6th Street and it has a narrow 2 m. wide gateway.

All streets and avenues at Pikillakta were paved with a fill of split rocks similar to that used in wall construction and were probably covered by pounded earth and gravel surfaces. In several places modern pitting has exposed over a meter of artificial fill. Surfaces locally tend to be fairly level but the arteries do ascend and descend even minor undulations of terrain.

Great Plaza - Over half of Area 1 is composed of an enormous open space I am calling the Great Plaza. The surface is very uneven, with depressions and rock outcrops; little attempt was made, apparently, to regularize the terrain. The western edge was bordered by a massive wall with no definite entrance (sections of it, however, are completely eroded away). At the north it is bordered by 2 parallel rows of 4 Large Rectangular Buildings each. They are similar to such units in Area 2, but are somewhat larger and with a much lower ratio of roofed to open space than most of the latter. They have no definite doorways communicating with the plaza, Enclosure A or Avenue A (except possibly between Building 112 and the plaza but this is doubtful). There may be a flight of terraces running along the west wall of the plaza into Building 112-113.

The southern edge of the plaza is bordered either by a row of four Large Rectangular Buildings or two Great Enclosures. The state of preservation is so poor it is difficult to say which is the case. Running between the two enclosures or four buildings, whichever the case may be, is the main entrance to the site.

The east side of the plaza is the most interesting, since this was the access side into Area 2, the most complex and important area of the site. The plaza side here is an impressive and imposing sight with its network of terraces, stairways, and gateways. Immediately facing the plaza, running the length of Area 2A, north and south of the Entry Court are the Entry Corridors. There are three of them and they are the same width as the corridors of the Rectangular Buildings. With the exception of the Entry Court that interrupts their path, these corridors run between the South Peripheral Street and 6th Street. Avenue A and B run parallel to the set of corridors on the west and east sides respectively. Transverse walls divide each corridor into long rectangular rooms with almost geometric precision. Where the walls are visible, they are spaced at 17.5 m. intervals. The westernmost corridor has a set of doorways to permit north-south movement of traffic. Each of the front rooms of this corridor also has a doorway opening on to Avenue A. The middle and east corridor rooms have doors in their west walls only, and therefore communicate only with the west corridor.

Great Enclosures - One of the types of structural units at Pikillakta is the Great Enclosure. These are large rectangular spaces enclosed by high walls. At least seven are known (Enclosures 3, 4, 5, 6, 7, 8, and 9) and there are possibly two more (Enclosures 1 and 2). Enclosures 1 and 2 may be the badly restored remains of four Large Rectangular Buildings. Great Enclosures are distinctive in their large size as compared to Rectangular Buildings. Enclosures 3 and 4 measure 100 x 175 m. Even the smallest Great Enclosure, 6, measures 100 x 35 m. The Great Plaza itself might be called a Great Enclosure, but I have separated it because of its obvious special significance. A second characteristic of the Great Enclosure is absence or near absence of internal structures, or of artificial remodelling of the ground surface - all have very irregular surfaces including small hills and rock knolls. They are rectangular in shape but vary considerably in proportion and size. All are located in peripheral positions whether outside of the primary area of the site or within it.

Large Rectangular Buildings - This is perhaps the most distinctive and characteristic structural unit. Today many of them appear as large, empty enclosures, but a careful examination of the interiors and of the better-preserved examples demonstrates that all have interior structures. The impression of empty enclosures is the result of the greater destruction of interior walls, the narrowness of the rooms, and the high ratio of open to roofed space. With the exception of the Small Conjoined Room Complexes, they are the most common building type at Pikillakta. Buildings 11-14, 15-18, 19-22, 25-28, 30-33, 29, 34-40, 41 b, 42-49, 96, 97, 98, 100, and 121-201-all fit into this classification and perhaps several others that I am arbitrarily considering as part of Complex A (87-91, 23, 24). At least 122 buildings, therefore, are classified as of this type. This includes all of those (81) in Area 3 and 41 in Area 2.

Measurements were taken in all of those in Area 2 but none in Area 3. With respect to size, those in Area 2 fall into three variants. Buildings 11-23, 35-38, 30-33, 37-40, 41 b, 42 are all approximately 35-36 m. square. Actually measurements vary from 34.8-36.4 but, as I have noted, it is very difficult to get precise measurements. Measurements taken from the aero-photo of those in Area 3 indicate that they were all approximately the same size.

Buildings 34-36 and 29 had a similar east-west dimension-approximately 35 meters - but their north-south measurements varied between 40.4-42.8 meters. Structures 96, 97, 99, 100, on the other hand, were smaller, averaging 27 x 30 meters.

The Large Rectangular Buildings fall into two basic types cross-cutting the types based on sizes. Type A typically has two conjoined parallel roofed corridors on the east side and one corridor on each of the other three. The corridors range in width from 2-2.8 meters with a mode between 2.1-2.4. The proportion of roofed corridor to open court is therefore very low. In a building 36 meters square the space within the outside wall calculates at 1,296 m<sup>2</sup>. of which 810 m<sup>2</sup> is open court; the balance, is roofed corridor and interior walls.

There is considerable minor variation in plan. In some buildings one or even two sides may lack corridors (at least surface indications are absent). Variations also include: buildings lacking a double corridor on the east side; others possessing two sides with double corridors, or in which the double corridor is on a side other than the east; and others with triple corridors on one side. All such variations are uncommon, however.

There are also variations in the way in which corridors are joined. In some cases they join at right angles; in others a diagonal wall separates them at the corner of the building.

Each corridor on each side of a building was divided by cross walls into long narrow rooms. The number of rooms per corridor noted in surface survey varies from 2-4, 2-3 rooms were perhaps the mode and they are quite variable in length. One of the distinctive characteristics of the Rectangular Buildings is their complete lack of external doors as visible modes of ingress and egress. As noted previously, they share common walls with adjacent buildings but no definite doorways are known from building to building or from building to street. There are a very few cases today where such doors are visible, but they are all clearly recent since the bordering stones are simply piled loosely without earth mortar.

The only definite ancient doors are between corridor and central court. Also, no case was noted of lateral doorways between rooms of a corridor; and one could not travel directly around the court via a corridor. Each room on the single corridor side has its own doorway facing the central courtyard. In the case of double corridors, one entered the back room by way of the front room which, in turn, had a door to the courtyard.

In Area 3, the tier of buildings 121-134 has a somewhat unique variation of the general plan. They are all located on steep slopes and have terraced interiors. Usually there is a wide terrace at the upper or eastern third of the interior, and most of the roofed structure is concentrated there. Typically on this upper terrace there are double corridors. The west edge of the terrace, where the terrace-facing is located, lacks a corridor. The lower 2/3 of the enclosure, therefore, is mostly open space, although usually it had single corridors on the north and south sides.

2-Type B - this type of the Large Rectangular Building has one of the most extraordinary plans I have seen in prehistoric buildings. In this type there are two variants based on size. One has 3 parallel corridors on each side and measures 35 x 36 meters square; the other has two on each side and measures 27 x 30 meters. Both are extremely regular in plan. In both types, each corridor is divided by a transverse wall into two rooms. The most peculiar thing about the plan, however, is the use of diagonal walls to delimit and separate the corridors (at the corners of the building). This produces a very odd room plan in which each room has two interior right angle corners and two oblique ones, forming a right trapezoid. As in the case of Variant A, there are no lateral doorways; all doorways either front on the plaza or provide communication between the back and middle rooms or middle and front rooms. The complex has 8 apartments, of either two or three rooms each, depending on which of the size variants is involved, or 16-24 rooms in all.

Each apartment has its own door facing the central court. In several cases the court is divided into two sections, of which the east consists of a terrace and the west a sunken patio.

Thirteen examples of Type B Large Rectangular Buildings are known on the site. A major difference between Types A and B is that of the ratio between roofed and unroofed space. In a building 36 meters square, with triple corridors only 240 m<sup>2</sup> of the 1,296 m<sup>2</sup> is open court. In the smaller variant the total interior space is 810 m<sup>2</sup> and the open court makes up 270 m<sup>2</sup>. The proportions approximate more closely those found in true residences in parts of the world where houses have central courtyards. Corridor widths in the Type B resemble those of Type A.

Small Rectangular Buildings - Another common building type at Pikillakta is the Small Rectangular Building. In contrast to the Large Rectangular Building there is considerable variation in size, proportion, number of corridors and joining of corners. In part this variety may be the product of methodological problems in defining plans, since they are concentrated in the poorest preserved portions of the site. Basically their plans are similar to those of the Large Rectangular Building. They have interior spaces ranging between 325-730 m<sup>2</sup> with the mode at 450-660 m<sup>2</sup>. They are considerably smaller, therefore, than the Large Rectangular Building. In comparison with the latter there is a greater tendency toward diagonal corner walls. Although the regularity of alignment and position is much less than in the Large Rectangular Building, some regularities can nonetheless be pointed out.

1 - They are concentrated in the northwest quadrant of Area 2A, in some cases occurring in groups of identical buildings.

2 - Buildings 3-10 are quite uniform and are arranged in a single row. All have no more than one corridor to a side and all measure 17.5 m. N-S by 33 m. E-W. Two of them together measure (in their north-south dimensions) the same as one of the Large Rectangular Buildings to the east of the row, and every other east-west wall of the Small Rectangular Building therefore lines up exactly with the east-west wall of a Large Rectangular Building. Also each east-west wall of Buildings 3-10 is lined up with the transverse walls of the entrance corridor.

3 - Buildings 71-75 occur in a row north of the Entry Complex and correspond in position to 3-10 south of it. They are approximately the same size in the east-west dimension but vary between 20.1-20.7 m. in the north-south measurement. They also differ from the Building 3-10 group in having double corridors on the east side.

4 - North of 5th Street are two tiers of Small Rectangular Buildings. The north-south dimensions of these buildings vary very little - 23.5-26.9 meters. The east-west dimensions however vary from 12.7 to 28 meters. Within the group there is considerable variation in plan. Buildings 50-57, 61, 63 are, at least from surface observation, mostly open court. Buildings 66-70 all have single corridors on each side; 65 has a double corridor on the east side, one on each of the others; 58, 62, 64 all have double corridors and diagonal corner walls on each side. (they look like small variants of Type B Large Rectangular Buildings).

5 - East of Building 98 is a group of four buildings, 92-95 which also look like small examples of Type B Large Rectangular Buildings.

Nuclear Pikillakta - Even a casual glance at the map or the aerophoto of Pikillakta suggests that the central portion of Area 2 A was the nerve center and architectural focus of the site. At first glance it also seems different from and in sharp contrast to the rest of the architecture. Careful examination, however, demonstrates that the basic elements of plan are similar to those found everywhere else on the site; it is the unique combination and configuration that is distinctive here. The same combination of courts, narrow corridors and rectangular buildings can be seen here but with greater variation in the size and orientation of courts, number of corridors and building units than elsewhere. Three of the courts are so much larger than those in even the largest Rectangular Building, that I am calling them plazas, and along with their associated peripheral structures, I am applying to them the term Plaza Complexes. These plazas seem to have served as foci of architectural orientation for Nuclear Pikillakta.

Plaza A is the largest and is located exactly in the center of Area 2 A. It measures approximately 70 x 60 m. The only definite entrance is by way of 4th Street. It is possible that there was a west entrance from the Entry Court through the court of Building 83. On the south side of Plaza A there are three east-west rows of structures. The tier bordering the plaza consists mainly of open courts with little surface indication of roofed structures. They probably had direct access to the plaza. South of this tier are two tiers of six self-contained buildings (88-91, 23, 24). Basically all of them are classifiable as Large Rectangular Buildings excepting 89, 90; they differ however from typical Large Rectangular Buildings in corridor arrangements, overall size and shape. In the case of 88 there is a large end courtyard. None except possibly 91 have exterior entrances or exits.

West of the plaza and between it and the Entry Complex are two tiers of structures. The innermost tiers, Units A-E, are generally like Small Rectangular Buildings but are atypical in the possession of five parallel corridors on their east sides. The entire area here is so badly pitted that the pattern of communication between the units, the corridors in each unit and between unit and Plaza A could not be determined.

West of this tier is a row of buildings (76-87). When I first began my survey of Pikillakta this tier of buildings seemed to stand out as a unique complex with some highly specialized function. Detailed mapping, however, demonstrates that all units are simply Rectangular Buildings of varying size and orientation. My first impression was based on their apparent elevation above all of the surrounding structures. It looked as though the buildings were located on a terraced artificial platform with Buildings 83-84 on the upper terrace. I suppose I had in mind something like the terraced temple platforms of Mesoamerica or the North Andean Coast. More probably the buildings are located in one of the natural rises so characteristic of the relief of the area. Preservation of walls is very poor in this area. Building 83 is unique in that it apparently has direct communication with the Entry Complex. As noted previously, it may have also had direct communication with Plaza A but the east side is almost destroyed.

To the east and north east of Plaza A is a very complex arrangement of courts, corridors and small rooms of which the excavated Unit I is one. Besides Unit I, Unit M also has large niches. Such niches seem to be rare but they may have been common in the Nuclear Area of the site, since it is so poorly preserved.

To the northwest of Plaza A is a cluster of units consisting of a plaza (Plaza B), three courts and two Small Rectangular Buildings.

The plan of the Plaza C Complex is probably correct but again the preservation is poor and excavation is needed for verification. I have described this complex previously in the discussion of the excavation of Unit A.

Building 98 has a plan very similar to the Plaza C Complex and perhaps it should be classified as a Plaza Complex. It has been thoroughly pitted by treasure seekers and several rooms were exposed in the north side. One of the caches of turquoise figurines is reported by local informants to have come from this building.

Small Conjoined Room Complexes - At the north end of the site, located primarily in Area 2 B, is a large rectangular area measuring 285 x 205 meters. It is occupied primarily by rows of Small Conjoined Rooms, an architectural form that contrasts sharply with the rest of the site. In all there are 501 preserved rooms and I believe there were originally 504. The rooms are small, rectangular but with rounded corners. Each room in a row shares a wall with the next and each room has one doorway, midway along one of the long sides. There is some variation in size but the mode seems to be 5.6 - 5.8 meters E-W by 4.6 - 4.7 N-S (interior measurements). As stated, rooms occur in rows; each row faces a narrow street into which its doorway exits. The doorways range between 60-90 cm. wide. The walls are slightly thicker than average in the Rectangular Buildings with a mode of 80-90 cm. Unlike the Rectangular Building Corridors, the roofs were steeply gabled - Inca style - and probably were thatched. In one case the west end wall is preserved almost to the apex and it is 5.0 meters above the present surface of the interior. From the gable apex to the original floor level may well have been 6-7 meters.

In several rooms treasure seekers have excavated deep pits. The subflooring was apparently of loose rock, probably capped by a layer of earth. The streets are approximately the width of the corridors in Rectangular Buildings and vary to about the same extent.

The small rooms occur in five well-defined clusters or complexes. Each complex is in the form of a rectangle with a peripheral wall and thoroughfare, and has a single entrance.

Complex A appears as a rectangle 100 x 105 m. The only definite entrance is a narrow doorway from 6th Street. This communicates with a peripheral avenue-street that circumscribes the complex. Leading off of it are 10 streets, each providing access to a single string of rooms. Complex A consists of 149 rooms arranged in eleven rows, 4 rows of 11, 7 of 15 rooms. In seven cases the entrance to the streets from the peripheral artery has a stone gateway similar to those on Avenue E, probably provided with a wooden gate. In all probability all streets have such

specialized entrances. The irregularity in the number of rooms per row is produced by the presence of a Small Rectangular Building (119) in the southwest corner of the complex.

Complex B consists of 153 rooms arranged in 9 rows of 17 rooms each. They lie within a rectangle that measures 120 x 95 m. It also has a peripheral avenue-street, bordered by a high wall, that provided access to the 8 internal streets. Access to the peripheral artery was limited to a single narrow doorway on 8th Street.

Complex C contains 122 rooms, distributed within a rectangle, that measures 95 x 110 m. Portions of this rectangle are occupied by two large rectangular buildings (117-118), the balance by the small rooms. The presence of Buildings 117-118 produces some irregularity of plan. For example, there are 4 rows of thirteen rooms each, separated by a row of 18 rooms, from 4 more rows of 13 rooms. Altogether the complex includes 9 rows of rooms and 8 internal streets. As in the case of the other two complexes it is surrounded by a peripheral artery and high wall and has only one small entrance, from 8th Street.

East of Avenue E are two much smaller groups. Complex E consists of 48 rooms arranged along five streets in six rows of 8 rooms each. It too has a peripheral thoroughfare, wall and an entrance from 8th Street. The rectangle within which the complex is situated measures 55 x 65 m.

Complex D is the most complex internally of the five groups and has the fewest number of rooms. It measures 105 x 45 m. and includes two spacious courts, a complex of rectangular rooms, a more complex entrance with stairways and an entrance corridor (from Avenue E). There are only 38 of the small rooms, 29 north of the rectangular room complex, 9 south (possibly 12 - there is a deeply pitted area that may have been occupied by a row of 3 rooms). Group D with its more complex plan may have functioned as an administrative center for the entire Small Room Complex Area.

The Small Room Complexes diverge sharply from the rest of the site in their architectural characteristics: the use of gabled roofs, arrangement of small rooms with round corners in linear strips facing streets and, abundance of doorways are all distinctive traits. Also distinctive is the grouping of the rooms into discrete complexes, in each case with single entrances, and carefully controlled flow of traffic. Within each complex the movement of traffic was relatively easy.

The location of the Rectangular Buildings 119, 117, 118 suggest a functional relationship to Complexes A, C and B respectively, although no doorways leading from these buildings to the complexes were observed. Another peculiarity of the plan of the complexes is that the doorways of the small rooms almost never face the peripheral artery. The only exception is in Complex E. In Complex A all doorways face north except those of Rooms 135-149. In this row they face south to avoid a direct entrance into the north peripheral street of the complex.

In Complex B all doorways face south except Rooms 1-17 which face north to avoid a direct entrance on to the south peripheral street of the complex. The arrangement in Complex C is similar to that of B, i.e. - all face south, except Buildings 1-13 which face north. In Complex E all doorways face south. In Complex D all but one row, Buildings 10-14, face south. In only one row therefore, in each of Complexes A, B, C, and E, do the doorways of two rows of rooms face each other.

### Summary

The basic characteristics of Pikillakta architecture, in summary, seem to be as follows: use of split stone, earth, gravel and gypsum; near absence of cut and fitted stone; combination of narrow corridor-like rooms, with courtyards, into building complexes, without exterior doorways; great empty walled spaces; striking regularity of plan with a monotonous repetition of basic elements, broken only by minor variations. The degree of minor variation is considerable and involves the width of the corridors, size of the building complex, internal terracing of courtyards. The overall impression of the site is one of precision and regularity in planning but closer examination reveals very slipshod execution of planning and numerous minor errors. In a single building the corridor widths are rarely uniform and widths may vary even within a single corridor; and the inside corners are rarely well squared off. The construction itself is poor, corners are never bonded. One's impression is that of a single great building project planned and directed by professional architects and executed by great masses of unskilled labor. The most impressive characteristics of Pikillakta architecture are its monumental size, regularity of plan and height of the walls.

Pikillakta contrasts sharply with Inca civic centers in its lack of use of cut and especially fitted stone, its relatively unimpressive natural setting, compact and geometric plan (in Inca sites components may be compact and geometrically planned but the site as a whole is usually quite dispersed), extensive use of earth stuccos and gypsum stuccos and plasters, flat roofs, vertical walls, and rectangular rather than trapezoidal doorways and niches.

### IV Interpretations

Before discussing the probable functions of the site of Pikillakta it will be necessary to establish its chronological position; to a certain degree the conclusions as to function will depend on its dating. Most writers have considered it as pertaining to the Inca period (Harth-Terre 1959, Pardo 1957, Valcarcel 1933). Others, struck by the resemblance of the architecture to that of Wari, located in the Central Highlands of Peru near Ayacucho, have considered it as a site of the Expansionist Tiahuanaco period (Rowe, Chavez Ballon and Lumbreras Personal Communication). In part the Inca dating was based on local folk traditions, in part on the supposed stylistic affinities of the turquoise figurines. Primarily, however, it seems to have been based on historical inference (i.e. the plan suggested a state constructed center and the



Inca were known to build on such a large scale), and the simple fact that Inca ruins are abundant in the vicinity. The South Peripheral Avenue does seem to run toward the site of Rumicolca, a combination defense wall and monumental gateway that crosses the valley. The gateway has typical Late Inca cut and fitted stone construction. Along the shore of Huacarpay Lagune and on a small hill near Huacarpay are impressive Inca habitation and granary sites and extensive terracing. Only a few hundred meters south of the entrance of the Pikillakta site, located in the same ridge and between the site and Rumicolca, is a small Inca village site called "Ollerayoc." In all of these sites the building plan and style are typically Inca, and Inca pottery is abundant. Wall construction is identical to that at Pikillakta. The floor plans are different however, typically Inca, and have such standard features of Inca construction as trapezoidal niches and doorways and battered walls. Actually the split stone-earth and earth-stucco wall construction at Pikillakta can be duplicated at rural Inca construction outside of administrative centers like Ollantaytambo, Pisac, Macchu Picchu and of course Cuzco, where the cut and fitted stone construction is common. In fact this is a strong argument against an Inca date for Pikillakta. An Inca site of this size and apparent importance would certainly have at least some cut stone construction.

A much closer resemblance can be demonstrated between the architecture of Pikillakta and that of Wari. Aside from the wall construction which is identical, the list of correspondences is a long one: large empty walled enclosures, peripheral streets, rectangular buildings with central courts and narrow corridors, the practice of defining areas of the site with high walls and streets, multistoried buildings with projecting stone slabs for second story floor supports, rectangular doorways and niches, use of gypsum plasters, and probably flat masonry roofs. A nonarchitectural feature found at both sites is turquoise figurines.

There are differences as well. Subterranean chambers of cut stone masonry occur at Wari and are probably absent at Pikillakta. Pikillakta has a much more formal and rigid plan. Since Wari is in very poor condition, it is difficult to generalize about its overall plan, and the relative positioning of structure units. My impression of Wari is that of a basically unregulated growth and plan upon which some attempts at planning were imposed at a later date. For example, there are large rectangular walled precincts that enclose large areas of the city. Within these precincts one does not have the impression of orderly planning. The Rectangular Buildings observable on the surface are all very small in size compared to those at Pikillakta. Most of them are probably the size of Buildings 103 or 92 at Pikillakta.

The Conjoined Small Room Complexes are absent at Wari, as near as one can tell from surface survey. One Large Rectangular Building at Wari is unique and does not occur at Pikillakta. It consists of a large walled enclosure with hundreds of small rectangular niches on the walls. Lumbreras (Personal Communication) believes they were for tenoning stone heads and that the structure was a temple. Stone statues like those found at Wari have not been reported from Pikillakta.

In summary, there seem to be definite and close stylistic resemblances in architecture and turquoise carvings between Pikillakta and Wari. Differences seem to reflect differences in growth patterns and functions.

The excavations yielded very little occupational refuse and this confirms the picture from surface survey. Approximately 25-30 sherds were found in the lower level of the debris and on the floors. Approximately 8-10 of them are distinctive and clearly pertain to the Expansionist Tiahuanaco horizon. They seem to have closest ties to the Vinaque Phase at Wari and Atarco Phase in the Nazca Valley (see Menzel 1964). One sherd particularly has a painting that represents a canine in typical Tiahuanaco style and color scheme (in this case, reddish brown and cream outlined in dark brown). The front teeth are depicted in the same distinctive way that they are represented in paintings of felines and serpents in the Atarco Phase - i.e. a rectangle divided by a diagonal line (see Menzel Plate IV fig. 11 a, Plate III fig. 8). The sherd sample, small as it is, confirms, therefore, an Expansionist Tiahuanaco date and suggests the B horizon.

The primary objective of the Pikillakta survey and excavation was an attempt to define the function of the site as a whole and of its various subdivisions. All anthropologists, with whom I have discussed the site and who have written about it, considered it as the product of a highly organized state and felt that it was a single planned construction project. I have presented arguments against its being a normal residential community such as a town or city. The street pattern is as difficult to comprehend as that of a town; but even more damaging to such an interpretation is the large size of the buildings, their uniformity, and the rigidity of plan. Such features do not correlate with the social heterogeneity so diagnostic of urban communities. The Large Rectangular Buildings might conceivably be the residences of kin groups such as lineages, with families residing in the apartments; but their uniform size, and the uniform size of interior rooms and apartments argue against it, since all social groupings based on kinship are highly variable in size and composition. Furthermore, one would also expect greater variety in size and quality if housing is related to differences in status. In comparison, the reader is referred to my Teotihuacan Valley Report (1965) where Aztec and Teotihuacan urban sites are defined and described. If it is a residential site, it reflects an extraordinarily disciplined and rigidly organized social system.

Others, having in mind a somewhat exaggerated picture of the socialistic aspects of the Inca State, have considered it Inca in date and functioning as a hospital, penitentiary, or asylum for the insane or incurably diseased. Although personally I have a great respect for the level of political integration and administrative capacity of the Inca, I feel that these suggestions are rather extreme. If all the lawbreakers, mentally ill, or incurably diseased in the empire was assembled in one place, I suppose one would need a site the size of Pikillakta, but I do not believe the Inca had evolved this level of penetration into local life. Their interpretations are apparently based on the emphasis on high walled enclosure-like buildings without external doors.

The site has also been considered a fort for the same reason; but also, in consideration of the existence of the outer wall. Although, as I shall point out, the site does have fortress-like characteristics; the type of construction is not really functional as a fortress. Even individual peasants in the area today have chopped out big gaping holes in the walls with pickaxes to facilitate movement across the site.

Harth-Terre, although he errs in assigning the site an Inca date, has presented the most acceptable and carefully presented interpretation of the site. He considers it a huge provincial storehouse, a kind of collection depot for local agricultural taxes. He noted the presence of the rooms within the Rectangular Buildings and of course the Central Courtyards. He suggests that the courts were used to dry out root crops, such as potatoes, and that the corridors were used for storage. Even though the site is not Inca, this function could have been the case in the earlier period.

Aside from the chronological data presented previously, there are strong reasons against considering the site an Inca granary. All along the Cuzco Valley, spaced at fairly regular intervals, there are a series of granary sites for tax collection and they don't resemble in any way, except wall construction, the buildings at Pikillakta. There are also granary complexes attached to Inca provincial sites like Pisac and Ollantaytambo, and they are similar to those in the Cuzco Valley. They are always built on hillsides and consist of sets of rectangular buildings with high gabled roofs constructed in a series, built on terraces, and sharing walls. Considering the size of the Inca empire, if Pikillakta were an Inca granary why are there not other similar sites scattered through the Inca domain?

The strongest argument against the primary function of Pikillakta as a storage depot however, whatever its date, is the plan. As has been noted, the Rectangular Buildings are multistoried, have no exterior doorways, and very few streets communicating with them. If they were storehouses, heavy loads would have to be moved up ladders on human backs and then lowered again into the patios. For use of the produce, the procedure would have to be reversed all over again. Even if ropes were used to raise and lower the tribute, the entire procedure seems extraordinarily and unnecessarily involved and difficult. It is especially difficult to conceive of such a storage procedure, considering the fact that llamas were available to move tribute directly into storage rooms. Furthermore, the courtyards seem unnecessarily large and how does one explain the Type B Large Rectangular Buildings?

My interpretation of the site is that it was built by a highly organized militaristic state, centered at Wari, as a frontier garrison to be used in emergencies to defend the southern frontier of the empire. I will now review the architectural characteristics of the site and discuss their relationship to this conclusion.

The conclusion is based first of all on the overall plan. The orderly plan and impression of discipline suggest a military establishment. The carefully controlled flow of traffic also is indicative of a military site. More specifically, following this interpretation, a function could be defined for each of the major areas and types of structures on the site.

1 - Rectangular Buildings Type A - In spite of their uniform plans, this type of structure does appear to have been a residence. I am considering the Type A Large Rectangular Buildings as barracks. They are admirably adapted to such a function. If the corridor like rooms were used as sleeping quarters only, then the average building with five corridors could have housed a minimum of 200 men, assuming two storied structures, or 300 assuming three. In an emergency, of course, this number could be substantially increased. In other words, a single Large Rectangular Building - Type A could have housed an entire company of soldiers. The size of the building then, could relate to some level of tactical organization. The large open court could have served as an exercise ground. The lack of external doorways would tend not only to restrict movement but to define military units. This raises a key problem in interpretation of Pikillakta - the means of ingress and egress into the Rectangular Buildings. If my reconstruction of the roof construction is correct, the answer is simple. With the geometric arrangement of buildings, and sharing of walls by adjacent structures, the roofs of each of north-south and east-west corridors served as a perfectly serviceable street. The roof, therefore, provided a regular grid of streets for movement from one unit to another. The arrangement also makes sense as a technique of military engineering, in case of attack to prevent ready access by invaders and to provide a mode of rapid deployment of troops. A system of movable ladders was probably used to permit entry into the courtyards. In an emergency, the removal of such ladders would convert each unit into an individual fortress. Each corridor room or set of rooms might have also related to a tactical subdivision of the company. The 122 Type A Large Rectangular Buildings could provide lodging for at least 25,000 men.

2 - Large Rectangular Buildings Type B - being much fewer in number and having much less courtyard space, they possibly served as quarters for some specialized personnel, perhaps the lower echelon of officialdom of an elite corps. In Aztec, Mexico, for example, the noble class fought as a separate unit.

3 - Small Rectangular Buildings - these are similar in plan to the Large Rectangular Buildings and probably served as barracks for soldiers organized in smaller units. Possibly, they were soldiers with specialized functions.

4 - Small Conjoined Room Complexes - This section of the site, I believe, was designed as the commissary and the small rooms used as granaries. They are similar to the Inca granaries at San Pedro Caghi, attached to the temple of Viracocha. They differ in the Inca site because they are completely circular and do not share walls, but their size and arrangement along streets are similar. Llama trains could be led into the complex, down the streets, and unloaded either within the room or in the street at a convenient distance. The cubic capacity of the 50 rooms

would be enormous and would suffice to feed a large force for several months. It is possible that the intention was to keep them well stocked even if the site was to be occupied only in emergencies. The grouping into complexes may have had a connection either with major divisions of the personnel, or possibly to the type of produce stored. The Rectangular Buildings associated with them may have served as barracks for guards.

5 - Nuclear Complex - I have characterized this section of the site as the nerve center. If Pikillakta was a garrison this would be its administrative center. In all probability some religious structures were included as well. The absence of stone sculpture, and of temples like the one suggested for Wari, however, indicate that it was not primarily a religious precinct.

Unit I, Plaza A, one of the two excavated structures, probably had religious functions, but no definite evidence was found. Frequent occurrence of what are probably llama bones, however, might possibly have been the remains of offerings. They were not found concentrated or arranged in any particular place or manner however and they may have been the debris of meals of the constructions gangs.

6 - The Great Plaza with its reviewing stand-like terrace could have functioned very easily as an assembly, exercise and parade ground for several thousand soldiers. Some of the Great Enclosures may also have been used in this way but more probably were corrals for llamas and alpacas, as Harth Terre suggests.

If we conceive of the site as a garrison then most of its peculiarities can be explained. The streets and avenues served first as a means of rapid movement from one area of the site to another. They also interrupt and restrict the movement along the roof top thoroughfares and peripheral streets could have served as patrol strips and to restrict and control movement. Roofs of the higher buildings were excellent tactical positions for defense and patrol, and even the high walls of the Great Enclosure and Plaza could be used for patrol. Under attack each Rectangular Building becomes an individual fortress. Even the North Approach Avenue, that seems to lead nowhere, can be explained. It ends on the edge of a cliff with a spectacular view of the entire Cuzco Valley. Enemy troop movement up the new valley could be easily detected from this vantage point. Furthermore, I suspect that the South Approach Avenue did in fact lead to Rumicolca and that the wall was built in Expansionist Tiahuanaco times. I believe the Inca simply added a new gateway and built it. If the garrison was built to contain invasions this wall across the old valley - today the main route to Cuzco - would make sense. Furthermore the geological uplift that diverted the Huatanay to its new channel did not block entirely the old valley and left not one but two passes, one on either side of the uplifted area. The Rumicolca wall guards only one pass. I surveyed the other side of the uplifted area between it and the mountain wall of the old valley and found another wall, without a gateway, that is probably a companion construction in age and purpose.

If the interpretation of the date and function of Pikillakta presented above is correct, then the significance of the site in terms of the evolution of Andean political systems generally and the beginnings of the Inca state in particular is considerable. I am not going to go into detail on these problems here but will simply make some suggestions. Very briefly the situation may be summarized as follows:

1 - The apparent meteoric rise of the Inca state with its sophisticated administrative techniques poses a serious problem to an understanding of cultural historic process. Some earlier attempts to establish such political systems must have occurred and served as a base for the Inca development.

2 - Starting with Uhle and more explicitly defined by Kroeber, a Tiahuanaco horizon style has long been recognized in Andean Archaeology. It is a highly specialized art style represented in stone sculpture, textiles and ceramics and has been traditionally ascribed to a source at the site of Tiahuanaco in Bolivia. Before more recent work has complicated the picture, it was thought that the style diffused from Tiahuanaco into the Peruvian Highlands and coastal desert. The new style was especially vigorous in the Central Coast at Pachacamac and South Coast in the Nazca Valley where it partially replaced and was partially integrated into a rich local regional style.

3 - Recent writers have disagreed on two points; whether the expansion of the style into the Peruvian Coast was directly from Tiahuanaco or from some yet unknown, but geographically closer, secondary center. They do not question its initial spread from Tiahuanaco. One school of thought sees it as a style, linked with a religious cult, that was introduced from Tiahuanaco by missionaries, to a center in the central highlands of Peru. There it was reinterpreted and reintegrated into a local cultural tradition and diffused to the coastal areas. The second area of disagreement is whether this geographical expansion of the style was the product of primarily religious activities or military conquests. More recent writers seem to accent the latter and talk about an empire centered at the site of Wari, previously mentioned.

I believe that the data from Pikillakta strongly supports this last position. The site of Wari was probably the capital of a pre-Inca Pan-Andean Empire. Occupational debris is very heavy at Wari and covers a long span of time; starting with a rather simple marginal regional culture, transformed first by influence from the Nazca Valley, later from Tiahuanaco, into a vigorous regional civilization that evolved a distinctive regional style, based on a combination of Nazca and Tiahuanaco elements. The generally formless plan and growth of the site, with a gross and superimposed regularity of plan, suggest a center evolving gradually from a small rural community. Pikillakta on the other hand is obviously the product of a highly organized and mature political system. It is a striking testimony to the administrative power and military character of the Wari state. Much of the administrative knowledge of the Inca was probably based on the techniques developed in this earlier state.

This interpretation is also strongly supported by data from the site of Viracocha Pampa, near Huamachuco in the northern highlands (McCown 1945). Viracocha Pampa looks like a smaller version of Pikillakta in plan and building types (in fact, if we include only areas 1 and 2 at Pikillakta, the sites are nearly identical in size and very similar in plan).

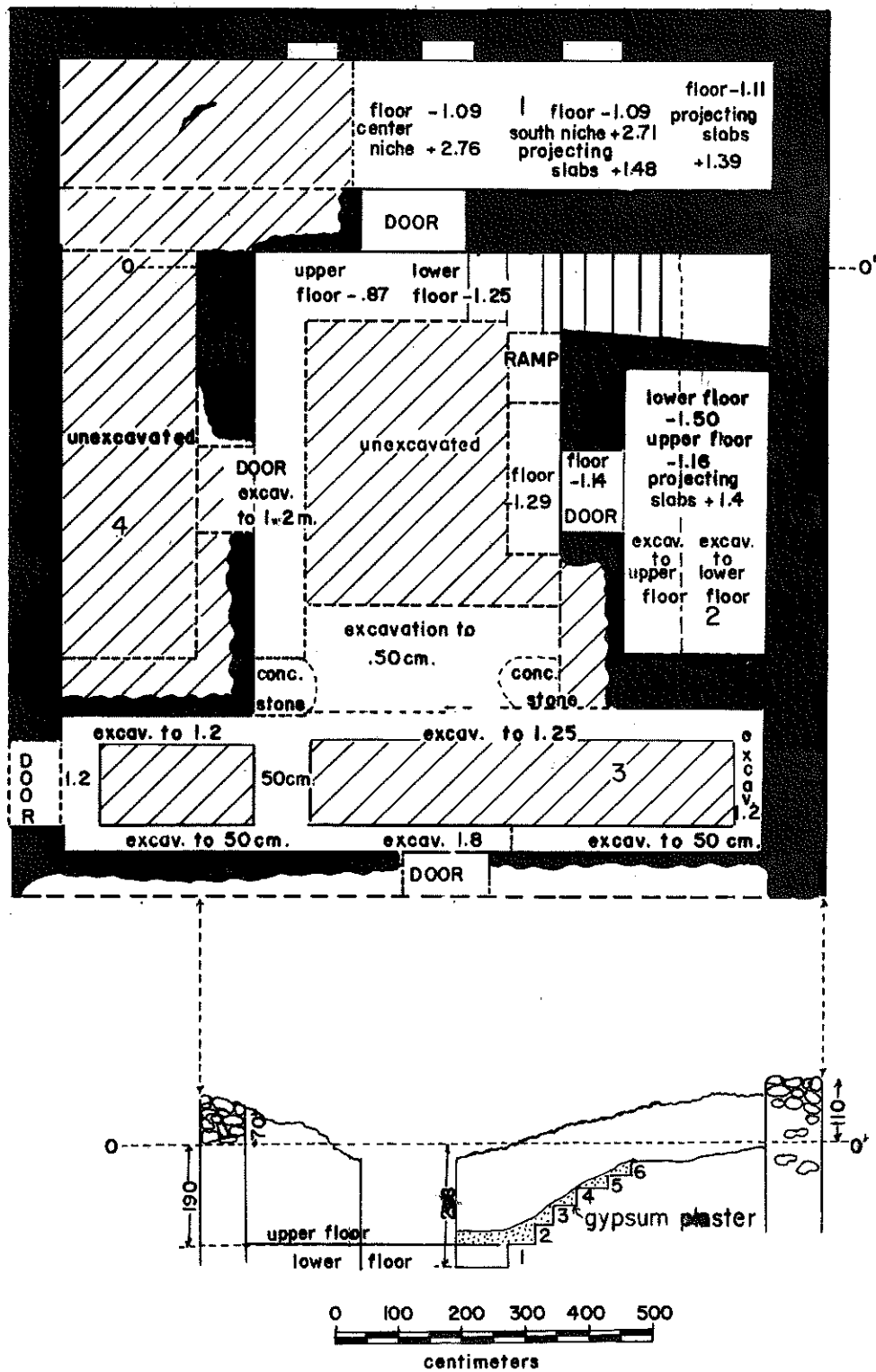
Shared construction elements include: the slab and mud wall; double wall battering; multistoried buildings with upper floors of wood, supported on beams placed on ledges or inserted in niches; flat roofs; corridor type rooms; and compound type combination unit with a virtual absence of doorways.

With respect to plan, the site is enclosed by a wall, measuring 600 ms to a side. An avenue splits the site into two unique rectangular areas, performing the same function as Avenue A at Pikillakta. One portion is almost completely occupied by a large empty area, comparable to the Great Plaza of Pikillakta. The larger division has a great number of compounds, very comparable in plan and size to those at Pikillakta. Also present are several narrow alleys separating groups of compounds, and the entrance area focuses on a central plaza as in Area 2 at Pikillakta. A major difference between Area 2 at Pikillakta and Viracocha Pampa is the absence of rows of small conjoined rooms in the latter site.

Pottery was apparently common at Viracocha Pampa, primarily consisting of coarse paste utility wares which McCown was unable to date. Viracocha Pampa might have functioned as a garrison for the northern frontier of the Wari empire, thus complimenting Pikillakta's relationship to Wari's southern frontier. The near absence of pottery and other occupational debris at Pikillakta is puzzling. The surface of the courts of Rectangular Buildings at Wari are literally covered with sherds. One of two possibilities may be suggested. Either the site was still under construction when the Wari Empire collapsed (some of the irregularities in corridor numbers in the Rectangular Buildings do suggest they were unfinished) or it was finished and intended for, but never used, as an emergency garrison. In the latter case, it may have had a small population of guards. Whatever the function of Pikillakta was, the lack of occupational debris demands explanation.

Figure 2. Excavation Ground Plan &amp; Profile

## PLAZA A COMPLEX - Unit I



NOTE: PLUS AND MINUS NUMBERS BASED ON LEVEL LINE. ALL OTHER NUMBERS REFER TO DEPTHS BELOW THE SURFACE. LARGE NUMBERS 1-4 REFER TO ROOM NUMBERS.



Figure 3. Excavation Ground Plan and Profile.

## PLAZA "C" COMPLEX - Unit A

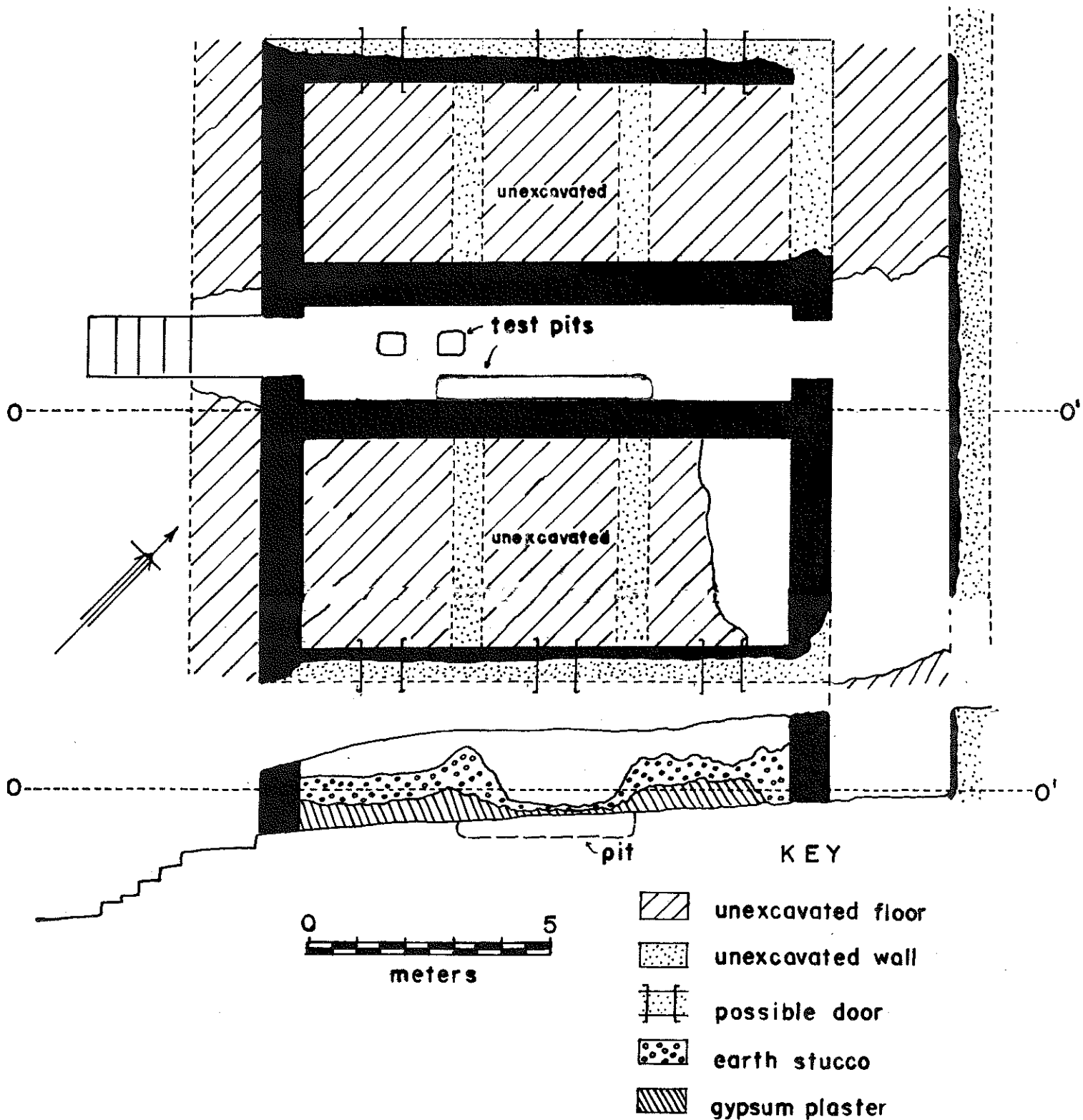
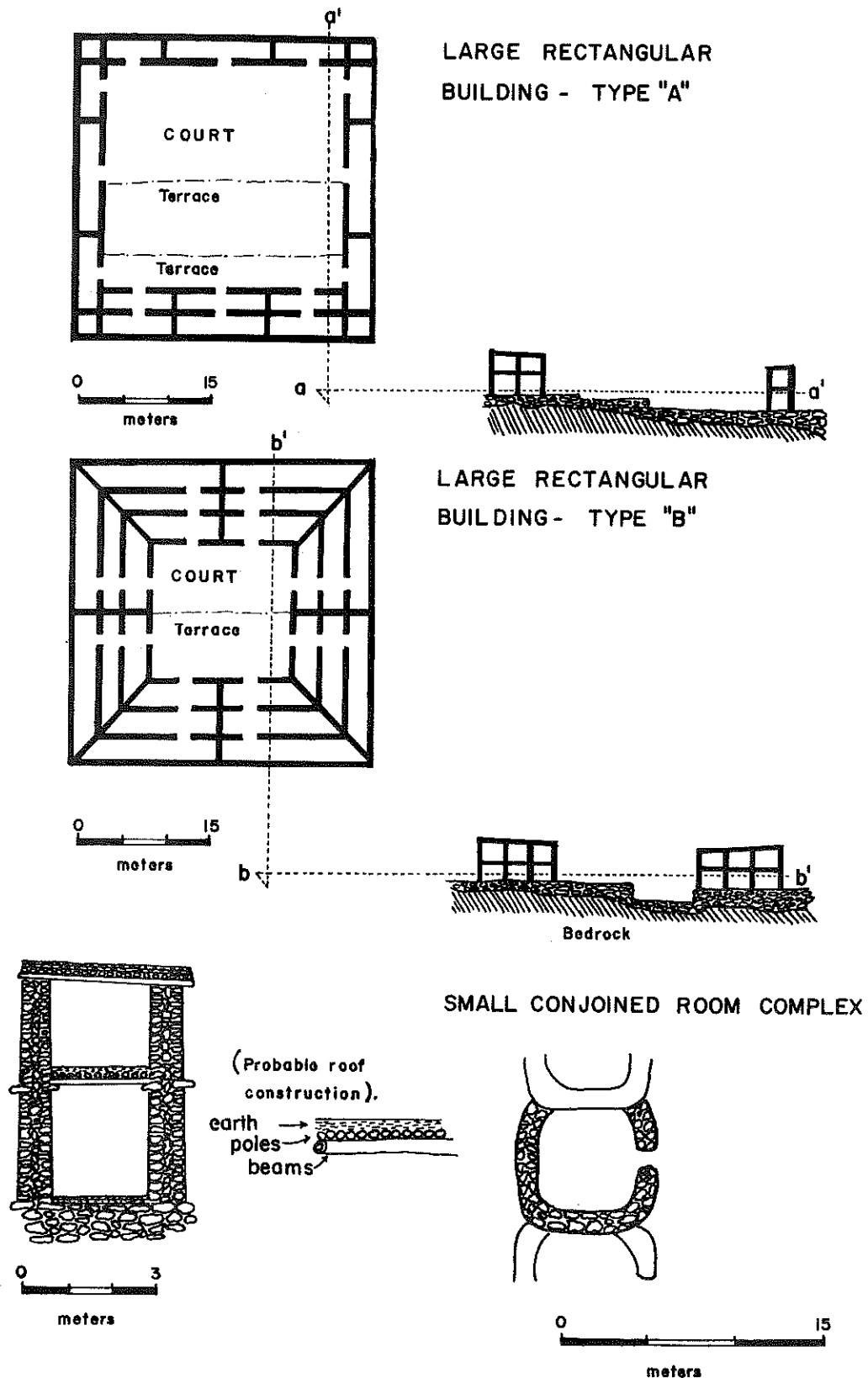
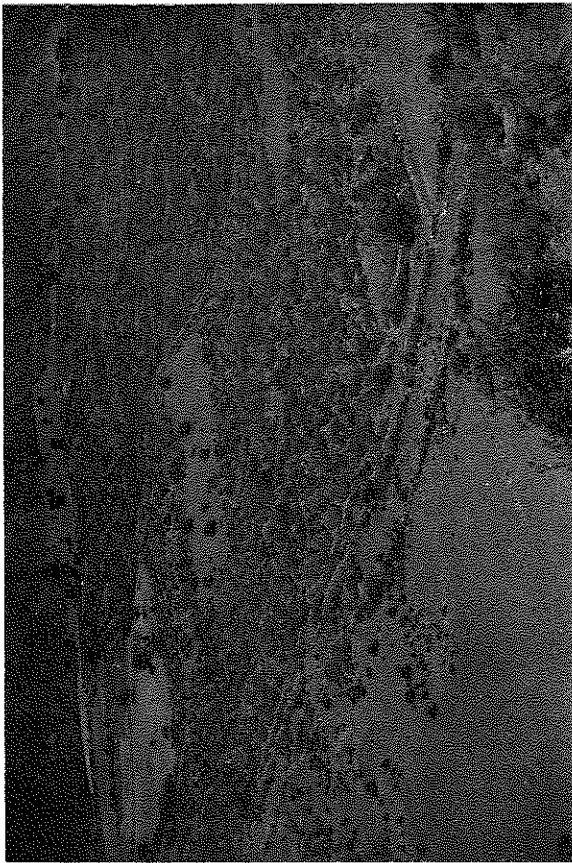


Figure 4. Ground Plans and Profiles of Buildings.



## Plate 1

b.



a.



c.



## Plate 2

b.



d.



a.



c.



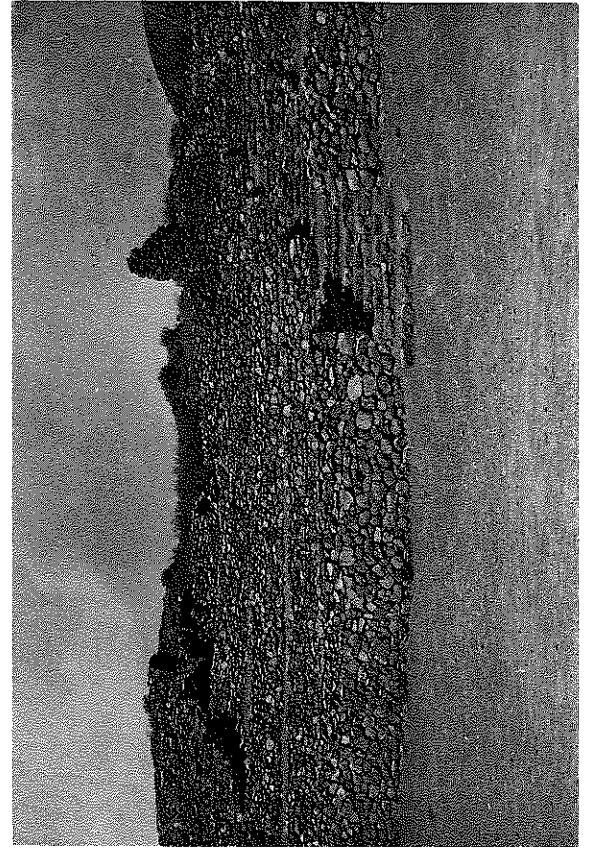


## Plate 3

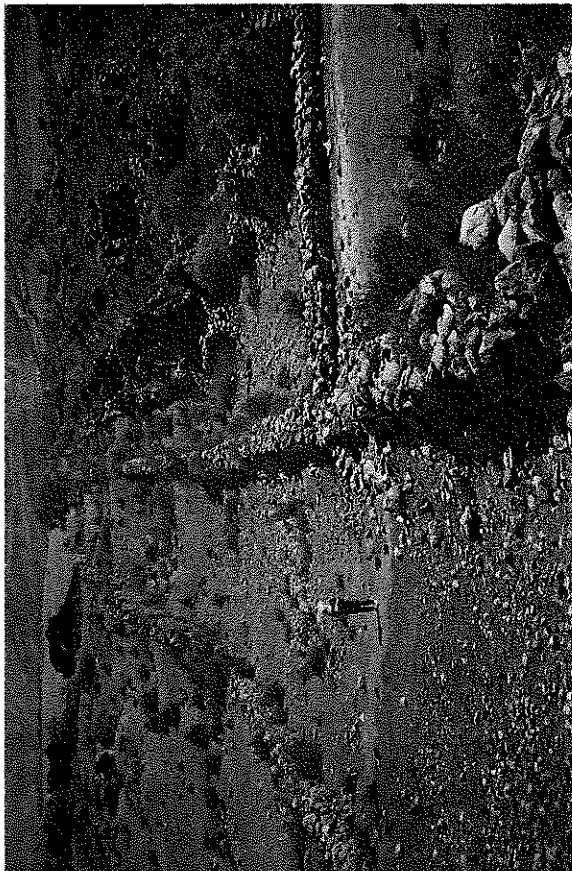
b.



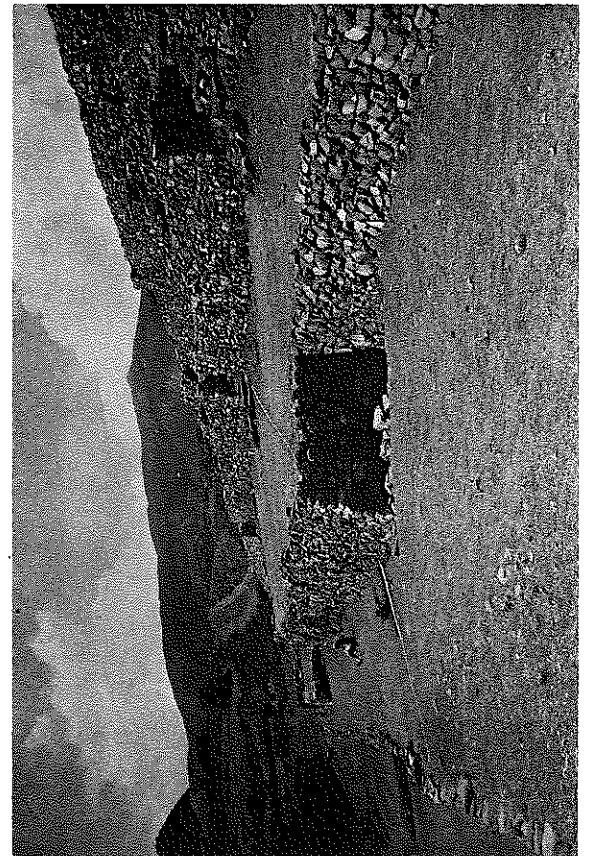
d.



a.

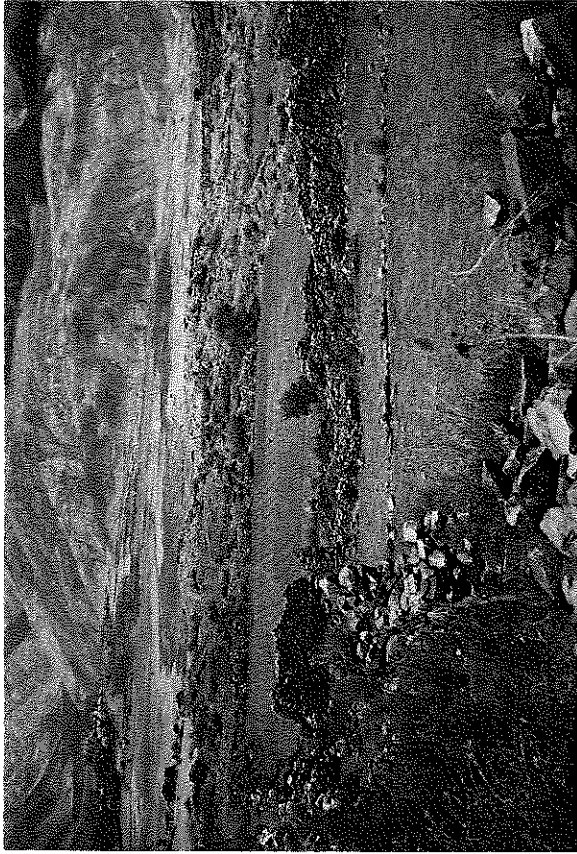


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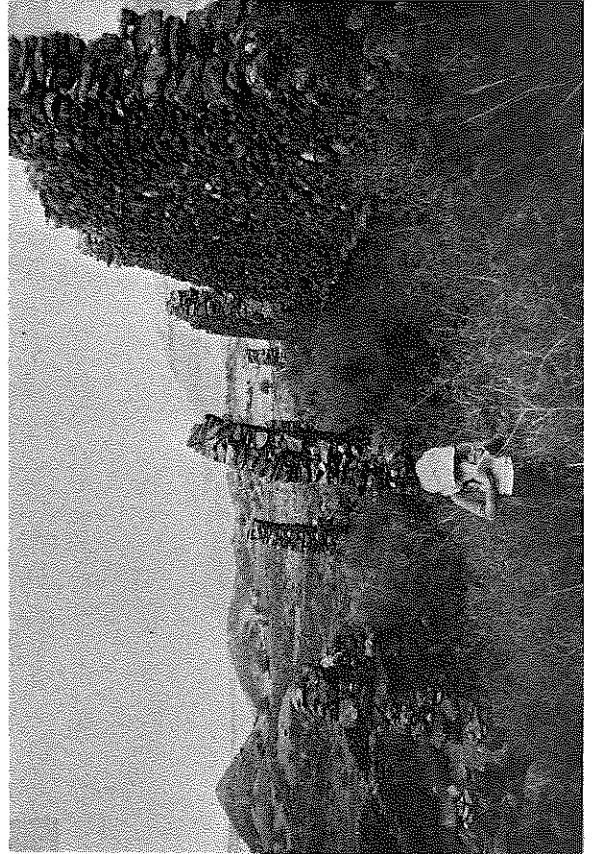


## Plate 4

b.



d.



a.



c.





Plate 5

b.



d.



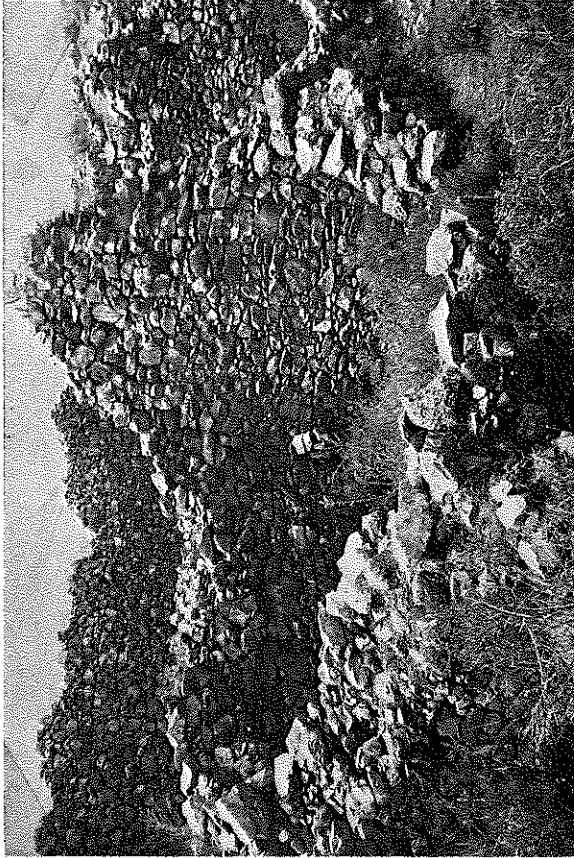
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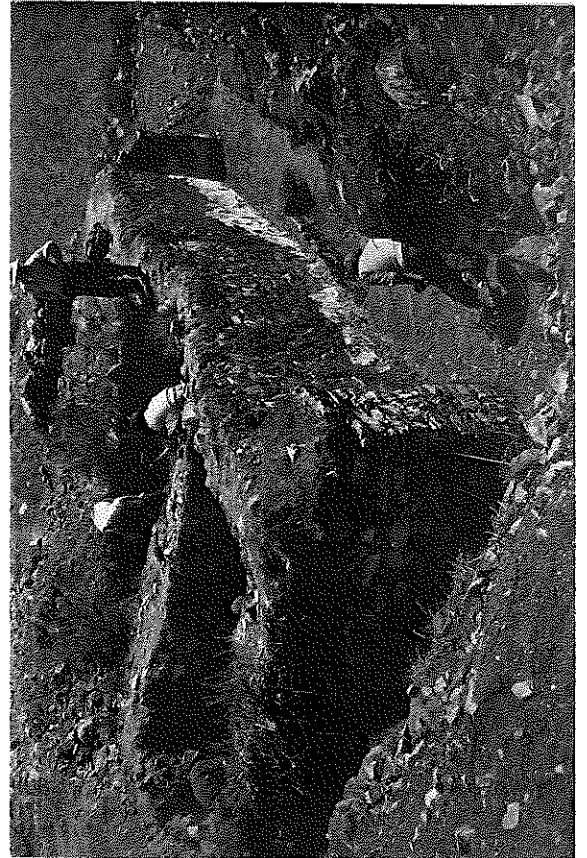
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b.



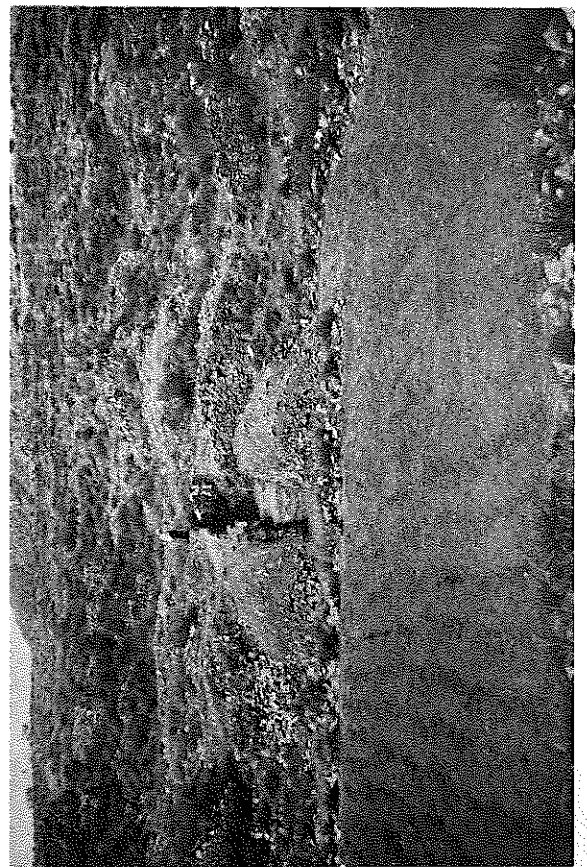
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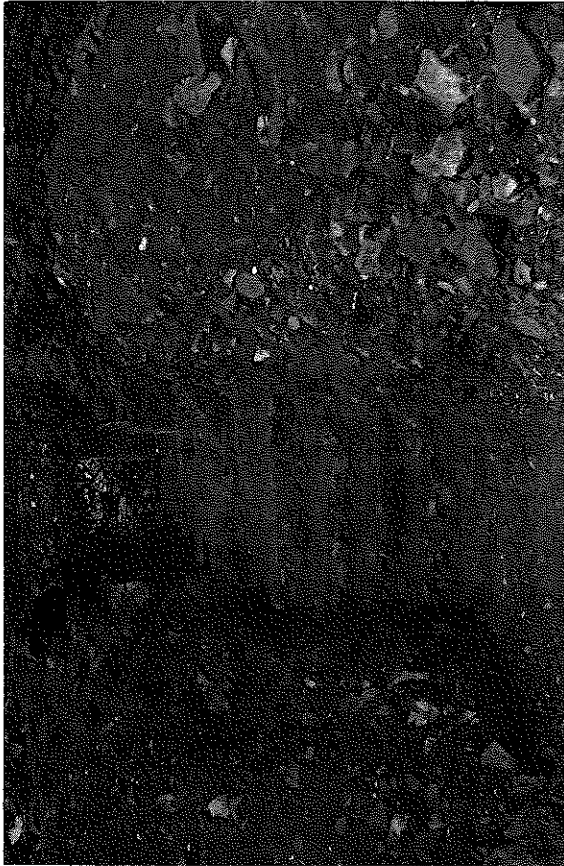


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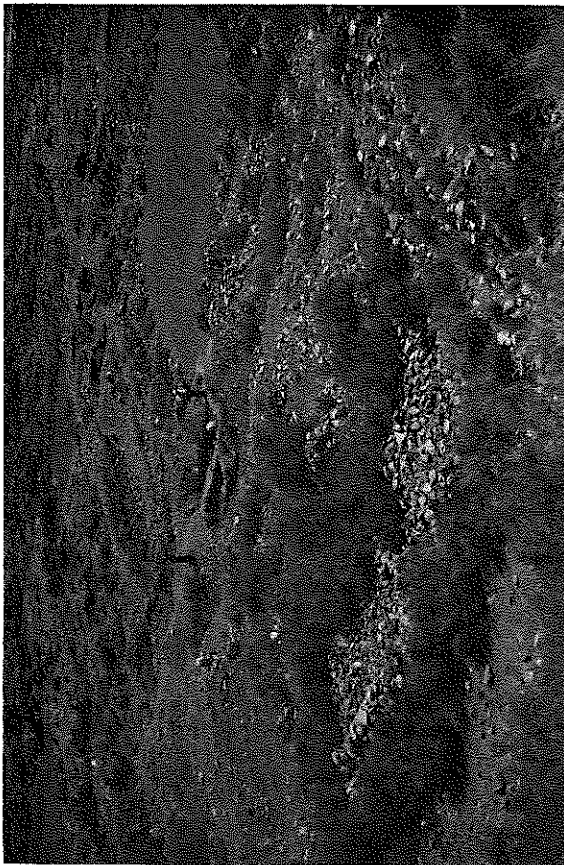
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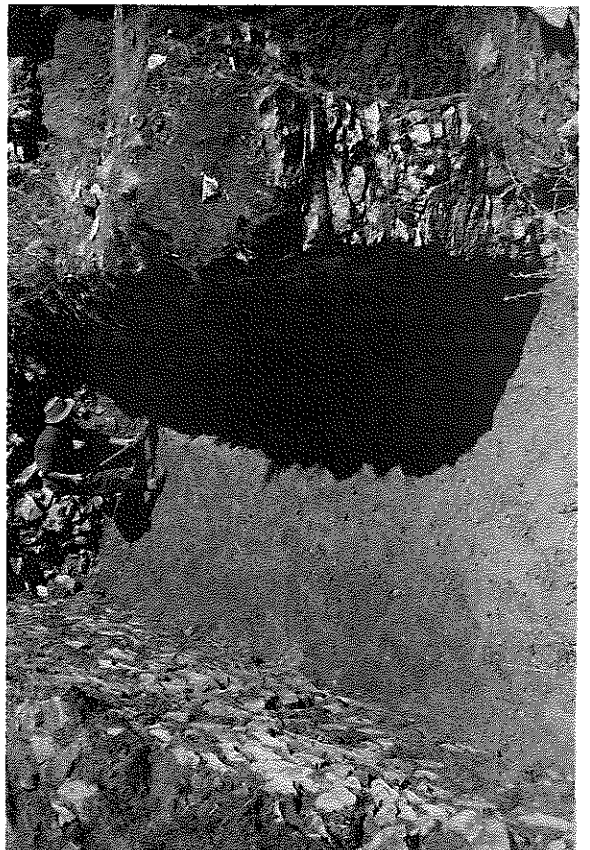
d.



a.



c.



b.



d.



a.



c.



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