

EARLY CULTURAL REMAINS ON THE CENTRAL COAST OF PERU<sup>1</sup>

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On the basis of investigations carried out during the early months of 1963, Patterson and Lanning reported the occurrence of three early cultural assemblages in the lower part of the Chillón Valley on the central Peruvian coast.<sup>2</sup> These were the Chivateros I and II assemblages, found in a stratified quarry-workshop site on Cerro Chivateros, and the Oquendo complex which was found isolated at another site located about three kilometers away. The chronological relationship of the Chivateros I and II assemblages was immediately clear from the stratigraphy at the site. Artifacts of the Chivateros I assemblage were found in a zone of gray eolian sand with a salitre formation in the upper 2-5 cm of it; immediately overlying this zone of the soil profile was a later zone of fine-grained, gray-brown eolian sand that contained Chivateros II implements. Similarities between some of the more common artifacts in the two assemblages, as well as the nature of the soil profile itself, suggested that the Chivateros I and II complexes were fairly close to one another in age. The problem still remained, however, of relating the Oquendo complex which not only occurred in another locality but also contained artifacts that were quite different from those of either assemblage found at the site on Cerro Chivateros. After three years of examining the data collected at Oquendo, it was still impossible to say with any degree of certainty whether the Oquendo assemblage preceded Chivateros I in time or was later than Chivateros II. Since equally unconvincing arguments could be made to support both placements in time for the Oquendo complex, we decided that the only way this question might be answered would be by new excavations at the Oquendo and Chivateros sites. These excavations were made by members of the Seventh Peabody Museum, Harvard University, Archaeological Expedition to Peru in August, 1966 under the auspices and at the direction of the Museo Nacional de Antropología y Arqueología. What I propose to do in this paper is report the preliminary results of this investigation.

A small excavation with a maximum depth of 80 cm was made in the upper part of the Oquendo site. This excavation revealed two distinct zones in the soil profile. The upper zone consisted of a layer of fine-grained eolian sand with an average depth of 45 cm below the present surface and contained large quantities of Oquendo artifacts and chipping debris and a few fragments of salt water mussels tentatively identified as Mytilus magellanicus and M. chorus. Immediately underlying this layer was a thick zone of eolian sand that contained fragments of foliating quartzite and an unidentified metamorphic rock and lacked artifacts, chipping debris, and shell fragments; this zone, which had a more granular texture and appearance than the later zone of the soil profile, was sealed off by a 2-3 cm thick salitre layer that formed along its upper edge.

The artifacts and chipping waste of the Oquendo assemblage are made of a distinctive, fine-grained quartzite that is grayish-

green in color and outcrops in the area of the site. The basic chipping technique was direct percussion flaking with small river or beach cobble hammerstones. The cores in this assemblage have unprepared striking platforms and multiple flakes, flake-blades, and blades removed by blows directed usually at one flat surface of a tabular fragment; these cores resemble the pyramidal cores found in other lithic assemblages in the New World. The majority of the cores was discarded when a sufficient number of flakes had been removed from them, although a few were apparently made into keeled scrapers, by removing small chips with blows directed at the original striking platform, or into core burins. The flakes removed from the pyramidal cores of the Oquendo assemblage typically have a small part of the original striking platform at their proximal ends near the bulb of percussion.

Most implements in the Oquendo assemblage have unifacial chipping along one or more edges of a flake or flake-blade. The most common implements in the Oquendo assemblage are burins; these include simple burins made by removing a spall along the longitudinal axis of a flake from a flat edge so that the resulting angle is slightly less than  $90^\circ$ , burins on a notch, which were made by making a concave area on one edge and removing a spall along the longitudinal axis from one or both sides of the notch, burins on a notch, in which the spall was removed from a scraper edge on the longitudinal axis of the flake, and right angle burins which were made by removing spalls at approximately  $90^\circ$  angles to each other. Many pieces in the Oquendo assemblage have more than one burin on them or consist of burins combined with another kind of tool; for example, one flake has three simple burins and a scraper edge and another has a simple burin on one edge and a denticulate on the other.

Other implements that occur in the Oquendo sample include asymmetrical denticulate tools which were made by removing flakes and chips along an edge with blows directed on one surface, keeled denticulate tools which have triangular to diamond-shaped cross-sections and unifacial chipping on the widest surface, pointed tools which are made at the intersection of two edges by removing small chips from both edges in order to emphasize the point, side scrapers made by unifacial chipping along a straight or convex-curved edge, notched tools which are made on a latitudinal edge of a flake, and steep-nosed end scrapers.

Two small test excavations were made in the vicinity of the short trench excavated in 1963 at Cerro Chivateros. The first excavation was adjacent to the deepest square of the 1963 trench and revealed four major zones in the soil profile that were separated from each other by salitre formations along the upper edges of the second and fourth zones and by the different consistency of the third zone. The most recent zone of the soil profile was composed of a fine-grained, gray-brown eolian sand that varied in depth from 6 to 15 cm below the present surface and contained large quantities of Chivateros II artifacts and chipping debris made from green to blue-gray quartzite. The second zone, which is a slightly compacted gray eolian sand varying in depth from 8 to 18 cm, is capped by a 2-6 cm thick salitre and contained quartzite artifacts and chipping

debris of the Chivateros I assemblage. The third zone was composed of a compacted gray eolian sand with a maximum depth of 15 cm and contained quartzite artifacts and chipping debris. The earliest zone in the deposit is a highly compacted reddish-brown eolian sand with a maximum depth of 40 cm which is capped by a 1-2 cm thick salitre layer and immediately overlies a zone of quartzite foliating from the bedrock; interspersed through this zone are quartzite implements and chipping debris that have heavily stained or patinated surfaces varying in color from nearly yellow through tan to a grayish-brown.

The second excavation was made on the northeast corner of the 1963 trench, about five meters uphill from the first one. It revealed three of the four soil zones encountered in the first test excavation. The most recent zone in the soil profile of the second excavation was a gray-brown eolian sand with a maximum depth of 8 cm which contained rootlets, traces of Tillandsia sp., and Chivateros II artifacts and chipping debris. The second zone was an uncompacted gray-brown eolian sand with a maximum depth of 22 cm, the upper 10 cm of which was a salitre formation; this zone corresponds to the second major zone encountered in the first excavation and contained Chivateros I artifacts and chipping debris. The lowest zone, which varied between 17 and 25 cm in thickness, was composed of a compacted brown eolian sand and contained artifacts and chipping debris that were similar to those of the lowest zone in the first excavation.

Two main conclusions can be drawn from the two test excavations made at Cerro Chivateros. One is that the soil profile found in the deep square adjacent to the first excavation was atypical of the site as a whole in that the third soil zone was found immediately overlying a quartzite outcrop, and the fourth, or red, zone was absent. As a result of this misfortune of sampling, the remainder of the 1963 trench was excavated only to the top of the red soil zone. The second major conclusion is that the assemblage found in the red zone is not only different from the Chivateros I complex, which was defined on the basis of materials from the second and third soil zones, but also stratigraphically earlier than the Chivateros assemblages.

All the chipped stone at Chivateros is fine-grained quartzite which outcrops in the quarry-workshop area. The outcrops are composed of tabular pieces with quadrangular cross-sections and flat faces resulting from the natural fracture pattern of the stone. Unworked pieces with triangular, pentagonal, or hexagonal cross-sections and flat faces also occur as a result of secondary fracture or shearing. The angle of natural fracture on the unworked material is between 35° and 55°.

The basic chipping technique used during the period when the lowest, or red, zone of the soil profile formed was direct percussion with beach or river cobble hammerstones. The cores have unprepared striking platforms and multiple flakes removed from one face of a tabular fragment by blows directed at approximately the same striking angle to the surface; occasionally, however, flakes were removed from more than one surface. When a sufficient number

of flakes were removed, most of the cores were apparently discarded, though a few were made into implements by percussion chipping along the edge of a previous flake scar. The cores in this assemblage resemble the so-called polyhedral cores that have been reported in other early lithic assemblages in the New World. The flakes removed from the cores are quite variable in length, width, and thickness; many are short and thick with triangular or trapezoidal cross-sections while a few are long, thin triangular blades that were probably burin spalls.

Most implements in the red zone are made on flakes struck from cores or on small, naturally fractured pieces of quartzite which resemble flakes and occur in the vicinity of the outcrops. The tools in this assemblage were made by direct percussion chipping along one or more edges of the flake or tabular fragment, and nearly all the chips were removed by blows delivered at approximately the same angle to a single striking surface. Among the implements occurring in the Chivateros Red Zone assemblage are simple and right angle burins which are similar to those of the Oquendo complex, notched tools which were made by removing a series of uniform chips on either side of three or four small flakes on the longitudinal edge of a fragment, pointed tools which are made in the same way as those in the Oquendo assemblage, double pointed tools which are made on either end of a steeply chipped notch, unifacially chipped side scrapers made on straight or convex-curved edges, and steep-nosed end scrapers made with unifacial chipping on the latitudinal end of a fragment.

An innovation in chipping techniques occurred during the period when the third, or earliest gray, zone of the soil profile was formed, and the method persisted as the predominant one throughout the time represented by the three later soil zones in the deposit. The basic chipping technique was still direct percussion flaking with cobble hammerstones that were apparently larger on the average than those occurring in either the Oquendo or Chivateros Red Zone assemblages. Flakes were removed bifacially from tabular fragments and large flakes in order to make the cores into implements; this kind of chipping contrasts markedly with the techniques used in the Chivateros Red Zone and Oquendo assemblages, which produced flakes that were then made into tools. In the Chivateros I and II assemblages, flakes were struck from both prepared and unprepared striking platforms and typically have small areas of the platform at their proximal ends near the bulbs of percussion. Flakes of all sizes are much more common in the chipping debris than in the earlier red soil zone; the flakes range from a few to more than 25 cm in length, and pieces with lengths of 10-15 cm are quite common.

Among the objects occurring in the third soil zone are keeled bifaces made on tabular fragments of quartzite, large denticulates which were made by bifacially flaking the edge of a tabular fragment, large side and end scrapers made on tabular fragments and large flakes by removing flakes from one surface, small notched tools with unifacially chipped notches on either a longitudinal or latitudinal edge of a tabular fragment, pointed tools made on small flakes, and a number of long thin triangular blades that may possibly be burin spalls.

The collection from the part of the second soil zone below the salitre formation was fairly small and included large flakes with prepared and unprepared striking platforms, large side scrapers with unifacial chipping on straight or convex-curved longitudinal edges of tabular fragments and flakes, notched tools with unifacially chipped notches on the latitudinal edges of tabular fragments and flakes, pointed tools made at the intersection of two edges of a tabular fragment, steep-nosed end scrapers, and a keeled denticulate similar to those of the Oquendo complex.

The salitre formation in the upper part of the second soil zone yielded bifaces with both keeled and lenticular cross-sections that were made on tabular fragments and large flakes, large denticulates with both unifacial and bifacial chipping along the edges of tabular fragments and large flakes, large scrapers with unifacial chipping along the longitudinal edges of tabular fragments or flakes, notched tools with unifacially chipped notches on both the longitudinal and latitudinal edges of tabular fragments, a keeled denticulate, and a bifacially chipped "thrusting spear" point.

The most recent zone of the soil profile contained a bifacially chipped "thrusting spear" point, a keeled denticulate with unifacial chipping, two fragments of small points with diamond-shaped cross-sections, unifacially chipped denticulates made on flakes and tabular fragments, notched tools with unifacially chipped notches on the longitudinal edges of tabular fragments, and unifacially chipped scrapers on the longitudinal edges of tabular pieces.

The discovery of the Red Zone assemblage at Cerro Chivateros sheds new light on the problem of placing the Oquendo complex in the local cultural sequence.<sup>3</sup> It is now possible to make a plausible seriation argument that the Oquendo assemblage is intermediate in age between the Chivateros Red Zone and Chivateros I units, because it shares features with both complexes. The Chivateros Red Zone and Oquendo assemblages share several varieties of burins that are apparently absent from the two later complexes at Cerro Chivateros. On the other hand, the Oquendo and Chivateros I and II assemblages share a number of specific tool types--such as denticulates, keeled denticulates, and implements with notches on their latitudinal edges--which are absent from the Red Zone complex at Cerro Chivateros. An impressionistic examination of the four assemblages suggests that the Oquendo and Chivateros Red Zone artifacts are similar to each other in that they have chunky appearances, and that the chipping wastes of the Oquendo and Chivateros I and II complexes are more similar in that they contain high proportions of flakes with small areas of striking platform at their proximal ends.

The seriation argument for the placement of the Oquendo complex between the Chivateros Red Zone and Chivateros I assemblages is also supported to some extent by additional data obtained in the Lurín Valley by members of the Peabody Museum, Harvard University Expedition in August, 1965. Three distinctive, early cultural assemblages have been found in the lower part of the Lurín

drainage. One of these, the Cerro Tortuga complex, shares tool types and chipping techniques with both the Chivateros Red Zone and Oquendo complexes. The second complex, which is called Cerro Achona, shares tool types and chipping techniques with both Oquendo and the later Chivateros assemblages, though its artifacts are made from a poor quality quartzite. The Conchitas assemblage shares tool types and its chipping technique with the Chivateros I and II complexes, though the artifacts are again made from a quartzite that does not chip very well.

During the 1963 excavation at Cerro Chivateros, a small, unworked and uncharred piece of wood and a number of distinctive Chivateros I artifacts were found in the salitre formation at the top of the second soil zone. The wood fragment, which was submitted to the Institute of Geophysics of the University of California at Los Angeles, yielded a measurement of  $10,430 \pm 160$  radiocarbon years (UCLA-683) before A.D. 1950 and dates the later part or end of the period when Chivateros I artifacts were made.<sup>4</sup>

Data collected from the soil profiles at Cerro Chivateros and Oquendo indicate that the Oquendo and Chivateros II assemblages were incorporated entirely into eolian deposits, and that the Chivateros Red Zone and Chivateros I complexes were incorporated into eolian deposits covered with salitre formations. The cultural sequence presented in this paper suggests that the upper soil zone at Oquendo is slightly later than the fourth zone at Chivateros and earlier than the third zone; if this is the case, then there was an interval at Cerro Chivateros when soil formation was either lacking or occurred at a slow rate. Such a situation might easily be produced by slight changes in the prevailing wind directions.

If the salitre formations at the tops of the second and fourth soil zones at Cerro Chivateros and on the upper edge of the second zone at Oquendo correspond to slightly wetter phases on the Peruvian coast that are contemporary with periods of glacial advance at higher elevations and latitudes,<sup>5</sup> then it is possible to make some estimates of the ages of the Chivateros Red Zone and Oquendo assemblages. The radiocarbon measurement obtained from the wood incorporated into the salitre at the top of the second soil zone at Chivateros suggests that the formation may be contemporary with the Valdres Readvance and Younger Dryas in the northern hemisphere and that the eolian deposit underlying the salitre was formed during a slightly warmer, drier interval that corresponds to the Two Creeks Interstadial and the Allerod Oscillation. The salitre layer covering the fourth soil zone at Chivateros would represent a wet phase corresponding to the Port Huron or Older Dryas glacial advance in the northern hemisphere. If this is the case, then the Chivateros Red Zone assemblage would have an age of slightly more than 12,000 radiocarbon years, and the Oquendo complex would date between 11,000 and 12,000 radiocarbon years.

## NOTES

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<sup>2</sup>Patterson and Lanning 1964, p. 113

<sup>3</sup>Patterson and Lanning 1964, p. 113; Lanning 1963 and 1965.

<sup>4</sup>Two counts were made on this sample; one yielded an age of 10,420  $\pm$  160 radiocarbon years and the other an age of 10,440  $\pm$  160 years. The average of the two counts was published by Berger, Fergusson, and Libby 1965, p. 347. The radiocarbon ages cited are based on the Libby or 5568  $\pm$  30 yr. half-life.

<sup>5</sup>Patterson and Lanning ms.

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## KEY TO ILLUSTRATIONS

Figs. 1-9. All specimens from the lowest soil zones in the two excavations at Cerro Chivateros.

1. Two double pointed tools.
2. Three pointed tools, all made on thin tabular fragments.



3. Two steep-nosed end scrapers with unifacial chipping on the latitudinal ends.
4. Two notched tools with triangular cross-sections.
5. Simple burin made by removing a blade along the longitudinal axis of the fragment.
6. Three spalls.
7. Two polyhedral cores with percussion chipping along the edges of previous flake scars.
8. Two unifacially chipped scrapers with curved edges.
9. Unifacially chipped side scraper.

Figs. 10-15. All specimens from the third soil zone of the first excavation at Cerro Chivateros.

10. Keeled biface made from a tabular fragment.
11. Denticulate with bifacial chipping along the edges of a tabular fragment.
12. Unifacially chipped side scraper made on a tabular fragment with a triangular cross-section.
13. Three spalls.
14. Two notched tools made by unifacial chipping on the edges of tabular fragments.
15. Pointed tool made on a flake.

Figs. 16-21. All specimens from the part of the second soil zone below the salitre cap in the first excavation at Cerro Chivateros.

16. Two tabular fragments with notches on their latitudinal ends.
17. Notched tool made on a tabular fragment with a triangular cross-section.
18. Two spalls.
19. Two tabular fragments with scraper edges on their latitudinal ends.
20. Two scrapers with curved edges.
21. Keeled denticulate.

Figs. 22-26. All specimens from the salitre cap of the second soil zone in the first excavation at Cerro Chivateros.

22. Fragment of a biface with a lenticular cross-section.
23. Fragment of a "thrusting" spear point.
24. Keeled denticulate.
25. Scraper with unifacial chipping on the longitudinal axis of a tabular fragment with a triangular cross-section.
26. Unifacially chipped notch on the latitudinal end of a tabular fragment.

Figs. 27-33. All specimens from the most recent soil zone in the first excavation at Cerro Chivateros.

27. Small biface with a lenticular cross-section.
28. Fragment of a "thrusting" spear point.
29. Two fragments of small points with diamond-shaped cross-sections.
30. Keeled denticulate.



31. Two notched tools on the longitudinal edges of tabular fragments.

32. Unifacially chipped denticulate made on the longitudinal edge of a tabular fragment.

Figs. 34-41. All specimens from the upper soil zone at Oquendo.

34. Pyramidal core.

35. Three fragments of keeled denticulates.

36. Large flake with unifacially chipped scraper edges.

37. Unifacially chipped denticulate made on a tabular fragment with a triangular cross-section.

38. Burin core with a simple burin.

39. Burin made on a notch.

40. Spall.

41. Double pointed tool combined with a notched tool.

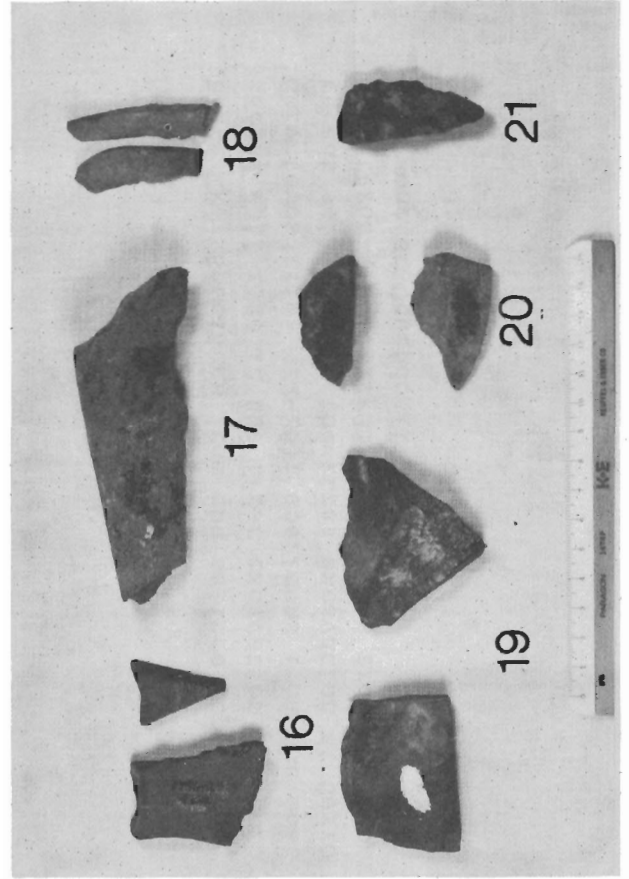
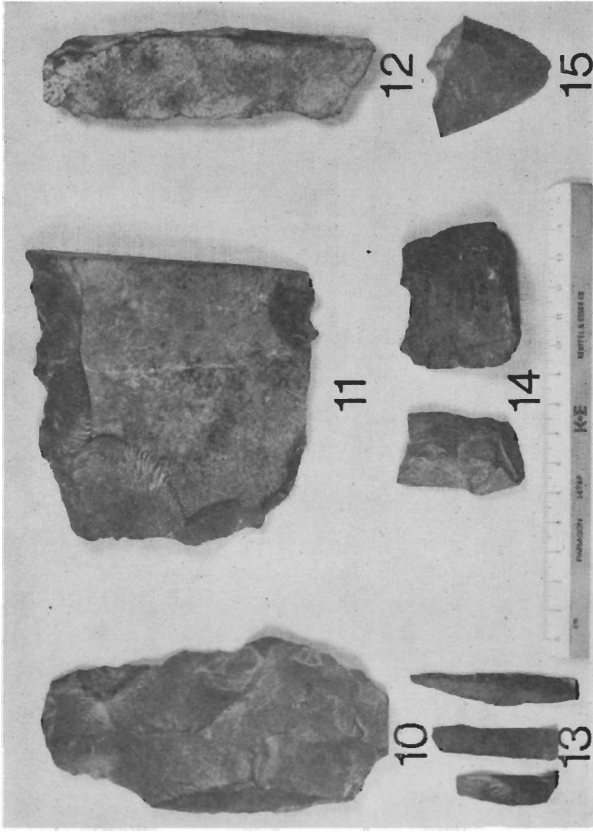
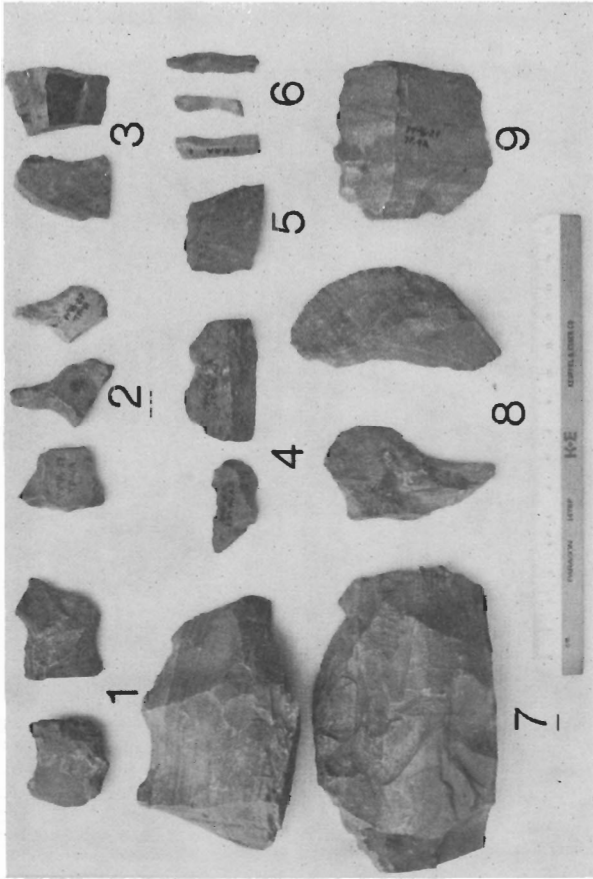


Plate XIX. Specimens from the lowest soil zones in the two excavations at Cerro Chivateros (figs. 1-9); specimens from the third soil zone of the first excavation at Cerro Chivateros (figs. 10-15); specimens from the part of the second soil zone below the salitre cap in the first excavation at Cerro Chivateros (figs. 16-21).

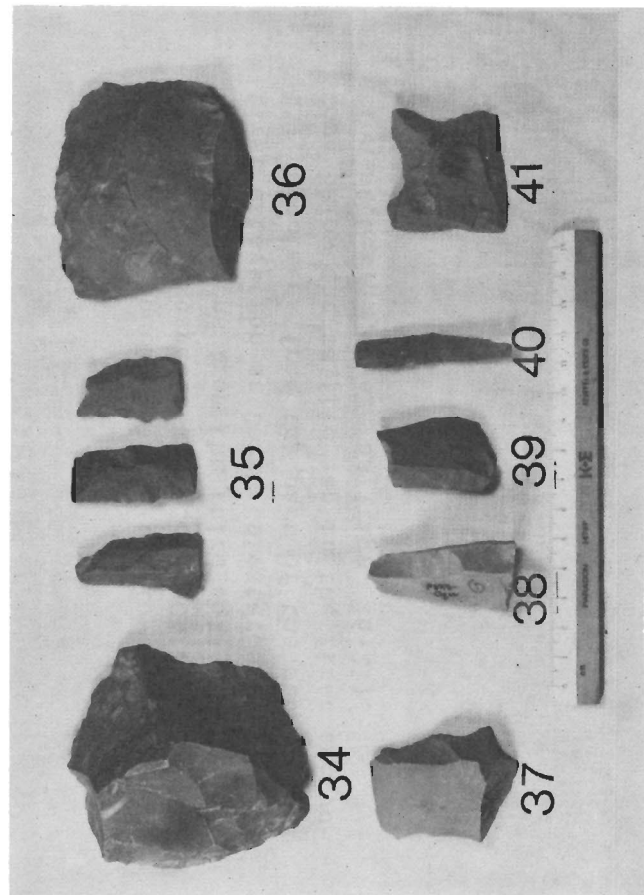
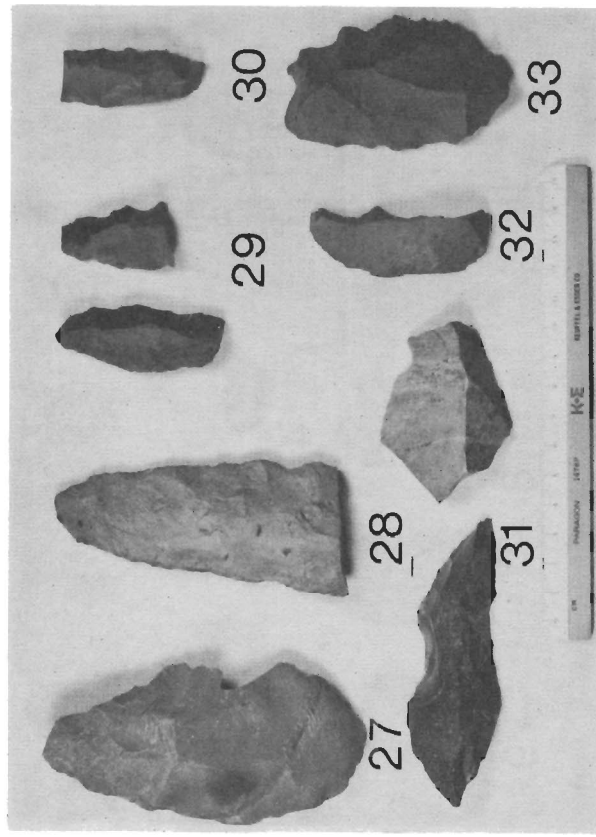
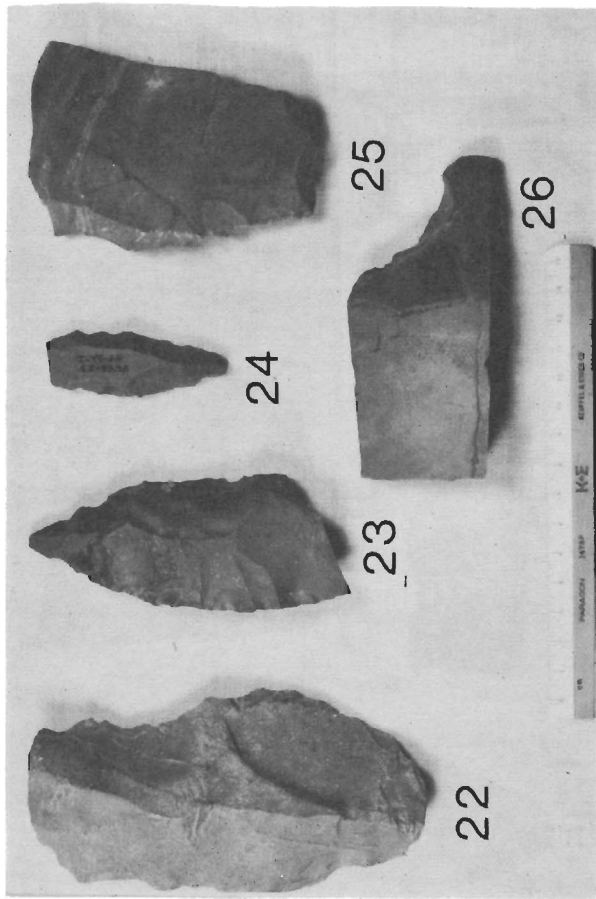


Plate XX. Specimens from the salitre cap of the second soil zone in the first excavation at Cerro Chivateros (figs. 22-26); specimens from the most recent soil zone in the first excavation at Cerro Chivateros (figs. 27-33); specimens from the upper soil zone at Oquendo (figs. 34-41).