

NOTES ON POTTERY MAKING IN HIGHLAND PERU

Lila M. O'Neale

Editors' preface. The article presented here was found among the papers left upon the sudden death of Lila M. O'Neale on February 2, 1948. It was given into Rowe's care by Anna H. Gayton, O'Neale's literary executrix. O'Neale had been working on this manuscript shortly before her death and, as the following correspondence indicates, intended to revise it to include comparative material from other areas of Latin America. Along with the finished manuscript presented here, there were quite extensive notes for the comparative section, but no completed text. The manuscript also had indications of which photographs were to accompany the text, and the museum specimens (figs. 22, 23, and 52) had been photographed.

The utility of such an article to archaeologists should be obvious. The more information we have on the modern pottery making techniques in Peru, the better will we be able to interpret ancient ceramics. This description is of more than usual interest, not only because it contains one of the few descriptions and illustrations of the use of the molde in Peru (see also Nordenskiöld as cited by Linné, 1925, p. 95 and fig. 28; Tello, 1938, pp. XIV-XVI; Tschopik, 1950, p. 209 and fig. 64; Spahni, 1966, pp. 40, 43, 74-75, and photograph on p. 61), but also because it is based on observations made in 1931.

We decided to reproduce the manuscript in its original form introducing only such changes as were necessary for clarity. We have not, however, included all of the photographs that were available, selecting those that seemed most informative and pertinent to the text. Unfortunately not all the photographs had accompanying negatives, a fact that explains the small size at which some figures are reproduced. We felt that greater sharpness would be achieved by reproducing the original print rather than making a copy negative and enlarging it.

The toys and miniature vessels illustrated in figs. 1-18 are undoubtedly those to which O'Neale refers in her note to Kroeber reproduced below. The specimens were apparently in her possession at that time, since they were not presented to the Lowie Museum of Anthropology until 1966. We do not have exact provenience on these items but it is probable that they were bought in the Ayacucho and Huancayo markets.

Where necessary we have converted the original measurements into the metric system (some of the originals were metric) and such additions are in square brackets. Rather than make exact conversions of approximate measurements, however, we have converted into the approximate equivalent (e.g., 2 inches becomes 5 cm. rather than 5.1 cm., etc.).

Accompanying the manuscript was a note that O'Neale had written to Kroeber and his response to her. We include copies of these notes here to help place this work in perspective. Lila M. O'Neale was known to her friends and colleagues as Pat.

[Note from Lila M. O'Neale to Alfred L. Kroeber, written on the back of a sheet of letterhead for interdepartmental use of the Department of Decorative Art, University of California, Berkeley.]

Dec. 20, 1946

Alfred, several good suggestions have been made so far. The most radical one is Ted's [Theodore D. McCown]. He thinks the chronological order is without significance and that the Macuris (p. 9) [of the ms.] at Mito Alto ought to begin the procession.

Please let me have any comments. This is a rough draft. I mean to include another illustration, one of miniature pots made as toys but faithfully reproducing the proportions of the ordinary vessels. Perhaps, too, analyses of the clays used. [Specimens of clay are in the Robert H. Lowie Museum of Anthropology, University of California, Berkeley, 16-4356 and 16-4357.]

Pat

Oh, and there are quite a lot of pertinent comparisons to draw attention to from Linné's South American Ceramics, to go no further afield.

P

[Note from Alfred L. Kroeber to Lila M. O'Neale, written on a sheet of letterhead notepaper of the Department of Anthropology, University of California.]

[no date]

Dear Pat:

This is fine—either order of data. Linné comparisons will help, but it stands on its own feet, as is. The Tello reference is "Arte Antiguo Peruano," in Inca, vol. II, 1935 [sic], pp. xiv, xo (sic)

Sincerely

ALK

Part of the information presented in this paper was obtained during a reconnaissance trip with Dr. Julio C. Tello to the departments of Huancayo and Ayacucho in the south-central region of highland Peru. Many of the photographs were taken by Mr. Paul G. Ledig, Observer in Charge, Huancayo Magnetic Observatory.

What pottery making we saw in the Ayacucho district was done at our special request and in one instance by a potter who spoke only Quechua. The material collected under those circumstances is regrettably scanty. Craftsmen rarely offer information regarding procedures

and methods which appear to them to be completely without significance. Undoubtedly too, the men workers near Huanta would have been excellent informants had there been opportunity to remain with them longer than a couple of hours. Later in the same year, more details were collected during a stay of several weeks in the Huancayo district. Except for minor differences, pottery making is carried on in much the same way in the two districts.

Ayacucho

The pottery market in Ayacucho is held in the open air at the rear entrance to the great wooden building in which most of the produce, foods, foreign dry goods and native textiles are offered for sale. The group of women potters sit on the ground with their wares spread out carelessly in front of them. The attitude toward the potential customer is one of indifference. Ollas, cooking vessels, pitchers for the native drink (chicha), storage jars, pottery stoves, together with miniatures of all of them and in addition to pottery toys, are crudely shaped and of rough texture (figs. 1-18). On none of the several occasions when visits were made to this section of the market did I see in the assortment for sale the slightest evidence of pride in workmanship or any refinement of technical skills in the handling of materials.

Clay is brought from deposits in the surrounding hills to the several potters who live in a small community on the outskirts of Ayacucho. It is carried down in large chunks which are crushed and pulverized under an ovoid boulder rocked from side to side on a flat stone. This is the method and usually the identical equipment employed in reducing maize kernels to flour.¹ The powdered clay is sifted through a perforated tin can, then has sand and water added to it to form the right texture and consistency. Only occasionally is a mass of clay mixed for the paste since it can be kept moist for future use by forming it into compact mounds of various sizes and shapes and covering them with sacks.

My Ayacucho informant was a middle-aged woman. In response to signs she demonstrated the making of a miniature cooking pot (figs. 19-21). She began by cutting off, with her fingers, a lump of moist clay from her supply mound. She placed the clay in her left palm. By turning the lump with her fingers and shaping it with the right thumb and fingers, she converted the mass first to a shallow dish. Then she drew up the sides at the same time pushing them outward to give the vessel a globular form. The work progressed with no other changes in the position of the small model and with no variation in procedure other than in the amount of pressure exerted by the fingers upon the clay.

When the desired height of the side walls had been achieved, the shaping of the neck brought into use the only accessory required: a pad formed by folding a strip of heavy cloth to a width of about 1 1/2 inches [4 cm.]. This strip was dipped in water, left very wet, and hung over the edge of the pot. By again revolving the pot and slightly increasing the pressure upon the pad with the right thumb and first finger, the woman straightened the inturning edge to form a low collar (fig. 19).

The finishing operations with the wet pad turned the edge to flare outward, smoothed and rounded it (figs. 20, 21).

Miniature vessels and toys are molded from a lump of clay. The woman said larger vessels were coiled. To what extent coiling is done in the district could not be learned in the time at my disposal.

After sun drying, Ayacucho pottery is baked in a circular kiln, ordinarily built of stones.² Horse or burro dung is scattered over the ground to cover the bottom of the kiln. Midway to the top of the low wall, sheets of tin from old cans make a platform upon which to set the pots. No firing was being done in any of the kilns in the neighborhood on the day of my visit.

Much of the pottery on sale in the market is left the plain clay color. If there is an effort toward decoration it usually consists of nothing more than a coat of coloring made by mixing a red earth and water. This is applied after the firing.

Huayhuas

Thirty kilometers north of Ayacucho is the town of Huanta. In this district the men and women potters are grouped near the little village of Huayhuas to the southeast. In addition to cooking vessels, which all potters can and do make, the principal types of containers are storage jars for water and chicha. One of the men in the neighborhood was mentioned as a skillful modeler of animal forms and whistles. At one home, a number of men demonstrated making jars; at the other home, men and women potters placed sun-dried vessels in the accepted arrangement for firing.

Clay for the pottery made at Huayhuas comes from special caves in the surrounding hills. It is crushed on a flat stone with a wooden maul. Then the smaller pieces are ground on a mealing stone by rocking an ovoid boulder over them, the method employed by all the potters we saw working in the area covered. Sand and water to form the proper plasticity are added to the clay. Undoubtedly for home industries as flourishing as those in the Huayhuas district, there were pits in which the clay was mixed, but we did not see them. As at Ayacucho, paste was kept in readiness for future needs. Layers of green leaves were spread over the barrel-shaped mound and tied in place. The whole was covered with several heavy wool rugs.

The few necessary tools are simple. At the first house visited, the maul with which large chunks of clay were reduced to smaller pieces was a conveniently shaped section of a tree branch. The mealing stone for pulverizing the small pieces was, as at Ayacucho, the identical one on which the woman ground maize flour. A wooden hoop about 18 inches [50 cm.] in diameter, covered with skin which had been perforated with small holes was the sifter. The clay mass was kneaded on a sheep's hide.

Most important of all the special equipment are the pottery disks of two sizes (fig. 22). The smaller, a shallow plate form is made

to revolve on a flat stone. This lower disk is kept turning by the palm of the left hand in order to bring all portions of the pot or jar within easy reach of the right hand. Since there is no device connecting the disk and the stone, the disk cannot be set spinning for more than a moment but must be constantly manipulated. The second disk is larger. The lower surface of this plaque is molded to fit more or less exactly into the concavity of the revolving disk and with it constitutes what amounts to a single unit. The upper disk is the foundation upon which the pot is made and set aside to dry. Each potter must therefore have available a separate foundation disk for each object to be finished during one day's work. By the time he is ready to begin work the following morning, the previous day's pots are sufficiently dry to permit removing them from their foundations.

A "scraper" for smoothing the outer surface of a partly dried jar is cut from an iron strip of the type which reinforces packing boxes. The one used by the men measured 7 inches by 1 inch [17.8 by 2.5 cm.]. No one I asked seemed to know what material had been used prior to the iron strip. Sections of broken gourd food bowls suitable in shape to fit the curves of jars (fig. 23), a folded rag to wet for the finishing processes and gourds to hold water complete the list of accessories employed by the Huayhuas potters.

At one house visited, pots were usually made in the same semi-dark room in which the moist clay was stored. A flat stone had been let into the earth in a corner of the room near the entrance to a depth to make the upper surface level with the floor. The stone formed a smooth immovable base upon which to turn the revolving disk. The work was brought out into the sunshine only because we wished to take photographs of the processes.

An older man directed a teen-age boy to make a medium-sized chicha jar. He began by scraping off with his fingers a double handful of clay from the storage mound. He shaped the mass into a rough ball and worked down an indentation with the fingers of both hands. He enlarged the indentation by forcing his right fist into it. The crude form was then placed on a foundation disk. It would not be removed from this disk until all but the bottom was thoroughly sun-dried. The boy set the foundation disk in position upon the revolving disk. During this series of operations, one of the women potters collected the smaller tools, the two gourd fragments, a strip of heavy cloth, a scraper, and placed these together with a gourd of water beside the boy.

Within the time encompassed by a few revolutions of the foundation disk, the boy drew up the sides of the jar to a height of approximately 4 inches [10 cm.]. He stopped his work to make a thick roll of clay between his hands. This was placed around the top of the jar, the ends of the roll just meeting. The right hand was again placed inside the jar, the left hand was flattened on the outside but also kept the disk revolving. Shaping was effected by moistening the right hand and pulling the clay upward (fig. 24) while the edge was being pinched out more thinly with the fingers, the revolving disk was kept down to slow speed.

The boy dipped one of the gourd fragments in water. He smoothed the inner surface of the jar with the rounded side of the fragment and pushed out the walls to give a globular shape to the vessel. He reworked the top to make it even thinner. He folded the rag to a strip about 7 inches long by 2 inches wide [18 by 5 cm.], dipped it in water and left it very wet. He thinned the edge, smoothed and shaped the neck of this first pot by holding the wet pad over the edge and changing the pressure of his fingers upon it. The revolving disk turned even more slowly during these procedures. Finally, the potter smoothed the inside surface of the jar with the second gourd fragment which apparently differed from the first to a degree which made his choice of it a deliberate one. These operations finished the preliminary work upon a chicha jar and, still on its foundation disk, it was set apart with others to dry.

In making a second jar, I noticed that the boy appeared to follow identical procedures, although this piece was to have a flaring mouth and handles set low on the sides. At completion of the stage at which he rounded out the sides with the gourd fragment, he formed a roll of clay about an inch [2.5 cm.] in diameter to place on the inside of the jar. The roll was pushed down in order to reinforce the bottom rather than the side walls. The right hand pressed the roll until it became part of the inner surface. The objective was to furnish thickness in order that scraping might be done over sufficient material to make the desired contour.

After shaping and reinforcing the jar, the boy made a thick round cake of clay through the center of which he worked a hole (fig. 25). This "doughnut" was exactly the size of the top of the jar and added to it material from which to draw up the neck. The potter's right hand pulled straight up on the inside of the doughnut at the same time that the left hand welded its lower edge to the outside of the jar. Then, turning the revolving disk slowly with the left hand, the potter smoothed the outer surface of the neck with quick upward strokes of a gourd fragment. At this stage, the neck was a straight collar. The flare (fig. 26) was effected by pressure on the strip of wet cloth folded over the edge.

Strap handles on chicha jars are placed at the point of greatest diameter. First the boy made a roll of clay. Then he flattened one end, and shaping it to fit the curve of the jar, pressed it into position. He used both hands to elongate, flatten, and shape the remaining length of the strap which extended downward. He smoothed the clay strap with moistened fingers. Finally, placing the right hand flat against the surface of the jar with the first finger close under the juncture of strap and jar, the potter bent the strap over his first finger with a single slow movement of the second and third fingers over the strap. The lower end of the completed handle was pressed and tapered off to make a neat join with the body of the jar (fig. 26).

Huayhuas potters set their jars, each on its own foundation disk, in the sun to dry. After one full day, they are removed from their disks and scraped. The Andean potters employ the word "scrape" to signify shaping by means of cutting away excess thickness of clay.³ The

objective achieved is a refined contour and a smooth surface. Scraping begins at the bottom of the pot and all strokes are upward (cf. figs. 39, 40). The extra roll of clay welded to the interior of the second pot at the angle formed by bottom and sides was placed in position to furnish sufficient thickness of material for deep scraping at this point. I got the impression that shaping the jar from the exterior was more quickly and successfully accomplished than by controlling the contour during initial stages of modeling on the foundation disk.

After scraping a jar, the potter rubbed the exterior with a coarse woolen rag dipped in water. Then he picked up a smooth stone and worked it in rotary motion over the surface. Where there were perceptible roughnesses or irregularities, he applied small dabs of wet clay and pressed them well into the partly dried vessel. Finally, he smoothed the whole surface with moist hands and set the jar aside to dry for several days.

A second group of potters at Huayhuas demonstrated the arrangement of pots for firing. Part of the yard at this house was full of chicha jars turned in all positions to allow them to dry evenly. Shallow food bowls shaped like the lower half of a large gourd were braced back to back. Men and women worked together in making a circle of pots outlining an area about 8 feet [250 cm.] across. Each jar was tipped against the one ahead of it, all handles in the same relative position. The center of the circle was filled with more pots of different but smaller sizes (fig. 27). Dung was scattered to fill in all the spaces and piled up wherever there was sufficient room for a quantity (fig. 28). Then the whole mass was covered over with straw. They told us that the fire burns "all day." Other than that more or less variable measure of time, there appears to be no test for the accomplishment of the right degree of firing. No pottery was being fired in Huayhuas on the day of our visit.

Huancayo District

Pottery from the villages near Huancayo is, in the main, simple in form, ordinarily lacking in modeled or relief details, and with few exceptions crudely patterned (fig. 29).

Mito Alto

Mito Alto, about 20 km. northeast of Huancayo, is a local pottery center. The village is situated on a flat plain through which winds the Mantaro River. The narrow streets of the village are flanked by high courtyard walls broken only by the entrances and an occasional window. Once the members of a family pass through their own heavy wooden street door, they are insured comparative seclusion. An adobe structure of one or two rooms is usually set at the back of the lot. Often the house faces a row of storerooms or pens for animals and fowls built against the street wall. Between the house and the outbuildings on the front of the lot, there is a free area for pottery making activities. Since any jar or utensil requires about 8 days for its completion, a potter's courtyard is usually more or less crowded with his work in all

stages of progress (fig. 30).

The Macuri family, a father, mother, and several grown children, are potters. A married daughter lives in the house adjoining. Entrance to her courtyard is gained through its own street door, and semi-privacy is afforded by the low stone boundary wall which separates the two properties. The younger woman borrowed some of the necessary equipment probably because her space was less well adapted for work than was the family yard. The mother, my principal informant, occasionally borrowed minor tools from her daughter. On the whole, the two families worked independently on the several days I spent with them.

The mother, Estafana, comes from a line of potters. Both her mother and grandmother were professionals. When Estafana was a child, she made toys of clay, miniature plates, and bowls in imitation of her elders' work. She said her mother did not like to have her small daughter play with the paste because it was hard on her clothes; at another time Estafana said her mother was happy to see her child gaining the necessary experience to make her a capable assistant. Both statements were probably true. By the time she was twelve years old, Estafana could help in any of the processes, but she was twenty before she regularly made pots to send to market. Her son volunteered the information that a child was usually taught procedures by its mother or older relative. He demonstrated how a mother would put her hand inside the vessel and correct the modeling when a child appeared to be having difficulties with the contour.

At Mito Alto, potters agreed, the craft was dying out. The young people did not care to learn the processes. Once upon a time, a child of eight or ten worked with greater or less interest, just to be with his elders. Nowadays, children often express disinclination to put their hands in the clay. The youngest potter in Mito Alto was between twenty and thirty years old.

Although children may not take any interest in the family's industry, those in the Macuri household were expected to help their elders. A grandchild often was directed to bring Estafana ground white clay when she needed it for her paint. This same child also carried heavy foundation disks from the family yard to her own home on another street where the elder Macuri was working. In the married daughter's yard next door, a boy of nine or ten sat grinding black powder for paint. He rocked the boulder over the mealing stone with the expertness which comes from practice. Where every phase of a craft is centered in so small a space as a town lot, few of its details remain unexplored by the children of the family.

Pottery making is considered heavy work for women, especially when it involves cooking pots, ollas, and chicha jars. Estafana said that women potters got old before their time. The clay is always cold, even in summer, and in winter at an elevation of over 11,000 feet [3300 m.], the paste is intensely disagreeable to work with. Potters move their foundation disks into the house during cold weather, but even under shelter their hands become painfully raw.

Estafana could mold a 12 inch [30 cm.] pot in about 5 minutes. She made a dozen or more jars of various shapes in a day. There are, of course, forms which require much longer than 5 minutes to complete. No potter can or does work uninterruptedly and it is customary, except when working on the smallest pots, to set one piece aside for a short time so that the clay may dry out a little before continuing procedures. During the interval another pot may be worked on or the potter may turn to other tasks. Usually, a woman has a number of household duties which she fits into her pottery program. A "day," too, is a flexible unit of measurement. Estafana reckoned hers from the time the morning sun was warm to the time when the afternoon began to cool. According to clock time in August, this period is approximately from 8:00 to 3:00 at Mito Alto. On two occasions, work was just getting under way when I arrived at 9:30. It is conceivable that accomplishment is a more accurate measure of the "day" than is the time element.

José, Estafana, and their oldest son all made pottery regularly for the Sunday market in Huancayo. The schedule of work more or less consistently held to in the Macuri household differed for each of the three elders. Estafana outlined her share in the program as follows:

Monday. The plastic clay is mixed by treading it with bare feet in the pit and formed into a mound. This part of the schedule may take less time some weeks than others if there is clay left over from the previous week's mix. Estafana helps the men.

Tuesday, Wednesday, Thursday. Estafana makes pots and jars.

Friday. While the current week's output is drying in the sun, she paints the jars made during the preceding week in readiness for the market.

Saturday. The pottery made during the current week is scraped and the painted pots are fired. Late Saturday night or very early Sunday morning the fired pots are removed from the kiln, packed, and transported to Huancayo. For those potters living in the hills back of Mito Alto, the order of work would have to be adjusted to allow time to cover the distance of more than 20 km. to the market.

Pottery is transported on burros. The biggest pots are tied singly on the backs of the animals (fig. 31); some are hung in pairs, one on either side. Medium-sized and small pots are packed in straw within huge, netted saddle bags. To arrive with intact cargo at a market some 15 to 20 miles [20-25 km.] distant from the home village is an achievement. It is no easy task to keep burros well separated on the road or to prevent them from going too near the boundary walls which line the tracks. A moment's inattention on the part of the driver, or the panic caused by a passing auto have been known to reduce the week's efforts of a whole family to a mass of sherds.

Pottery sells readily at Huancayo. The Macuris could dispose of three dozen jars and cooking pots in from two to three hours if the day brought out the usual crowds. The large jars sell best, but every potter produces also a variety of smaller vessels because the firing is

more evenly done if the kiln can be filled so as to avoid large spaces between the pieces. Potters say they cannot successfully "burn" the big pots without taking this precaution.

The Macuris brought down sand and clay on their burros from Vicosos, a village in the hills back of Mito Alto. The clay is in small lumps which do not require grinding. They are put in the pozo, a stone-lined pit about 3 feet [1 m.] in diameter by a foot [30 cm.] deep (fig. 32). It is filled half full of clay lumps, sand is added, and water is poured over the mixture. Then one of the men (usually) tramps the mass with his bare feet until it is smooth. Sometimes the batch as it comes from the pit is too moist. If this is the case, masses of clay are spread over old pots to dry out somewhat before shaping the supply into a mound.

Mito Alto sand is coarse. It must be prepared by grinding and sifting. None of the potters knew just how much sand was put in any mixture but they professed to recognize by its texture when the proper amount was present. One potter tested for the right proportions of clay and sand by running his tongue over a film of paste. Another placed a small bit of the paste in the palm of her hand. She drew out a thin film with the forefinger to judge by the appearance whether or not sufficient sand had been added. It is always possible to knead more into the paste before beginning any pot.

Clay may be prepared in quantities sufficient for several weeks' work. Estafana took hers from a mound about 18 inches [50 cm.] high which was kept moist under a heavy covering of rags. Men potters (and also tile makers) take clay from mounds in the same way: they spread their thumbs out, at right angles to the open hands, tips touching. Then they draw the hands straight downward. The stroke cuts off the clay in flat slabs almost a foot wide.

No clay is wasted during the making of a pot. Surplus bits and scraps from the scraping process are carefully gathered and stored in a broken pot. The long thick shavings from scraping are liberally sprinkled with water and poured out on a sheepskin. Estafana divided such masses into manageable lumps and kneaded each as we knead bread, but more vigorously. The quality of the clay, she explained, was identical to that taken from the supply mound yet she always added a little of the freshly mixed clay to the reworked fragments.

Tools and methods at Mito Alto differ somewhat from those at Huayhuas. At Huayhuas, there are usually two disks, the larger a foundation disk which fits into the upper concave surface of the smaller revolving disk (fig. 22). The two form a unit, and both revolve as one on a stone. At Mito Alto, there is a single disk similar in all respects to the Huayhuas foundation disk. It is turned on a stone which is propped with pottery fragments to hold it immovable (fig. 33). The foundation disks at Mito Alto are called moldes. All Estafana's disks were deeply scratched with her initials. If she did not sand the disks too heavily, the letters left imprints on the bottom of the pot. Other potters in the neighborhood marked their wares with small raised motives; one used an open flower in low relief. Instead of the gourd fragments

for smoothing surfaces, the Mito potters use an oval sherd (fig. 52). Estafana's favorite was about 12.5 cm. long by approximately 6.5 cm. wide. Its slight convexity made it fit the hand. Its edges were beveled to permit both scraping and smoothing depending upon the side presented to the surface of the pot and the manner in which the tool was held.

Any variation between the order of work at Huayhuas and that at Mito Alto may be owing to the fact that at Mito all processes were continued over the usual number of days instead of being telescoped into a couple of hours for the benefit of visitors. I believe the procedures are essentially the same.

Estafana began all her pots by shaping a mass of clay into a fairly round ball. She judged the amount required with what seemed unerring accuracy. She held the ball in her left hand and kneaded it as if it were dough. Then she made a deep impression in the center with vigorous punches of her right fist. She placed the crude shape on the foundation disk over which she had strewn a film of sand.

The left hand, whatever else it did, usually turned the foundation disk on the stone. Within the space of a few revolutions, the pottery shape resembled a straight-sided jar about 3 inches [7.5 cm.] high. It was made to round out slightly by increasing the pressure of the right hand upon its inner surface. A single clay coil just long enough to encircle the opening without overlap was applied to the inside of the pot (fig. 34). The coil was moistened with the fingers and pressed into place. This addition built up the sides 2 inches [5 cm.], and decreased the diameter of the opening. A second coil was slightly flattened and applied, this time to the outside of the first coil. The new one was pinched down to cement it to the outer surface of the jar (fig. 35). It was smoothed down with the hand dipped frequently in water to effect an invisible join. At this point, the foundation disk and pot were removed from the stone and set aside to allow some of the moisture to dry out. During the interim, Estafana, took up a partly finished jar to proceed with the modeling of a decoration. For clarity, these customary interruptions in the procedure of making a piece are noted but the work on a single jar is described as if it were continuous.

When Estafana came back to work on the first jar, she placed the third and fourth coils in position. The ends of each coil just met. Again the pot was set aside to dry for a few minutes. Upon resuming work on it, Estafana topped the two parts already completed—the base formed from a block and the upper portion consisting of four single coils—with a doughnut shape to furnish material for the neck (fig. 36). During all the operations, the pot on its disk was being slowly turned with the left hand to bring all of its surface within easy reach of the right hand. The doughnut was pinched up to form a neck about 2 inches [5 cm.] high. Estafana smoothed the inside surface of the neck with a slender round stick held perpendicular to exert gentle pressure against the clay (fig. 37). The flare was given by molding first with the right thumb and first finger and lastly with a very wet rag folded over the top (fig. 38). The jar was now ready for drying preliminary to the scraping process.

If a jar is to have a handle, it is applied before the surface is scraped, but the area covered is smoothed to make scraping unnecessary. A strap handle is the common form (fig. 44). It is begun with a roll of clay which is flattened and smoothed. The end which is to be the upper one in position, is flared and curved to duplicate as closely as possible the contour of the jar. When the opposite end of the strap had been moistened and pressed into place, Estafana made two small balls of clay and applied one to each side of the lower end of the handle. These furnished material for the slightly thicker base of the handle.

First drying usually takes a full day although the time may be shortened to a few hours if the sun is warm. In that case, pots made in the morning may be ready to scrape in the afternoon. The customary test for "dryness" is that the pot can be readily lifted from its foundation disk. To judge by observations made at Mito Alto, the time element is a variable factor. Pots in process of making may be set away to dry, ostensibly for only a few minutes, but they may be left a day with no apparent difference in the final result. The pot must be partly dried out before scraping is possible, but coils may be added to bases directly after shaping them from the lump of clay or even after the base has dried in preparation for scraping. During one of the intervals in making the complete pot just described, Estafana went back to finish two jar bases which had been drying for a day. She added two additional coils, each 2 inches [5 cm.] in diameter, to both bases (figs. 41, 42). One of these jars she finished while I was there.

At Mito Alto as at Huayhuas, scraping is done with a metal strip. The jar is scraped first in a series of long flat curves from base to top, and then with horizontal strokes following the circumference. Since the pot on its foundation disk is turning slowly during the process, each stroke is a little in advance of the preceding one (figs. 39, 40). The surplus clay in the form of long curls is reworked by sprinkling water over it and kneading the mass. The same pot from which the surplus was scraped may be finished using the reworked clay.

Subsequent processes gave finish to the jar. Estafana smoothed the outer surface of the flaring neck with a wet cloth; she discarded the cloth to use her wet hand; then she rubbed a round stick over the surface (fig. 43). Again she applied the wet rag, this time with the same flat-S strokes as were made with the scraping tool. Estafana paid particular attention to the joining of neck and body of the jar but made no effort to smooth the very bottom of the piece. That portion is shaped by a second scraping when the jar is taken from the disk and tipped on its side to dry out thoroughly. A jar is left to dry from one to four days depending largely upon the potter's convenience. After that time, jars are tipped on their sides and occasionally turned so that every part of the surface may be exposed to the sun.

Colors and designs at Mito Alto are limited in range. Before firing, the Macuris paint their pottery red with white bands either encircling the forms at locally conventional intervals or extending up from the bottom in great loops somewhat resembling the petals of a flower (fig. 45). All the fine line design is cursive in character with little or no care given to execution. If there are spot motives, they

are black and white spirals on the red ground. Usually, these are placed on the shoulder of the jar.

Dyes are made by grinding various earths with water in an old pot. The liquid is not strained, but it is occasionally stirred during its application. Painting is done quickly and mechanically. Estafana brought out into the sun the same oval stone upon which she spun the foundation disks. She tilted a jar on it holding it at an angle with her left hand and turning it as required to bring its different portions within reach (fig. 46). She applied the red coloring with a pad of soft rags bunched together. She left large patches of the natural clay under the handles and gave only a cursory swirl to the inside of the flared mouth. There was no general direction to her motions. Clearly the object was to color the jar in the shortest possible time. Since she had, up to these procedures, worked without observable self consciousness, I can only believe that she considered the painting as well accomplished through speed as through painstaking effort.

The white paint, fine white clay and water, was applied in bands from $3/4$ inch to 1 inch [2-2.5 cm.] wide. The applicator was a rag bunched up to make the proper width line. The pot was turned on the stone as the encircling bands were put on. Estafana usually made the lowest bands first, then the one at the greatest diameter of the jar and finally the band at the join of neck and body. She gave the handles a careless dab; she banded the inside of the flared neck once or twice. An exact meeting of the ends of any circle seemed never to concern her, but she painted the petallike loops with slightly more interest. Black, where it appears at all, was used by the Mito Alto potters to make a secondary design superimposed on the white bands. Estafana did not care for black on her jars, but the daughter in the adjoining yard had several showing slender plant motives in black on the petal loops (fig. 47). Some Mito pottery has incised patterns. A length of straw or a small stick serves as the tool. Most of the simple motives are encircling bands composed of rings or short vertical lines.

The only modeling I saw at Mito Alto was done in connection with a chicha pitcher on which a duck's head formed the spout. The preliminary procedures were the same as those employed for other containers: the block base, the added coils for height, the final doughnut, in this instance less than an inch in thickness. The clay ring formed the neck; a smaller more carefully shaped ring reinforced the top inner edge. Cementing each added portion to the one below it was much more deliberately done on this pot. Estafana was less nonchalant about the whole business; she gave close attention to the piece as it grew on its foundation disk. She smoothed the inside of the neck first with the fingers, then with the stick, then with the right thumb. Immediately after completing the formation of the jar she again smoothed the outer surface, especially those points at which wings and tail were to be cemented. The duck's bill began as a cylinder of clay. The end was pushed in to make it adhere to the jar surface more firmly, and the length was flattened and pinched to achieve a semblance of realism. The eyes were two balls of clay. A straw broken off at a node punched depressions for the eye sockets and drew a deep crease for the mouth. The tail and wings began as separate coils. Each was flattened, shaped, and smoothed before

applying it to the body of the jar (fig. 45 left front). Estafana was more particular about the downward slant of the wings and the position of the tail than about any other details of her pottery making. Since this type of jar is equipped with a strap handle, these realistic features are purely ornamental. I got the impression that she was accomplishing something beyond the ordinary potter's capabilities. Estafana did not consider herself in the "ordinary" class of craftsman. From my second visit on to the end of the series spent with her, she locked the street door against neighbors or casual onlookers who might want to observe her at her work. She spoke of "secret methods" and procedures which accomplished difficult forms and decorative details. This attitude surprised me somewhat, for no piece turned out appeared to be other than standard in shape; and the decorative details were, to judge by the broken pots scattered here and there in the courtyard, limited in number and extremely simple.

The Macuri son made and painted toy whistles shaped like men—usually policemen and soldiers—dogs, and llamas (see fig. 1). In response to a question, he said that women potters could not do that sort of modeling, that they made "only easy things." His opinion of himself as a superior craftsman could not be doubted, but he would not demonstrate the making of a whistle or a toy. He had already completed his quota of pieces for the coming Sunday market. They had been painted and were at the moment drying on the tiled roof.

In the Huancayo district, men make half the pottery produced for the market. Estafana's José makes big jars and storage ollas. Some of them are 28 inches [71 cm.] high with a mouth diameter of 21 inches [53.3 cm.], much too heavy for a woman to handle [sic - Ed.]. José makes and paints his pieces in the family yard, but on occasion works in the yards of his grown children. He can complete five storage jars in a day. He began each with a solid block of clay just as Estafana began her smaller ones. After that stage, instead of sitting down before each pot on its foundation disk, José propped up the disks to make them immovable and walked around the jars as he added the coils to one after the other of them. The diameter of the coils averaged 2 inches [5 cm.]; each was long enough to extend half way around the jar circumference. As José placed the halves in position, he welded them to the inner edge with thumb and first finger of the right hand and patted the outer surface with the left (fig. 48). By the time it had been pulled up in the shaping, a coil added about 4 inches [10 cm.] to the height of the jar.

José always worked in the sun, the warmth of which, together with keeping five jars in process of construction, eliminated waiting between operations for the clay to dry out slightly. Moreover, he believed clay molded on a cloudy day would not hold its shape. José was a much more careful worker than Estafana. When he painted his jars, he went from one to another as they lay tilted on their sides to dry. When he had covered all the visible surface with red paint, he shifted the position of each jar and painted the remainder. He went over the lot twice, the first coat being partly dry before he put on the second.

According to the Macuri schedule, firing is Sunday's work. Ordinarily, the painted jars are allowed to dry for at least a day, but

if the wind and sun are right, those finished in the morning may be fired in the afternoon. To a lay observer, the results of firing appeared to be left largely to chance. Estafana professed to have no idea of the number of pots she fired at any one time. Perhaps there were thirty. Nor had she had any idea how many whole pots might reasonably be expected from a single firing. Usually a good many of them broke.

The Macuri kiln was merely a low ring of stones set up against the wall dividing the family's courtyard from the married daughter's (fig. 49). Fuel was dried cattle dung and straw or chaff bought from people who owned animals. Dung was sold at about 30 centavos for a 100 pound sack.

The first pots placed in the kiln are the small, the medium-sized ones, and the toys or other miniature pieces. The big ollas and jars are placed on top. There was no such orderly arrangement in José and Estafana's kiln as we had observed at Huayhuas where the big pots formed the kiln walls. The fire burns from 12 to 14 hours. Heat is not tested in any way nor is the time more than approximate. When the fire dies down, the vessels slowly cool in the ashes. They were still warm when Estafana stepped over the low kiln wall and hooked out with a crooked stick the whole ollas and smaller pieces.

There are superstitions connected with the firing operations. Once a white woman watched the Macuris fill their kiln with the week's work and most of the pieces broke under the heat. The visitor was thereafter referred to as one who "had poor eyes for pottery." Apparently I was not held responsible for the seemingly large proportion of broken jars and small pieces resulting from the firing I observed. At least, the Macuris made no audible comments as they went about what appeared to be the customary business of retrieving the intact pieces from among the ruined ones. A neighbor took visitors much more seriously. He came forward with threatening words and gestures as we approached the well constructed kiln he had just fired (fig. 50).

The pottery that goes to the Huancayo market from Mito Alto is predominantly utilitarian. The Mito potters say they cannot make small cooking vessels, cups and bowls similar to our utensils because their raw materials are not right, that they are of necessity limited to water and chicha containers. Some potters hold that the clay is the same for all pottery in the region but that the sand differs. They tell you that Mito pottery cannot be put directly over the fire nor will it stand up under frequent heatings because of the quality of the sand. As a consequence of these limitations, there is a good deal of trading between the makers of storage vessels and of good cooking pots in the Sunday markets.

Mito clay is coarse, but at Vicos and Aco, villages in the hills not far from Mito Alto, there is fine clay and sand which imparts strength as well as luster to pottery. These two communities are often referred to as centers which furnish clay to other villages and also as places from which come fine products. Aco pottery especially is characterized by its smoother texture and greater variety of shapes. The Mito potters look upon the Aco potters with their permanent kilns (fig. 51) as professionals. A comparison between the forms and textures of two

lots, one Estafana's and the other an Aco family's (figs. 45 and 53, 54) reveals the obvious differences.

The pottery making I saw in the two highland districts was a family industry. The basic requirements as they related to demands of the local markets were known and the procedures by which those demands could be met had been systematized. The actual results of a family's time and effort, however, were greatly diminished through trial and error methods which were not recognized as inadequate to solve the recurring problem of breakage. At the Macuri's in Mito Alto, a fairly high proportion of pottery broken during the firing operation was accepted as normal. Although firing is the most difficult process to control, there is strong probability that the initial mixing of clay and sand might have been casually done and that the length of drying time was cut short for many of the jars. Potters agreed that even with sunny days, pots should dry about a week before firing. Those pieces I followed through from start to finish were fired on the fourth day. Their coming out intact was unlikely. There was neither time nor opportunity to investigate the results of a week's work in other courtyards. As for the Macuris, I judged there was approximately the same proportion of loss in the two lots fired, José's and Estafana's. They drew clay from a common mound and they fired in the same kiln. If José's pottery suffered less, it may have been because he organized his time better than did Estafana, on a schedule which gave his pots more uniform drying periods.

NOTES

All notes have been inserted by the editors.

¹The grinding implement referred to here, and later referred to as a "mealing stone" is the common Andean rocker mill generally called a batán in Peru. The batán is the flat base stone; the most general term for the semicircular upper grinding stone that is rocked from side to side over the material to be ground is mano de batán.

²O'Neale's use of the term kiln is considerably broader than that of standard English where the term usually refers to a permanent, closed heated compartment. It is probable that she is following Linné's usage (1925, p. 117) which includes "kilns" the exterior of which are formed wholly or partly by the very vessels which are to be fired and the fuel used to fire them.

³Throughout the article we have used the term "scrape" where O'Neale used the term "rasp." The original at this point indicates that her usage was probably due to a false assumption that the Spanish verb raspar has, in this context, the same meaning as its English cognate. The original text reads as follows: "With us, rasping like filing implies a movement back and forth across a surface. The Andean potters employ the word to signify shaping by means of cutting away excess thicknesses of clay."

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KEY TO ILLUSTRATIONS

All photographs were the property of the author. The following abbreviation has been used: RLMA, Robert H. Lowie Museum of Anthropology, University of California, Berkeley.

Plate XV

Fig. 1. RLMA 16-11956. Whistle in form of male dog. Maximum length 14.2 cm. White on light red matte paint, appliqué eyes, stamped design on collar.

Fig. 2. RLMA 16-11953. Whistle in form of pig. Height 7.8 cm. Purple-red matte paint, features incised and stamped.

Fig. 3. RLMA 16-11954. Maximum length 8.6 cm. Purple glaze on head, light blue glaze on tail, appliqué wings, stamped eyes.

Fig. 4. RLMA 16-11955. Whistle (broken) in form of four-footed bird. Maximum length 8.0 cm. Head and tail dark blue, wings red with incised outline, appliqué eyes.

Plate XVI

All vessels in this plate are miniatures. Those in figs. 14-18 all have rounded bases and are painted matte red on unpigmented ground.

Fig. 5. RLMA 16-11959a. Rim diameter 6.6 - 6.8 cm. Brownish glaze.

Fig. 6. RLMA 16-11964. Length 7.5 cm. Brownish glaze.

Fig. 7. RLMA 16-11965. Rim diameter 7.3 cm. Brownish glaze.

Fig. 8. RLMA 16-11962. Width across handles 7.2 cm. Brownish glaze.

Fig. 9. RLMA 16-11961. Rim diameter 4.9 cm. Light green glaze.

Fig. 10. RLMA 16-11960a. Rim diameter 3.6 cm. Brownish glaze.

Fig. 11. RLMA 16-11960b. Height 2.2 cm. Brownish glaze.

Fig. 12. RLMA 16-11963. Pitcher in form of a duck. Maximum height 5.3 cm. Greenish glaze, punctate eyes.

Fig. 13. RLMA 16-11959b. Maximum height 5.3 cm. Yellowish glaze.

Fig. 14. RLMA 16-11966. Height 6.5 cm.

Fig. 15. RLMA 16-11958. Height 3.95 cm.

Fig. 16. RLMA 16-11957. Height 5.0 cm.

Fig. 17. RLMA 16-11967. Height ca. 6.2 cm., width across handles 9.6 cm. Three handles at right angles to rim, one parallel to rim.

Fig. 18. RLMA 16-11968. Brazier. Height 5.8 cm.

Plate XVII

Figs. 19-21. Steps in manufacture of small bowl. Ayacucho, Peru.

Fig. 22. RLMA 16-4360. Two piece pottery disks for pottery making. Huayhuas, near Huanta, Peru. Lower disk: maximum diameter 2.5 cm., bevel edge on under side 2.5 cm., flat base diameter 4.5 cm., height at edges 4.5 cm., depression at center 2.0 cm., thickness at center 2.5 cm. Upper disk: Maximum diameter 30.0 cm., height at edge 4.0 cm.,

depression at center 2.0 cm., thickness 2.0 cm.

Fig. 23. RIMA 16-4361. Gourd fragments for finishing and shaping pottery. Huayhuas, near Huanta, Peru. Left fragment: maximum length 9.7 cm., broken pyroengraved gourd with design on outside and inside smoothed, top edge ground thin after breaking. Right fragment: maximum length 7.5 cm., unmodified gourd fragment.

Figs. 24-26. Steps in manufacture of chicha jar. Huayhuas, near Huanta, Peru.

Plate XVIII

Figs. 27-28. Making "kiln" (arranging pottery and fuel for firing). Huayhuas, near Huanta, Peru.

Fig. 29. Pottery market, Huancayo, Peru.

Fig. 30. Courtyard of Macuri house, Mito Alto, near Huancayo, Peru.

Fig. 31. Burro loaded for market. Mito Alto, near Huancayo, Peru.

Fig. 32. Pit in courtyard for mixing clay for pottery. Mito Alto, near Huancayo, Peru. Ca. 100 cm. diameter.

Plate XIX

Figs. 33-38. Steps in manufacture of small jar by Estafana Macuri. Mito Alto, near Huancayo, Peru.

Plate XX

Figs. 39-44. Steps in manufacture of large jar by Estafana Macuri. Mito Alto, near Huancayo, Peru.

Plate XXI

Fig. 45. Range of pottery vessels made by Estafana Macuri. Mito Alto, near Huancayo, Peru.

Fig. 46. Estafana Macuri painting jar with red base coat. Mito Alto, near Huancayo, Peru.

Fig. 47. Estafana Macuri's daughter putting white rim band on jar. Mito Alto, near Huancayo, Peru.

Fig. 48. José Macuri working on very large jar in foreground while his daughter reworks clay scrapings on sheepskin in background.

Fig. 49. Results of firing and "kiln" in courtyard of Macuri house. Mito Alto, near Huancayo, Peru.

Plate XXII

Fig. 50. Recently fired "kiln." Mito Alto, near Huancayo, Peru.

Fig. 51. Pottery kiln. Aco, near Huancayo, Peru.

Fig. 52. RIMA 16-4355. Pot sherd used to finish pottery. Mito Alto, near Huancayo, Peru. Length 12.5 cm., maximum width 6.25 cm., thickness 1.2 cm. Edges ground down somewhat on convex side.

Figs. 53-54. Pottery vessels made at Aco, near Huancayo, Peru.

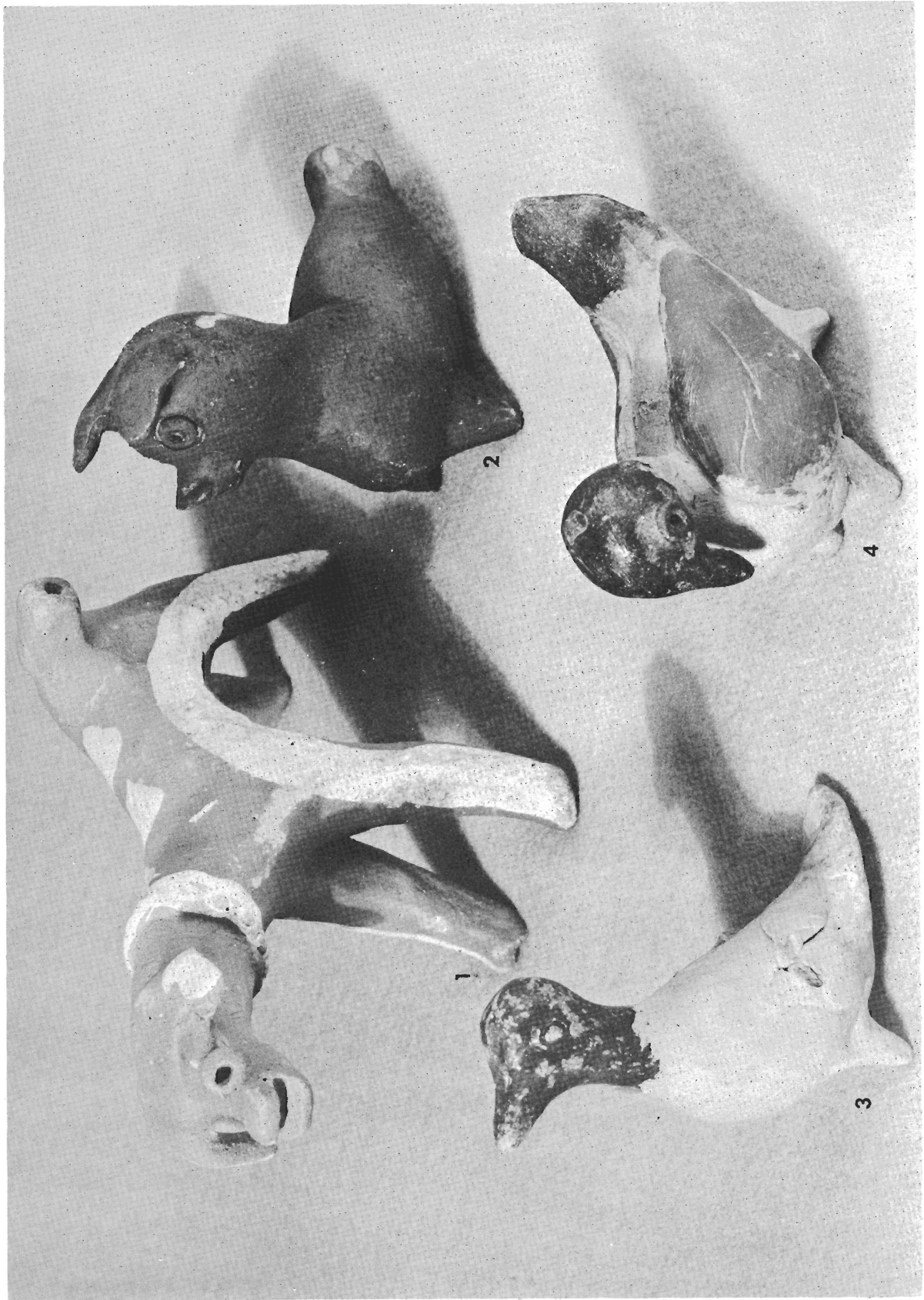


Plate XV. Figs. 1, 2, and 4, pottery whistles; fig. 3, toy (?). See Key to Illustrations.

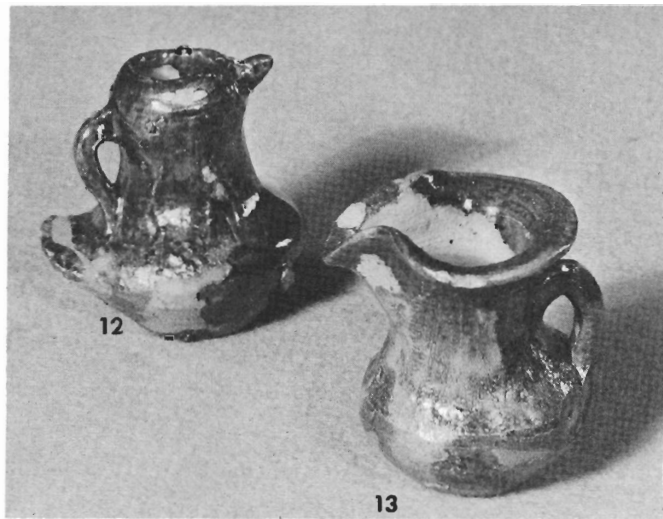
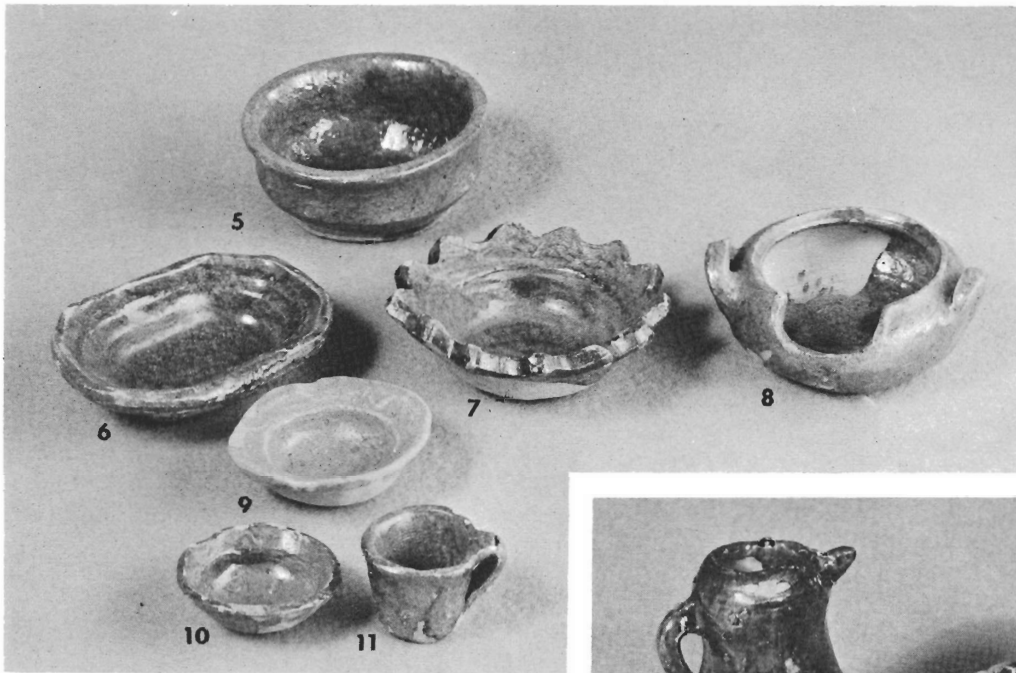


Plate XVI. Miniature pottery vessels from near Huancayo and/or Ayacucho, Peru. See Key to Illustrations.



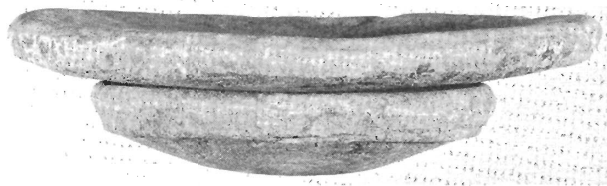
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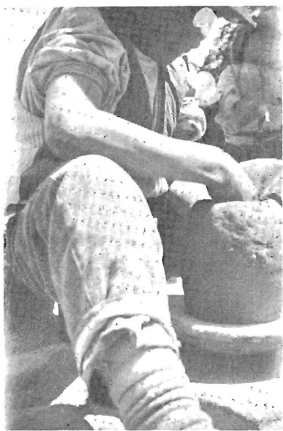
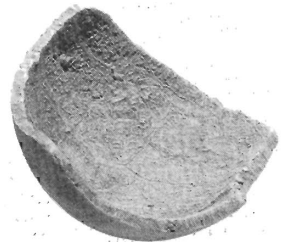
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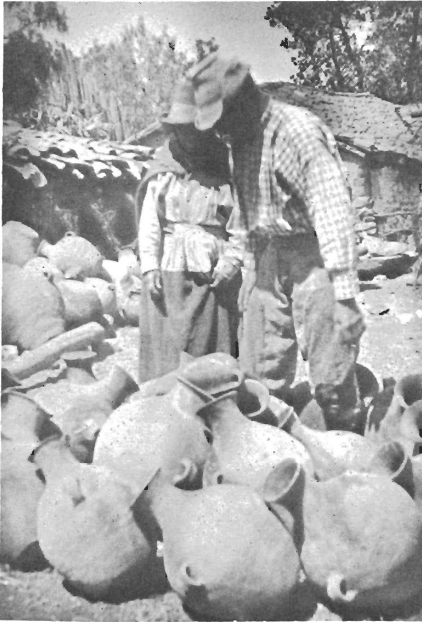


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Plate XVII. Ayacucho region. Figs. 19-21, making small bowl; fig. 22, two piece molde; fig. 23, gourd fragments; figs. 24-26, making chicha jar. See Key to Illustrations and text.



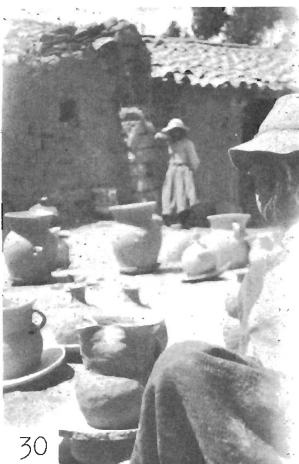
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Plate XVIII. Figs. 27, 28, preparing for firing; fig. 29, Huancayo market; fig. 30, potters' courtyard; fig. 31, loaded burro; fig. 32, pit for mixing clay. See Key to Illustrations and text.



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Plate XIX. Figs. 33-38, Estafana Macuri making small jar. Mito Alto, near Huancayo, Peru. See text.



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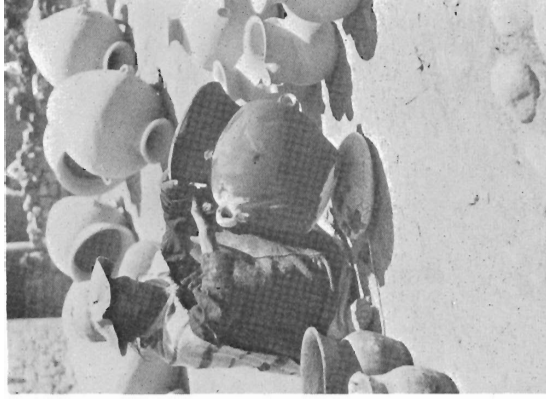


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Plate XX. Figs. 39-44, Estafana Macuri making large jar. Mito Alto, near Huancayo, Peru. See text.



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Plate XXI. Mito Alto. Fig. 45, range of vessels made by Estafana Macuri; figs. 46, 47, painting vessels; fig. 48, making large jar; fig. 49, "kiln" and results of firing. See Key to Illustrations and text.



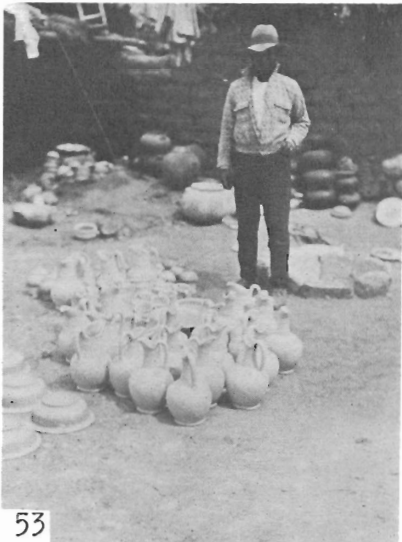
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Plate XXII. Huancayo region. Fig. 50, recently fired "kiln"; fig. 51, pottery kiln; fig. 52, sherd used in finishing; figs. 53, 54, range of vessels made at Aco. See Key to Illustrations and text.