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The University of New Mexico Bulletin

Navajo Pottery Manufacture

By W. W. Hill

THE UNIVERSITY OF NEW MEXICO BULLETIN
Whole Number 317 December 1, 1937
Anthropological Series, Vol. 2, No. 3
Published monthly in January, March, May, July, September, and November, and semi-monthly in February, April, June, August, October, and December by the University of New Mexico, Albuquerque, New Mexico
Entered as Second Class Matter, May 1, 1906, at the post office at Albuquerque, New Mexico, under Act of Congress July 16, 1894
University of New Mexico Press
1937

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INTRODUCTION

Recent researches by the Laboratory of Anthropology, Santa Fe, N. M., Harvard University, and the University of New Mexico, in the field of Navajo archaeology have increased the interest in the material culture of that people. With this in mind the following paper was formulated in hopes that it would stimulate further inquiry, help to bridge the gap between ethnology and archaeology in Navajo history, and ultimately lead to the discovery of the derivations of Navajo pottery.

The information contained in the paper was gathered during the years of 1933 to 1935 under the auspices of Yale University and the National Research Council. I wish to acknowledge my appreciation to these two institutions, and to Yale University for permission to publish on this phase of the work. I also wish to express my gratitude to the American Museum of Natural History, New York; the Museum of Anthropology, University of California, Berkeley, California; and the Laboratory of Anthropology, Santa Fe, N. M., for the use of their Navajo pottery collections.

Ethnologic material on pottery manufacture was obtained from fifteen informants. Their names and locations on the reservation were as follows: Black Woman, Keams Canyon, Ariz.; Tall Woman, White Cone, Ariz.; Margaret Shirley, Deer Spring, Ariz.; Little Woman, Ganado, Ariz.; Mrs. Ben, Black Rock, Ariz.; Pete Price, Fort Defiance, Ariz.; Curley, Chin Lee, Ariz.; Red Mustache's Wife, Little Woman, and Albert Sandoval, of Lukachukai, Ariz.; White Hair, Wheatfields, N. M.; Slim Curley, Crystal, N. M.; Tall One of the Mexican Clan, Red Rock, N. M.; and Willito Platero and Jose Maria Chavez, of Cañoncito, N. M.

Since the subject of the paper is in the field of material culture, linguistic refinements were considered unnecessary. For this reason the diacritical marks denoting length, tone, etc., have been eliminated.

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In accordance with the established policy of the University of New Mexico Press, the author has consented to adopt the Spanish spelling of Navajo, rather than his preferred form.

NAVAJO POTTERY MANUFACTURE

POTTERY TYPES [1]

The Navajo, unlike their Pueblo neighbors, were indifferent pottery makers. Their work was, on the whole, crude, the decoration inartistic, and the forms limited. The technique is, at present, confined to comparatively few individuals and appears never to have flourished to the extent of meeting the practical demands. In fact, Letherman,[2] in 1855, stated that, "If ever these people possessed the art of making pottery they have lost it, for they certainly make none now." While this is known to have been untrue, it gives an index to the comparative rarity of the art.

According to tradition, the origin of the utilitarian cooking pot is assigned to mythological antiquity, the origin of the painted wares to the Pueblos. This latter origin is further substantiated by the fact that in technical process the Navajo and Pueblos [3] form a group opposed to the rest of the pottery-making peoples of the Southwest, who use the paddle and anvil method of manufacture, and that such regional variations as occur in Navajo pottery-making technique generally bear the stamp of a peculiarity of the nearest pueblo.

Pottery forms included cooking pots, bowls, trays, cups, pitchers, canteens, and ladles. Today, as in the past, the most common form was the *asaa*, cooking pot (Fig. 1a). This was a fairly straight-sided vessel with a barely perceptible neck, wide-mouthed, and with a rim flaring slightly outward. The bottoms varied from round to conical. The

1. See also Sapir, E. and A. G. Sandoval, "A Note on Navaho Pottery," *American Anthropologist*, New Series, vol. 32, 1930, pp. 575-76; Franciscan Fathers, *Ethnologic Dictionary*, St. Michaels, 1910, pp. 285-91; James, Marjorie, "A Note on Navajo Pottery-Making," *El Palacio*, vol. XLIII, Nos. 13-14-15, 1937, pp. 85-6; Tschopic, Harry, in press; Douglas, F. H., "Seven Navaho Pots," *Material Culture Notes No. 3, Reports from the Ethnographic Laboratory*, Denver Art Museum, Denver, May, 1937.

2. Letherman, Jona, "Sketch of the Navajo Tribe of Indians, Territory of New Mexico," *Report of the Smithsonian Institution*, 1855, Washington, 1856, p. 296.

3. Gifford, E. W., "Pottery-Making in the Southwest," University of California, Berkeley, 1928, *Publications in American Archaeology and Ethnology*, vol. 23, pp. 353-73.

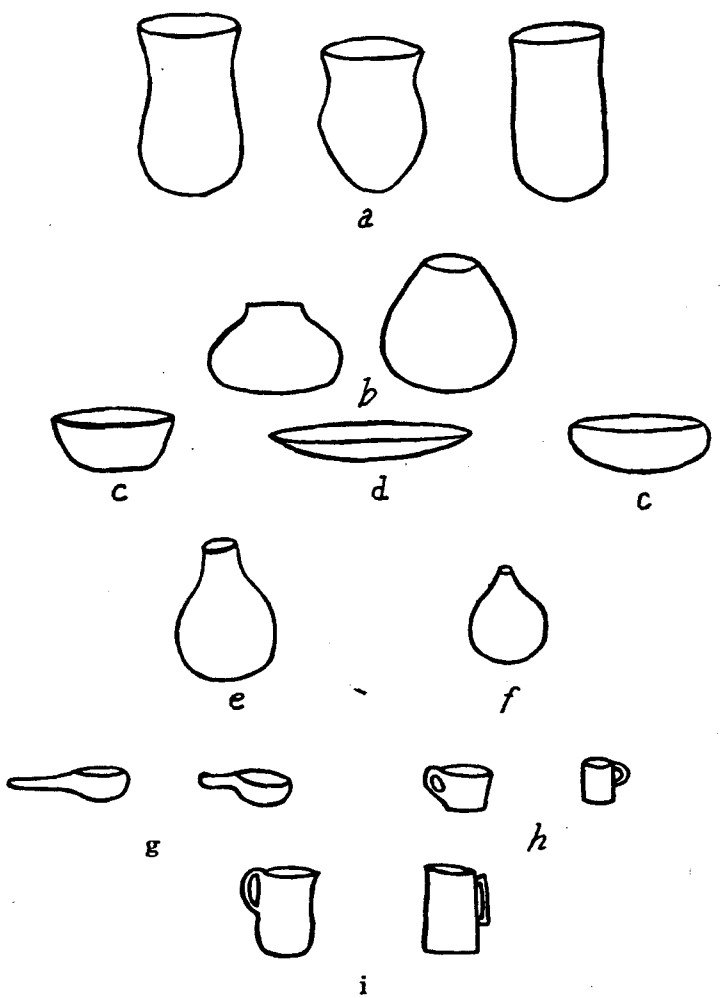

FIG. 1. Navajo Pottery Forms: a, cooking pots; b, cooking pots; c, bowls, d, parching tray; e, water jug; f, water bottles (after Franciscan Fathers); g, ladles; h, cups; i, pitchers.

neck of the pot usually carried an incised geometric design and the rim occasionally was scalloped. In size, these pots varied from one with a depth of three inches and a diameter of two inches, to pots three feet deep and two feet in diameter.

Another type of cooking pot (Fig. 1b) was formerly made and used. This had a globular body, and contracted at the neck toward the mouth. It was called *asaa tieli*, "wide pot." According to the Franciscan Fathers[4] these were originally imported from the Hopi.

Cooking pots were employed chiefly in the preparation of food. They were also used for carrying and storing water, and in this case a wool or buckskin rope was tied around the neck to serve as a handle. Occasionally these pots also served as storage receptacles for various fresh and dried vegetable and meat supplies, or for household articles.

In the Squaw or War Dance a skin head placed over the pot made it usable as a drum. Although a new pot was preferred, any pot might be taken for a drum. However, once used as a drum it could never be used as a cooking vessel. "This was because they put medicine in it." It was believed that eating from such a pot would make the person ill in the Enemy Way.

Bowls, *hactlic kletsa*, "dish of mud," or, according to the Franciscan Fathers, *letsa*, "*earthen basket*,"[5] (Fig. 1c) were the next most common pottery type. They are still being manufactured. These were never cooked in, but were used for serving food and as medicine containers in the ceremonies. Their bottoms were rounded. Their diameters ranged from two to twelve inches and their depths from one to six. The interiors and exteriors of bowls were commonly decorated (Plate IV a, b).

Of this same type were the shallow, undecorated pottery trays (Fig. 1d). These were shaped after the fashion of the food baskets and varied in diameter from eight to sixteen inches. They were designated by the same name as

4. Franciscan Fathers, *Ethnologic Dictionary*, St. Michaels, 1910, p. 290.
5. *Ibid.*, p. 287.

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were the bowls. Their principal use was for parching, and as food containers.

Canteens, *tosd*, according to the Franciscan Fathers,[6] *tqosa*, (Fig. 1e) were shaped after the manner of the pitched water baskets, with an oval body but a long contracted neck. They were often buckskin covered, or equipped with lugs to facilitate carrying. In the latter case, it was not unusual for them to be decorated (Plate IVc). They were used for transporting and storing water. The largest held about three gallons.

According to the Franciscan Fathers,[7] there was also a smaller water bottle, *tozis* (Fig. 1f).

> The water bottle was provided with a loop, or finger handle, near the neck, so that it might be conveniently grasped in pouring out its contents. They were shaped much like an ordinary pitcher, omitting the spout and handle, with a narrower neck than that of the waterpot.

Ladles or dippers, *hactlc adei*, (Fig. 1g) resembled the gourd ladles in shape. They were used in serving food and for drinking. Their diameters ranged from two to four inches and their lengths from six to eight inches. They were occasionally decorated (Plate IVd).

Cups (Fig. 1h), bore the same name and accomplished the same purpose as ladles. According to all except one informant, cups and pitchers (Fig. 1i) were recent innovations copied from introduced wares. This informant stated that her grandmother had made cups after the form of those discovered in the ruins.

Pipes, dolls, and animal figures also were made of clay. The latter two were generally sun dried, and were given to the children for toys.

6. *Ibid.*, p. 289.
7. *Ibid.*, p. 286.

MANUFACTURE OF COOKING POTS

Pottery making was an industry of women and berdaches. The knowledge of the art was acquired early in life. Children of five or six were told to watch their mothers and grandmothers as they worked, and were given lumps of clay with which to imitate the actions of these elders. As they grew older they made small pots under supervision and were corrected when they made errors. Finally they mastered the whole process and were allowed to make them alone.

The tools employed in pottery making were simple and few in number. Aside from the mano and metate, which were general household articles, they consisted of a corncob, a water-worn pebble, and a piece of gourd. The corncob was used in smoothing the exterior and, occasionally, the interior of the pots. Before being placed in use it was singed over the fire to remove the coarser surface which would abrade the soft clay. The pebbles used in smoothing and polishing the pots varied in diameter from one and a half to three inches. The convex surface of a piece of gourd usually was employed in smoothing the inside surface of the pottery.

Suitable clay seems to have been quite plentiful. If the clay was gathered from other than an established site, some was first moistened and kneaded to test its cohesiveness. "Even then you sometimes get fooled and it cracks." In the east, a grayish clay was chosen. One of the favorite sites was in the vicinity of Pueblo Alto, Chaco Canyon. The clay preferred in the central area was reddish. This could also be obtained from many localities and was especially plentiful along Carrizo Creek, Lukachukai. In the west, a whitish clay was most popular.

The tempering material used throughout the area was shards gathered at the various ruins with which the country abounds. Any shards other than those from corrugated pottery could be used. The latter were said to form a poor tempering material.

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The process of preparing the clay and temper varied somewhat according to the individual and to some extent in the different areas. In the east, both the clay and the tempering material were ground separately on the metate to the fineness of dust. Equal amounts of clay and tempering material were then mixed and water added, a little at a time, until, from past experience, the potter felt that the clay had assumed the right consistency. After this, the clay was kneaded and allowed to stand for three days before it was used.

In the central area one informant soaked her clay for an hour or more before grinding it. When it was ground, she covered the metate about a half an inch deep with ground tempering material (Plate Ia), placed the damp clay on this and kneaded the two together (Plate Ib). Another informant ground her clay dry, put it in a bowl of water, sprinkled on the tempering material, kneaded the two together, and allowed them to stand overnight before using. All informants depended on the color and feel of the clay to determine how much tempering material to add. If the clay was red it needed more temper. When the right amount had been introduced it became quite dark. The ratio was about two parts of clay to one of temper. "Too little tempering material will cause your pots to crack. If you have too much, your clay will not hold together." While the clay was being kneaded, water was added from time to time until it assumed the right consistency. During this process any hard lumps of clay, straw, hair, or any other foreign matter were carefully picked out and thrown away.

In the west, one informant mixed the clay and shards, wet them, and ground them together. For every pot, one handful of shards was put in. When ground, the mixture was put out to dry. When it had dried thoroughly water was added and it was ready to work. Another western informant ground the clay dry and used a coarser grade of tempering material than any of the other informants. In

PLATE I

a b
c d

a. grinding the tempering material. b. kneading the clay and tempering material [illegible]

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Plate II

a b
c d

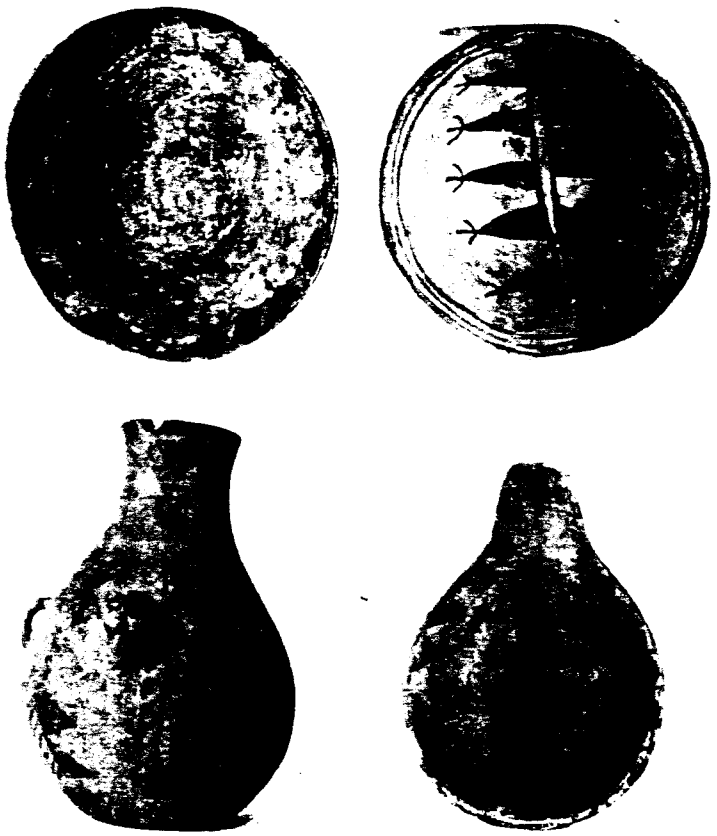
a, placing the coil; b, finishing the pot rim; c, putting on the incised design with the butt of a corn cob; d, rubbing out, after on a bowl before firing

Plate III

a

b

a, [illegible] after firing; b, polishing a cooking pot [illegible]



this latter case, the clay was worked into pottery as soon as it had been thoroughly kneaded.

With minor exceptions, the basic technique of making the various types of pottery was the same throughout the area. When the potter was ready to work she built a fire and placed her clay and a bowl of water near at hand. She kneaded the clay once more and was then ready to work.

In making a cooking pot, the potter took a lump of clay and, with the fingers, worked and molded it into the form of a small bowl (Plate Ic). During this work and in all subsequent stages the hands were kept continually moistened in water. Some informants varied slightly in this beginning process. One from the central area first pressed the lump of clay against her elbow to form the bowl-like bottom, and then with her fingers kneaded the bowl walls to an even thickness. An informant from the west merely took a ball of clay, flattened it out in pancake form, and added coils to this base. When finished the pot bottoms usually had a depth of about three inches. As soon as they were formed they were smoothed with a corncob both inside and out, or with a corncob on the outside and a piece of gourd on the inside. After this they were placed beside the fire and turned from time to time until they had set sufficiently to take the following coil.

When the bottom had had an opportunity to dry, the operator rolled out a coil between her palms (Plate Id). These coils were about three-quarters of an inch in diameter. Next she placed the bottom of the pot in her lap and moistened the inside edge. The ring coil was then affixed to the inside edge of the bottom, going clockwise (Plate IIa). The left hand guided the coil, while it was pressed into place and to uniform thickness with the bottom by the thumb and index and middle fingers of the right hand. A ring coil added about an inch and a half to the height of the side walls. One pot, nine inches high, consisted of the bottom and four coils. The coil, except for one individual, was always started on the side of the pot nearest the worker and the pot turned counter-

clockwise so that the potter continued to work at that point. The ends of the coils overlapped about three-quarters of an inch and were squeezed together. If the coil was too long, the surplus was pinched off; if too short, a small piece was added. The exception, noted above, placed the center of the ring coil at the far side of the pot and carried the two ends toward her on either side of the vessel. She pressed the ends of the coils together and did not overlap them.

All except one informant maintained that the joints might come at any point. This one stated that they should come one above the other so as to form an *atin* or "trail." When the coil was fixed, the fingers were again moistened and the clay smoothed on the outside with a corncob and on the inside with a corncob or piece of gourd. Then the whole pot was gone over with a water-worn pebble. The movement of all tools employed in the smoothing process was always upward.

When the coil was in place and had been smoothed, the pot was again placed by the side of the fire and turned from time to time until it had set. A potter made five or six pots at one time in order that, while some were drying, she could be working on others.

The remainder of the side wall was built up by repeating the process just described until the required height of the pot was attained. The slight flare at the rim and the contraction at the neck were achieved by varying the size of the coil rings and by working the clay in or out with the corncob and gourd.

When the last coil was placed, the rim was evened by pinching off or adding small pieces of clay (Plate IIb). It was then smoothed. Again, the whole pot was worked over with the corn cob, gourd, and water-worn pebble.

Next, the foundation for the design was placed on the pot. In the west, the last coil was made thicker than the rest and this extra surface was utilized to receive the incised design. In the central area and in the east, a thin coil about an eighth of an inch in diameter, was placed around the out-

side of the pot at the neck, pressed in and flattened. These fillets might encircle the pot once or twice, be serpentined, zigzaged, or stepped. Occasionally the fillets formed the only decoration, but more often carried an added design.

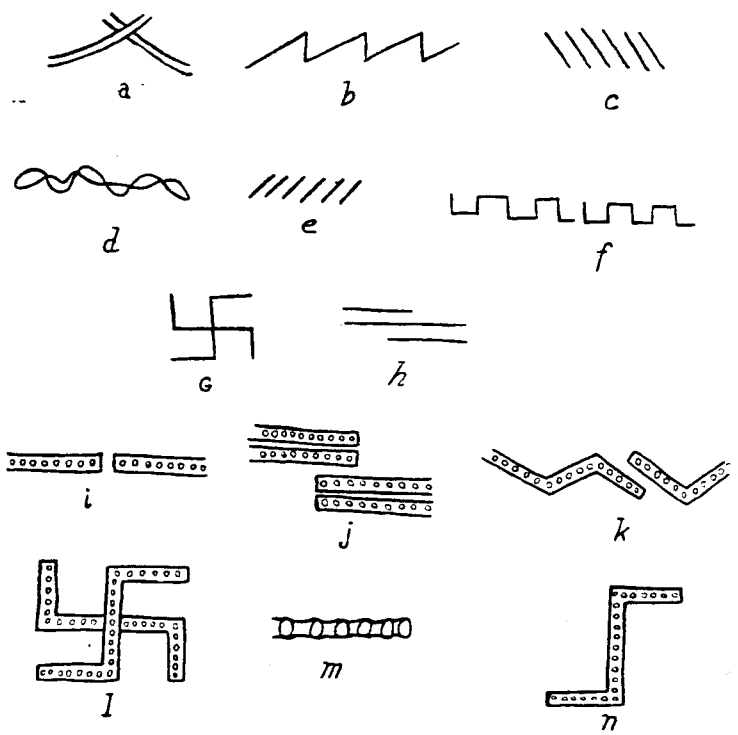


FIG. 2. Designs on Cooking Pots: a-h are incised designs; i-n are design coils carrying incised decoration; b and k are called "lightning"; h, "straight line that goes around"; m, "beads"; g, l, and n are designs which have been copied from the trade blankets.

The designs were simple and geometric. They usually consisted of a series of short straight lines or dots pressed into the clay of the neck of the pot or the fillet (Fig. 2a-n) with a stick, corncob, or the finger (Plate IIc). "These were supposed to represent a string of beads." In recent times, designs copied from the commercial blankets have been

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placed on the pots. As in the case of basket designs, the decorative elements or the fillet never completely encircled the pot. This break was called the *atin* "trail." One informant always placed this break in the design in line with the overlaps of the coils on the wall of the pot. All other informants placed the break at any convenient point. This break was accomplished in several ways: either

or

or, if the filet encircled the pot twice, in this manner

According to informants in the central area only the latter two types were permissible. Those in other areas used all types. No other decoration except an occasional scallop on the rim was ever applied to cooking pots.

After the design was placed, the pot was polished and smoothed again with the pebble and placed by the side of the fire for a day, or two days in the sun, to dry. It was said that if the pots did not dry thoroughly before they were fired, steam would form during the firing process and they would crack. In recent times one informant in the east has been giving her pots a cement wash to eliminate this danger and to make the pots more durable. No covers were ever made for the pots.

In the west, pots were fired in a pit in which a large fire had been built. Juniper was preferred, but any wood could be used. When the fire had burned down, the coals were raked to one side, the pots placed in the pit in any convenient position, and covered with live coals. They were left in the pit for from four to seven hours.

In the central and eastern area the pit was seldom used. The pots were placed upside down or occasionally right side up on flat stones (Plate IIIa). "If they are laid on their sides they will come out of the fire crooked." Wood, preferably juniper, was then piled around and over the pots. Enough wood was placed to insure the fire burning for six hours without replenishing. Informants stated that this

gave a steady heat with no quick temperature changes, and eliminated the danger of overfiring and cracking the pots which might occur if wood were subsequently added. However, in one firing that was witnessed, the fire was replenished three times without bad effects.

In recent times one informant in the east has been firing her pots in a Mexican type bake oven. Wood was put in and allowed to burn down. Then the pots were put in and allowed to remain twelve hours. Just after firing, pots are grayish in color. After they have been pitched and used for some time, they become black.

Before the pots had become cold they were removed from the firebed with a stick, placed on pinyon boughs or some flat surface, and rubbed inside and out with pinyon pitch (Plate IIIb). The pitch was applied with a stick, pinyon branch, or a rag. The pitching was said to "cool, harden, and darken the pottery."

If the cooking pots were to be used for storage they were not pitched. Pitching was also dispensed with, said one western informant, if the pots had a reddish cast after firing.

In the central area, after pitching, the pots were thoroughly greased with mutton tallow to remove the taste of the pitch.

MANUFACTURE OF OTHER WARES

Up until the time they were fired, the process of making bowls and parching trays was the same as that employed in making cooking pots. The same clay and the same ring-coiling technique were used, and the potter often made cooking pots, trays, and bowls at the same time.

However, after the pottery had set and was ready for firing, the process differed. A solution of red ochre in water was rubbed on the bowls (Plate IId). The bowls were then rubbed and polished with a water-worn pebble until the surface became quite dry. This process was repeated several times until the bowls or trays assumed a good polish. In the eastern and central areas, either yellow ochre or white clay

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might be substituted for the red ochre. After this, unless further decoration was to be applied, both bowls and trays were ready for firing.

In the west, the bowls and trays were fired with, and in the same manner, as the cooking pots. In the east, a ring of stones set on edge and about a foot high was erected. Smaller flat stones were placed inside this ring and the bowls or trays inverted upon them. The circle was then filled with sheep or horse dung and the fire started at the sides. The firing took about twelve hours.

In the central area, no stone circle was used. The bowls or trays were inverted or leaned against stones. Next they were covered with enough sheep dung to burn for six hours. When the bowls or trays had cooled sufficiently to be held with a rag, they were taken from the fire and rubbed with a mixture of tallow and sheep brains. "This hardens the bowls and polishes them at the same time." In all areas the bowls or trays after firing ranged from yellow to brick red or red orange, or in the central and eastern regions, when the clay slip was used, from light to dark gray.

Pitchers and cups followed the bowl-making technique of each area. The handle was usually a separate piece applied after the container was finished.

Trays never carried any further decoration. However, in the eastern and central areas (not in the west), the bowls were often (occasionally the pitchers and water bottles, also) decorated on the inside, outside, or on both faces (Plate IV a, b, c).

These decorations were crudely executed and simple. The designs varied from simple geometric figures and lines, running around or up and down the bowl, to conventionalized drawings of lightning and bird tracks, and realistic figures of deer, antelope, and birds (Fig. 3a-k). As in cooking pot and basketry designs an *atin* or "trail" was always left in the design.

No decoration of this sort is being made today. Formerly these designs were in black, yellow, or red. "Coal," or

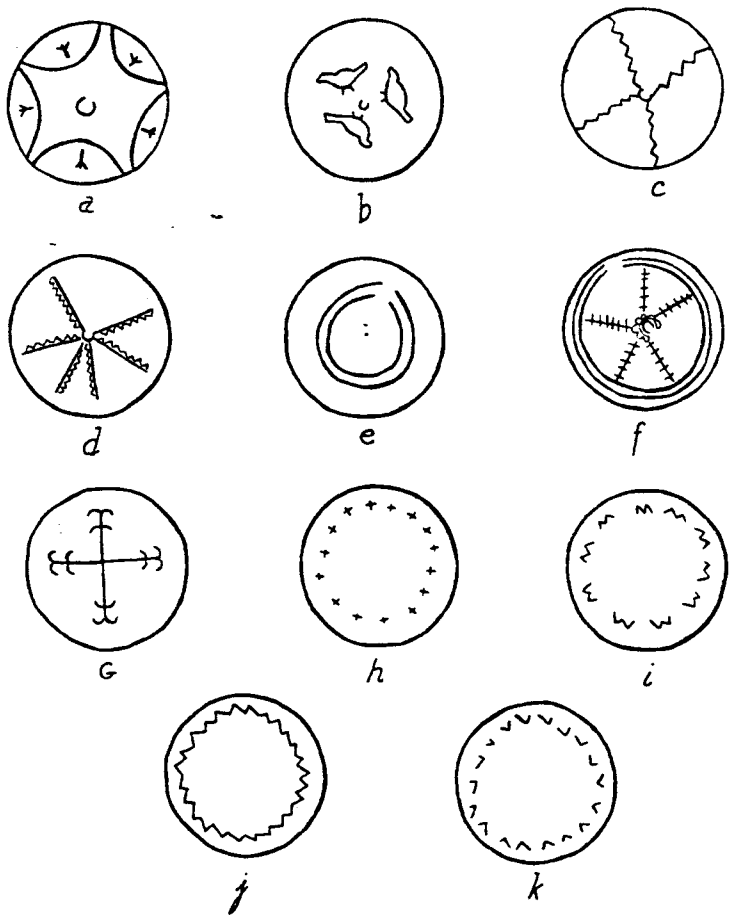

FIG. 3. Bowl Designs as drawn by Informants: a, b, and c represent respectively bird tracks, birds, and lightning. No explanation of the meaning of the other designs could be obtained.

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red or yellow ochre was ground to a powder. Then the juice of heated "wide yucca" *(Yucca baccata)* was squeezed out on a rock. One of the above powders was added and the resulting mixture used to draw the design on the bowl. The bowl was then fired. According to some informants the Navajo learned this art from the Pueblos.

Ladles and dippers in the central and eastern area were molded, not coiled. The handle was not a separate piece but was molded at the same time as the bowl. If the potter wished, she placed a hole in the handle of the ladle so that it might be hung. The same clay and firing methods employed in making bowls were used in making ladles. According to one informant in the central area, if no bowls were made the ladles might be fired with the cooking pots, in which case they were afterwards boiled in milk to harden them. Ladles occasionally bore designs (Plate IVd).

In the west, the following technique was used in making ladles and dippers. A lump of clay was flattened on a board or rock. Next, the worker lifted the edges of the clay to form the side walls of the bowl and squeezed one end together to form the handle. The ladle depth at this point would be about two finger widths. Two coils of clay were then added, one around the bowl to give it depth, the other to the top of the handle to strengthen it. The ladles were then fired with the bowls or cooking pots.

Clay pipes were made in two styles: the old tubular form (Fig. 4) and the more recent elbow type (Fig. 5). Those designed for ceremonial use had turquoise or white shell ground up with the clay. According to informants, both clay and cane stems were used. An opening was made in in the bowl of the pipe with a twig and the stem was fitted into this. A difference of opinion existed as to whether pipes destined for ceremonial use were made by men or women.

FIG. 4

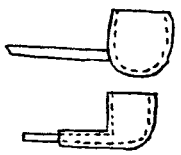

FIG. 5

RITUAL OBSERVANCES

Aside from the necessity of placing the coils in a "sunwise," i. e., clockwise, fashion and leaving a "trail" in the design, several other observances and rituals were connected with pottery making. Throughout the whole area it was thought that the potter would have better luck if she worked unobserved. If visitors were seen approaching, the pottery was covered until they departed. If they arrived before the potter had had an opportunity to cover her work she rubbed clay on the visitors' faces and arms to prevent the pot from cracking. This observance was further elaborated in the eastern area, where the potter, following the prescribed chant pattern, put clay on the soles of the visitors' feet, palms of their hands, breasts, between their shoulders, made a zigzag line across their breasts, and placed some in their mouths. "That would keep the pottery from cracking. If you did not do this, it would break." When this had been performed, the visitors gave the potter some pollen, which was sprinkled on the pots while asking for good luck.

Those people who had had the Wind or Shooting Chants performed over them were considered especially bad luck for potters. It was believed that pottery would always be ruined if such people looked upon it while it was in the process of being manufactured. Such individuals never attempted to make pottery for themselves as they were predestined to be unsuccessful.

Other beliefs were recorded by individuals in the east and west. One (east) stated that if the pottery should crack while the potter was not touching it or that if it "moved away" from her while she was working, it was an omen that she and her relatives would have bad luck. The same informant always sprinkled yellow corn pollen, or meal, and prayed for good luck as she took the vessels from the fire. Another informant (west) said, "You must think that you are going to make good pottery while you are working or it will not turn out well." She also held that if anyone watched

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the potter while the pottery was being placed in the fire pit, it would crack.

SUMMARY

Aside from the individual variations occurring in the technique of pottery manufacture, there appear several distinct regional differences. The decoration fillet present on cooking pots in the eastern and central areas is lacking in the west. All pottery in the west was fired with wood and in pits, while in the eastern area no pits were used in firing and only one case was noted for the central group. The cooking pots were fired with a wood fire, and bowls, trays, and ladles with a fire of sheep or horse dung. In the central area this fire was built on the ground; in the east the manure was piled in a stone circle. While painted designs were placed on bowls, pitchers, ladles, etc., in the central and eastern sections, informants in the west denied that it was ever done in that area. The ladles in the central and eastern parts were molded throughout. In the west the foundation of the ladle was molded and coils were added to build it up.

While in the present status of the work no definite statements as to origins are possible, certain broad inferences may be made on the basis of the above ethnological accounts. Two distinct influences appear to have contributed at different times to the Navajo potters' art, giving rise to two forms and a variation in the final processes of manufacture. The older form, the cooking pot, was an elongated vessel with a conical bottom and a slightly flaring rim. Most of them carried an incised geometric design at the neck. They were utterly un-Southwestern in character and were probably engendered through contacts with Basin or Plains people.

The second influence was more recent and appears to have come from the contacts of the Navajo with the Pueblos. It was responsible for the introduction of such household utensils as trays, bowls, and canteens. From this same direction, and probably at a later date, came the concept of painted decoration in geometric and naturalistic figures, an

art confined entirely to the eastern and part of the central Navajo. As yet it would be unjustifiable to surmise as to the time of arrival of this painted ware. Specimens in the Museum of Anthropology at the University of California were collected in 1902. Dr. Mera, of the Laboratory of Anthropology, informs me that he has seen pottery of the same type which was collected in 1880.

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