


# *The Interamerican Diffusion of a Cooking Technique: The Culinary Shoe-Pot*[1]

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**It is terrifying to think how much research is needed to determine the truth of even the most unimportant fact. Stendhal**

THIS paper explores a problem in archeological interpretation. Inferences are derived concerning the use and history of a peculiar pottery vessel shape, which are then applied to wider problems of interpretation.

In archeological sites in the Southwest and in the Eastern U.S., as well as in Middle and South America, a number of pottery vessels have been found that are usually grouped together in a category called "shoe-shaped" or "bird-shaped"; more rarely, they are also referred to as "duck-", "boot-", "slipper-", "moccasin-", and "foot-shaped." (In Spanish, they are usually called "botas", "patos", "patojos", "zapatillos", or "zuecos.") While some are obvious effigies of the objects from which they take their name, others bear no more resemblance to one of these objects than they do to any of the others.

While studying the distribution and function of bird-effigy vessels in the Southwest (MS in preparation), I noted that some of the simpler vessel shapes cannot be surely identified as imitations of the bird form, and are therefore called "shoe-pots" by some authors. But other authors call the same shapes "bird-effigies" because there seems to be a continuous intergradation from the simple, plain, least bird-like to the most obvious bird-effigies with modeled head, wings, feet, and tail, and with painted eyes and feathers.

More careful analysis, however, showed that among the simple vessels many of the larger ones have a number of features in common that the more obvious bird-effigies lack. These features include a wide, short-necked orifice and surface finish typical of cooking ware. In contrast to the other Southwestern "shoe-pots" and bird-effigies, these features are remarkably consistent in their association with each other and also show a consistent and restricted distribution in space and time.

It seemed possible, then, that there is a category of pottery vessels which should be analyzed separately from the other "shoe-pots," on the grounds that they have a different use and a different history. Shortly afterward, during a visit to the Chicago Natural History Museum, I noticed displays of vessels from Nicaragua and Argentina that are identical in all visible respects to the Southwestern specimens. A check of the literature not only confirmed the widespread distribution of this particular form, but also reinforced the possibility of its independence from the other "shoe-pots" and bird-effigies.

For many years, there has been speculation on the wide interamerican diffusion of the "shoe-pot" (e.g., as part of the famous "Q-Complex"—c.f. Stone 1948). But many of the vessels in this category have nothing more in common

than egg-shaped or horizontally-elongated body, with the orifice at one end. Lumping them together in the same category without considering variation in form and use has tended to obscure some important problems of culture history and has sometimes made difficult the interpretation of pottery uses as well as wider cultural patterns such as ceremony (e.g., Jijón y Caamaño 1920:25; Compton 1956).

Therefore, the purposes of this paper are: 1) to define the nature of a special culinary kind of shoe-pot and to distinguish it from other "shoe-pots"; 2) to present interpretations of the use of the culinary shoe-pot; 3) to indicate the distribution of the culinary shoe-pot in space and time; and 4) to examine some implications arising from this appraisal.

## THE CULINARY SHOE-POT AS A SPECIAL-USE VESSEL

### FORM

The culinary shoe-pot can be defined as a pottery vessel distinguished by the following attributes:

1. Body shape: Bilaterally symmetrical on one vertical plane, but asymmetrical about the vertical axis of rotation. That is, the vessels are elongated horizontally, resembling an egg or an oval; the prolonged end terminates in a point or more often is just a long bulge in the side of the pot. The base is usually rounded, occasionally flat, and more rarely has short tripod supports.
2. Orifice:
   Position: Placed at the broad end of the body opposite the prolongation; never in the center of the long dimension of the pot or at the narrow end.
   Shape: Restricted in vertical section, but not narrow. Varies from round to broad oval in plan; when oval, the long diameter is usually at right angles to the horizontal length of the body.
   Size: Large, diameter usually from one-third to two-thirds the horizontal length of the body.
   Rim: Usually outcurved, grading into vertical on some specimens.
   Neck: Very short.
3. Vessel size: Horizontal body length is seldom less than 10 cm. or more than 30 cm., and most are from 12 to 20 cm. long. They are therefore rather small compared to most cooking pots. A Mixe specimen that is 17 cm. long and 14.5 cm. high and is typical of the form, holds about 1.3 liters (1 quart 13 oz.) when filled to the brim. The normal capacity of most culinary shoe-pots can be estimated at from 1 to 3 liters (quarts).
4. Surface finish conforms to the style of local cooking wares—usually a rough, unslipped plainware, but may have decoration like other cooking pots that does not interfere with the cooking function and is of a kind not likely to be obscured or destroyed during use.
5. Handles: Frequently none. When present, there is usually a single small vertical pottery loop attached to the lip and to the neck or shoulder, or else there is a single lip tab; the single loop handle or tab is always placed on the side of the orifice opposite the body prolongation. In the few areas where there is a second loop handle, it is placed on the opposite side of the orifice from the first handle and may have had relatively less practical value. Even more rarely, the two handles are placed at the sides of the neck. At Chupícuaro (México), however, the rim sometimes had four small handles. (The lip tab was apparently used for moving the vessel, rather than pouring—Kidder, Cosgrove, and Cosgrove 1949: caption of fig. 13; similar lip tabs are also found singly or in pairs on other shapes of cooking pots—e.g., in Arizona: modern Pima "bean pots"—Russell 1908:128, pl. 18, *b*; late Gila Plain pots—Haury 1945: fig. 63; Sikyatki—Fewkes 1898a: pl. 118, *b*; and Upper Pima of San Cayetano—DiPeso 1956:286.)

While the vessels classified as culinary shoe-pots consistently meet all of these rather specialized criteria of form, the other shoe-pots, bird-effigies, etc.,

consistently lack them, except for the overall asymmetrical body shape. The non-culinary "shoe-pots" and effigies generally have considerable variety in shape and proportions of the neck; the orifices are usually narrower and seldom oval; rims are more varied; vessel sizes are far more varied; they are seldom made in cooking ware, but instead receive more careful treatment and are often elaborately painted, incised, or modeled; if there are handles at all, there is usually one large loop handle that arches over the length of the vessel or is attached to the neck on the side *toward* the prolongation, so as to aid in pouring.

One of the reasons why culinary shoe-pots have often been classified as bird-effigies in the past is that occasionally the potter has added small, flat, non-functional lugs of clay to the sides of the vessel body, usually at the points of greatest breadth; sometimes also there is a lug added to the projecting end. These lugs are usually interpreted, probably correctly, as representations of the wings and tail of a bird. These most frequently appear on culinary shoe-pots in the Southwest U.S., where bird-forms are the most common pottery effigies, and are much more rare on culinary shoe-pots of Middle and South America. It should not be surprising that potters would notice the oddly-shaped pot's vague resemblance to the shape of a bird's body, and since they were also familiar with true bird-effigies in other wares, the potter might take the opportunity of heightening the effect. However, it is important to note that the bird resemblance is never carried beyond this suggestive stage. Since more realistic bird features could not very well have been added without impairing the utility of the pots, and since relatively few such vessels have the bird features, it would seem that the bird resemblance is a secondary addition to a functionally-determined shape (cp. Latcham 1928:172; Kidder and Shepard 1936:341; Linné 1938:69; contrast, however, Debenedetti 1917:152 and Compton 1956).

A very few vessels have the appropriate shape attributes of culinary shoe-pots but are so elaborately painted they could not have been used for cooking; cf. vessels at Chupícuaro (Peterson 1955: fig. 7), Costa Rica (Lothrop 1926: pl. 122, *b*), and Arizona (Fewkes 1898b: pl. 19, *3*), where many other eccentric shapes also occur in painted wares. I would suggest that these similarities to the culinary shoe-pot shape are coincidental or, at best, the culinary forms or the bird effigies inspired the shape for asymmetric vessels that were put to other uses—fine examples of this practise are the handsome modern glazed copies of culinary shoe-pots for sale in Mexico City tourist shops. Significantly, non-culinary "shoe-pot" shapes do not occur in the culinary wares.

The term "culinary shoe-pot" is admittedly not a good one. The form should probably be designated by some such horrific phrase as: "rotationally-asymmetrical horizontally-elongated offset-orifice cooking vessels." Instead, the "shoe" designation is retained because it is common in the literature and it is clearly an abstract descriptive term rather than an interpretive term (contrast "bird-shaped"). "Culinary" is added in order to emphasize the inferred special use of these vessels and to distinguish them from the wide range of other vessel forms which have been called "shoe-pots."

USE

Evidence for the inferred special use of the culinary shoe-pot is based on 1) the attributes of shape and surface finish that themselves distinguish the vessels as a unique class, and 2) ethnographic reports of contemporary use of similar vessels.

Unlike other kinds of "shoe-pots," all specimens, so far as published data allow judgment, are in locally-made cooking ware and frequently show soot and other marks of having been in a fire. The large size of the restricted orifice, as contrasted with most other "shoe-pots," is a clue to the specific kind of cooking that the vessels were best suited for. The relationship of orifice diameter to use is well expressed by Linton (1944:370): an efficient cooking pot is one which has a mouth large enough to prevent explosive boiling over and to permit stirring of the contents; it must also have a mouth small enough, relative to the vessel's capacity and heating surface, to prevent it from frequently boiling dry. Furthermore, the tendency to globular body and round or flat bottom suggests the pot was used on coals rather than in flames (Linton 1944:373). The suitability of the culinary shoe-pot for boiling is clear.

It is also logical that placing the vessel on coals with the orifice on the margin of the hearth while the bulk of the body is toward the center of the hearth would allow the contents to be stirred or ladled out so the cook's hand is less apt to be burned during cooking. The position of the rim edge, loop handle, or lip tab at the outer edge of the hearth would keep it relatively cool and easy to grasp so that the pot may be moved in and out of the heat (cp. Jijón y Caamaño 1914:138; Ambrosetti 1908:301–2).

There is ethnographic support for the inferences derived from the form of the culinary "shoe-pots." They are still used by the Zapotec of Oaxaca and their neighbors the western Mixe, by the Popoloca of Puebla, and by the Mapuches (Araucanians) of Chile (de la Fuente 1949:49–50, fig. 5; Martínez Gracida, cited in Gamio 1922:203; Larsen, cited in Linné 1938:69 and 1942:72; Beals 1945:120; Paddock 1955:26; Parsons 1936:fig. 2; Carmen Cook de Leonard, personal communication; Lothrop 1936:16). The cited references indicate that among the Zapotec there is an additional advantage: with the orifice of the pot out of the way, there is room to set another vessel or a *comal* for baking tortillas in the center of the heat, partly over the body of the shoe-pot, which is pushed in between the hearth stones or the legs of a tripod vessel. By cooking several things at once, time and fuel are saved.

The Ica of the Sierra Nevada de Santa Marta, northern Colombia, reported that their ancestors used "shoe-pots" because the vessels could be partly pushed in under the ashes and coals (Bolinder 1942:18), but they may have been guessing. This might serve to promote more rapid boiling by subjecting to the heat a greater proportion of the pot's surface than would be the case with more globular vessels, but I suspect boiling would not be so much faster as to make the form advantageous for the average cook.

Other accounts of the use of the culinary shoe-pots are apparently speculation on the form of archeological specimens rather than direct observation of

their contemporary use (e.g., Southwest—Fewkes 1904:69, and 1898a:651; Argentina—Ambrosetti 1906:58; 1908:301–2).

There is no good ethnographic evidence that culinary shoe-pots were used for cooking any one food in all areas. Although culinary shoe-pots are quite variable in size, the majority seem rather small, as indicated above (capacity usually from 1 to 3 liters). Rydén (1936:163), in his discussion of some small Argentine examples of the form, suggests they were "designed for preparing medicines, or the like." However, Beals (personal correspondence) states that the Mixe of Oaxaca use the culinary shoe-pot primarily for cooking beans, since the form is advantageous for long, slow cooking. Carmen Cook de Leonard has informed me that the Popoloca of Puebla use "shoe-pots" to boil potatoes and tomatoes. In 1957, when I interviewed a Zapotec family in Mitla, Oaxaca, I was told that "shoe-pots" are still used in a village nearby; they are apparently not strictly reserved for any particular food but are used for boiling beans and even for making coffee. Mr. Paul Van de Velde informs me he has also seen them used in the Mixteca for "brewed" liquids, as atole and chololate. It seems probable that references to the use of "shoe-pots" for toasting or roasting corn may be in error by identifying the "shoe-pot" with a pottery roaster or brazier (e.g., Boman 1908:307, Uhle 1919:33, and Rydén 1944:135; for an Inca example of the brazier, see Rowe 1946:244, pl. 77, *g*).

Ceremonial uses or meanings of the culinary shoe-pot are very rare and seem to be secondary to their culinary uses. Paddock (1955:26) was informed by his Zapotec workmen that "shoe-pots" are buried in the house area with the afterbirth. Parsons (1936:xiii) believes it significant that the Zapotec word for the culinary shoe-pot in Mitla is the same as their name for the stream the dead must cross, and that the stream runs near an old burial ground. She also notes that some "shoe-pots" are miniatures and that miniature offerings are buried with the dead. Beals (1945:120) reports that the Mixe culinary shoe-pots are quite variable in size and implies that the miniatures might be used "for mountain top offerings by potters, especially learners." In Central America, large "shoe-pots" often had secondary use as burial urns, but frequently the rim had to be broken out to admit the body (Lothrop 1926:254). That many culinary shoe-pots should be found in graves in all archeological areas is not necessarily significant, since burials are one of the archeologist's main sources for whole vessels of all types.

## DISTRIBUTIONS IN TIME AND SPACE

In developed pottery industries, whether the potter's wheel is used or not, the most common vessel forms are rotationally symmetrical about a vertical axis. The asymmetrical vessels require special efforts to make. Even though their rarity and oddness has inevitably attracted the attention of archeologists, the identification of published specimens as culinary shoe-pots is frequently difficult because this variety has not been defined before and information or illustrations are sometimes not sufficiently detailed. It is hoped that the distributions reported here will be checked and re-evaluated by specialists in each area.

In tracing the distribution of the culinary shoe-pots, I have depended mainly on published sources. No consistent attempt has been made to run down unpublished specimens and they are noted only when they add significantly to published information. The catalog of published specimens is as complete as is presently feasible: coverage of the literature has been fairly thorough for the Southwest U.S., and somewhat less so for Middle America; only major publications and such other reports as were available have been consulted for the Eastern U.S., South America, and the Old World.

The geographic distribution is arranged by major areas and keyed to the map (Fig. 1). Following the site name is the assumed date of the "shoe-pots", then references in parentheses, then the number of specimens reported, and observations of any special features or context other than burials and trash deposits. "Plain" means that available information indicates no decoration, no handles, and no "wing" or "tail" lugs. Unless otherwise noted, lugs, handles, and other features conform to the norms of shape and placement listed above under FORM. Number of specimens refers to the number mentioned by the author—in some cases, more were apparently found than the authors specifically indicate.

The expressed time range does not refer to the span of existence of the specimens, but instead indicates only that they probably date from some time within the indicated range. Dating is sometimes difficult and questionable. The authors' opinions and later sources available to me are used (e.g., Willey 1958, Coe 1961).

## I. EASTERN UNITED STATES

Coverage of the literature on the archeology of the Eastern U.S. has probably been less thorough than for the other areas. Nevertheless, personal correspondence with Eastern archeologists has not brought more culinary shoe-pots to light. Four specimens are reported.

A. *Southern Illinois:*

Kincaid; 1598—post-1613 A.D.

(Orr 1951:326, 332, figs. 3, *i*, 6, *m*) 2 specimens: two handles at sides of necks, notched fillet decoration. Lengths: 7.3 and 16 cm.

B. *Eastern Tennessee:*

Lenoir Mound No. 2; post-1600 A.D. (?)

(Thomas 1894:402; Holmes 1903:181–2, fig. 68; Griffin 1943:249, 253, pl. 129, *2*) 1 specimen: two handles, with notched fillet and incised decoration. Length: 15 cm. Classification as *culinary* shoe-pot possible, but uncertain. (Ascribed to "Cherokee complex.")

Citico Mound; post-1600 A.D. (?)

(Thomas 1894:376, fig. 251; Holmes 1903:181–2, fig. 69; Griffin 1943:249, 253, pl. 130, *2*) 1 specimen: two handles, notched fillet decoration. Length: 13 cm. Classification as *culinary* shoe-pot possible, but uncertain. (Ascribed to "Cherokee complex.")

*Comment:* Whether these four specimens are actually culinary shoe-pots cannot now be positively determined. They do not, according to available descriptions, show marks of fire or soot that would prove their culinary use. Nor is there ethnographic evidence of their use in the area. All four vessels seem entirely typical of the local pottery in everything but shape (e.g., Griffin's pl. 129, *2*, is remarkably similar to the symmetrical vessel in his pl. 129, *4*). At present, the only reason to doubt their being culinary shoe-pots, as defined in this paper, is their rarity and their apparent remoteness from the normal range of distribution.

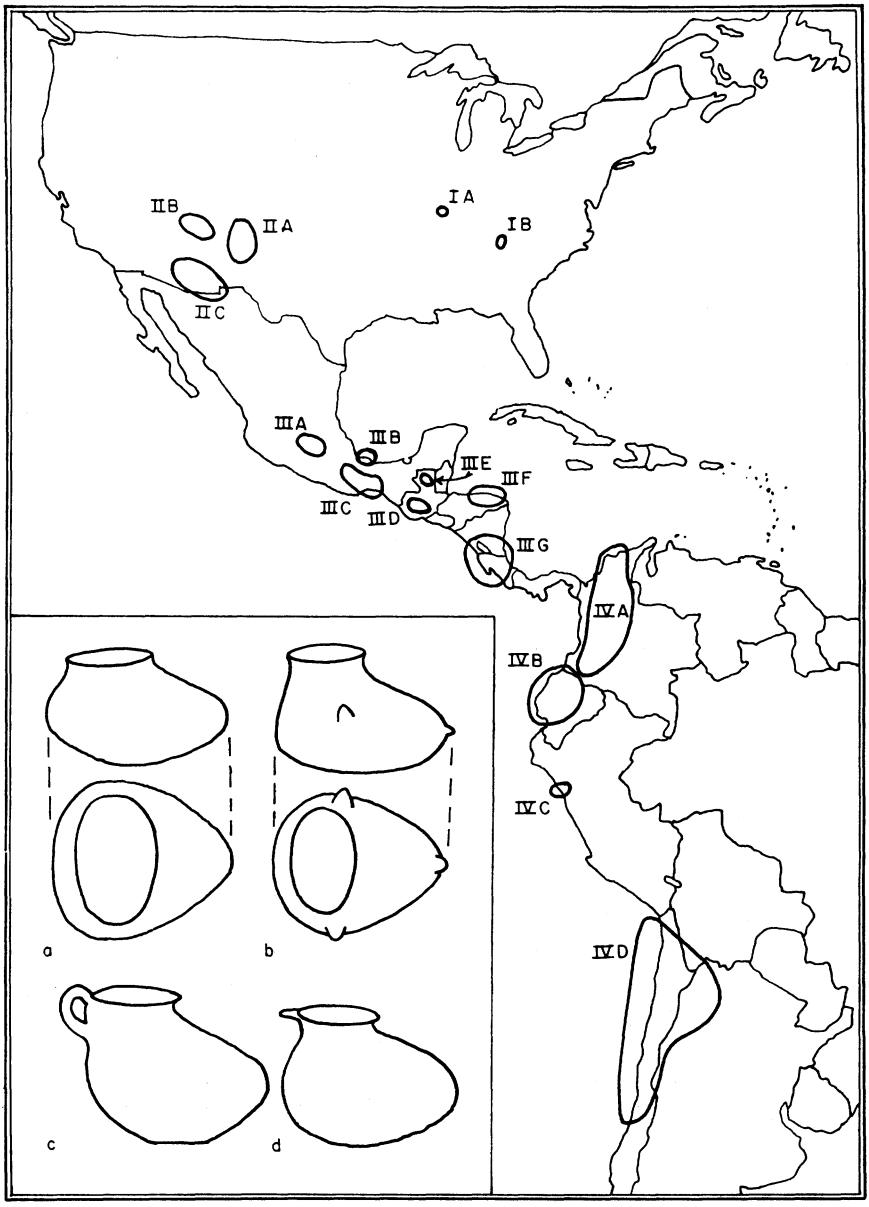


FIG. 1. Map of culinary shoe-pot distribution (keyed to text). *a*, Plain culinary shoe-pot; *b*, culinary shoe-pot with bird wing and tail lugs; *c*, culinary shoe-pot with vertical loop handle; *d*, culinary shoe-pot with lip tab handle (drawings schematic).

## II. SOUTHWESTERN UNITED STATES

Of all areas, coverage of the literature for the Southwest has been most thorough, except perhaps for the last few years. In this area, the separation of culinary from non-culinary "shoe-pots" and effigies is relatively easy because of full descriptions and the very nature of Southwestern pottery, where cooking wares were traditionally distinct from "service" wares (c.f. Kidder and Shepard 1936:591). The dating of most specimens is fairly secure, though guesses had to be made especially in the cases of earlier publications. About 70 specimens are mentioned, with hints that a few dozen more have been found.

A. *Rio Grande area:*

Forked Lightning; 1250–1300 A.D.

(Kidder and Shepard 1936:338, fig. 258, *c*) 1 specimen: handle, wing lugs. Length: ca. 8 cm.

Pecos; 1300–1600 A.D.

(Kidder and Shepard 1936:338–41, figs. 278, *d–f*, 280, *a–f*, 281, *a–i*) 13 specimens: some with front lug, some with wing and tail lugs, others plain (all late specimens plain, after ca. 1425 A.D.). Some in corrugated ware. Length: range 11–28 cm. Most have traces of soot.

Pindi Pueblo; 1300–1350 A.D.

(Stubbs and Stallings 1953: pl. 13, *a*, *b*; Stubbs, personal communication) 2 specimens: one with handle, both with wing and tail lugs. Corrugated ware. Length: ca. 15 and 20 cm.

Paa-ko; 1275–1425 and 1550–1650 A.D.

(Lambert 1954:105, 109, 110, pl. 22) Sherds only: "seem to be more common in the later occupation." Length: estimated 11.5 cm.

Amoxiumqua; 1300–1700 A.D.

(Reiter 1938:106, pl. 15a, *g*, *h*, *i*) 3 specimens: one with handle, one with front lug, one with wing lugs, two with tail lug. Lengths: 16, 17, and ? cm.

Poshu; 1475–1600 A.D.

(Jeançon 1923:39, pl. 38; Kidder and Shepard 1936:341) 2 specimens: plain, corrugated ware.

Pajarito Plateau; 1475–1600 A.D.

(Hewett 1906: pl. 14, *c*; Hewett 1908: pl. 15, *j*; Kidder 1915:425; Kidder and Shepard 1936:341) 1 specimen: tail lug.

*Comment*: Stubbs (personal communication) reports a specimen from about 15 miles north of Santa Fe which dates to the period 1100–1150 A.D. The vessel has a handle and is in corrugated ware, but "the pot was unfired and evidently cracked before firing. . . . It would appear to be almost identical in size and shape to the one illustrated in [Stubbs and Stallings 1953: pl. 13, *a*]. However, it lacked the wing and tail lugs of the Pindi specimen." Stubbs also states that he has culinary ware sherds from the Rio Grande area dating ca. 1000 A.D. that are probably from vessels about the same as those shown in Pindi (see above), though he has no examples large enough to give exact size or shape. Conclusions regarding the presence of culinary shoe-pots in this area before 1250 A.D. should await discovery of more surely identifiable examples.

Pecos was the only site that provided enough specimens over a long enough span of time to allow judgment of possible tendencies of change in form (Kidder and Shepard 1936:338); Kidder only notes, however, that in the later periods (after ca. 1425) the wing lugs are absent.

B. *Western Pueblo area:*

Sikyatki; 1300–1600 A.D.

(Fewkes 1898a:651–2, 656, pl. 120, *a–c*; Fewkes 1904:69) "Several" specimens: handles, lip tabs. One in corrugated ware. Length up to 30 or 45 cm. One, in a grave, rested in a "food bowl" and contained a "small rude ladle." Several are "covered with soot or blackened by fire."

Kechipaun, near Zuñi; 1300–1600 A.D.

(Bushnell and Digby 1955: pl. 7, *a*) 1 specimen: wing and tail lugs. Length: 23 cm.

Hawikuh; 1400–1600 A.D.

(Hodge 1918:66–7; Hodge 1923:32, pl. 27, *a*, *b*) 2 specimens: lip tab, wing and tail lugs on one; wing lugs on other (?). Lengths: 17 and 22 cm.

C. *Southern Arizona:*

Los Muertos; 1300–1400 A.D.

(Haury 1945:100, fig. 61, *m*, pl. 21, *e*) 1 specimen: plain. Length: 15 cm. Pottery type is Salt Red, but J. O. Brew (personal communication) kindly examined the specimen and reports it could have been used for cooking.

Tres Alamos; probably 1250–1450 A.D.

(Tuthill 1947:56, pl. 22; the chart in DiPeso 1953: fig. 15, is probably in error—DiPeso, personal communication) ? specimens: one with lip tab, wing lugs may occur. Length of one: 20 cm.

Babocomari; 1250–1550 A.D.

(DiPeso 1951:117–9, fig. 36, *f*, pl. 46, *a–f*) 7 specimens: two with handle, three with lip tab, one with tail lug, one with wing lugs, one plain. Length: range 9.3 to 32 cm., average 15.5 cm. One found buried in house floor, rim flush with floor level. One, heavily sooted, on house floor near hearth. Four in cremation area.

San Cayetano del Tumacacori; 1300–1700 A.D.

(DiPeso 1956:282, 287–9, pls. 82, 86, 87, figs. 43, 45) 31 specimens: thirteen with handles (one effigy handle), sixteen with lip tab, some with wing and tail lugs, two plain. Length: range 13–26 cm.; while median and average are both 19 cm., there are two clusters at about 15 and 21 cm.—if not accidental due to small sample, it might indicate two ideal sizes. Eleven from house floors, nineteen with burials, one from trash deposit.

Pendleton Ruin, southwestern New Mexico; 1350–1400 A.D.

(Kidder, Cosgrove, and Cosgrove 1949:132, fig. 13, *e–g, j*) 4 specimens: two with lip tabs, one with tail lug (?). One in corrugated ware. Lengths: 14 cm., 22 cm.; estimated from reconstruction: 17 cm., 25 cm.

## III. MIDDLE AMERICA

The contrast between culinary and non-culinary pottery is not as great in Mesoamerica as in the Southwest in some cases; this, combined with a tendency to less detailed published descriptions and illustrations, creates problems in identifying and tracing the distribution of the form. Interpretations of dating are frequently much less secure. About 45 specimens are mentioned, with hints that many hundreds more have been found.

A. *Central and Western México:*

Chupícuaro; 300 B.C.—300 A.D.

(Peterson 1955: figs. 8, 9; Porter 1956:542, 544, 545, figs. 6, *n, o*, 8, *g, h*) 10 vessels: one to four handles, wing and tail lugs. Five have red-painted lugs and rim, one has appliqué animal limbs and notched fillet from neck to vessel end. Length: range 11–30 cm. In museums in Mexico City, Guanajuato, and elsewhere, there are many dozens of culinary shoe-pots from the Lerma River drainage; for the most part these are like published specimens. The shoe-pot in Lumholtz (1902:405) may be from the same area; it has a handle and is ca. 19 cm. long.

Huapalcalco, Hidalgo; ca. 300 A.D.

(Florencia J. Muller, personal communication) 1 specimen: tail lug. Length: 23 cm. Clear signs of use on hearth. (Found in Burial J, Montículo A, Complejo Sur.)

Teotihuacán; 1–600 A.D. (?)

(Gamio 1922:203, fig. 58; Noguera 1930: fig. 50, *p*) 1 specimen: plain.

San José Zoquiapan, Tlaxcala; 1–600 A.D.

(Linné 1942:72, fig. 165) 1 specimen: plain. Length: 14 cm.

Estado de México (?); date ?

There are at least a dozen culinary shoe-pots in the State Museum in Toluca; no information was available on provenience at the time of my visit.

*Comment:* Evidence for the culinary shoe-pot in the Teotihuacán culture is not clear. The only possible examples to my knowledge are the Gamio-Noguera specimen (size and ware not indicated) from Teotihuacán itself, and Linné's small specimen from Tlaxcala. There are a number of other small "shoe-pots," mostly miniatures, that are clearly not culinary: one from Teotihuacán (Sejourné 1959: fig. 110A); three purchased at Azcapotzalco bearing in-

cised water symbols (Neys and von Winning 1946: fig. 1, *a*); two purchased at Ahuitzotla (von Winning, personal correspondence); and specimens on exhibit in the National Museum, Mexico City. These non-culinary specimens may imply the presence of larger culinary shoe-pots, but for the present the question must be left open.

B. *Gulf Coast:*

Tres Zapotes; 1200–1300 A.D. (Soncautla Complex)

(Drucker 1943:104, 106, pl. 23, *k*) 1 specimen: handle. "Small, possibly a miniature vessel."

Soncautla: 1200–1300 A.D.

(Drucker 1943:106, citing Strebel 1885–89) ". . . handled shoe-form pots, several specimens of which contained burned human bone."

C. *Oaxaca:*

Loma Larga, Mitla; 100 B.C.—200 A.D. (?)

(Caso and Rubín de la Borbolla 1936:18, 20) 1 specimen: handle. Length: 14 cm.

Monte Albán; 1000–1500 A.D.

(Caso 1938: figs. 49, 52; Caso 1941:87, 89) M.A. IV: 1 specimen (with pouring spout—?). M.A. V: 3 specimens: two with handle, one possibly with wing lugs.

Yagul; 1000–1500 A.D.

(Paddock 1955:26, 35, 76) Some specimens have wing and tail lugs. One buried in possible house patio.

Santa Cruz Teutila; 1300–1500 A.D.

(Weitlaner, cited in Paddock 1955: 85)

Zapotec, western Mixe, and Popoloca of Puebla; ethnographic present.

(Gamio 1922:203; Parsons 1936: fig. 2; Linné 1938:69; Linné 1942:72; Beals 1945:20; de la Fuente 1949:49–50, fig. 5; Paddock 1955:26; Carmen Cook de Leonard, personal communication)

*Comment:* Another specimen from Monte Albán (period IIIA, 1–400 A.D.) has been described by Bernal (1949: fig. 186); 1 specimen: handle on the side *toward* the prolongation, three small feet, polished gray ware, length 14 cm. Classification as *culinary* doubtful. Bernal states it is identical with one from Teotihuacán and feels it was imported from there; he also states it is not like the "shoe-pots" of Monte Albán I or V. My general impression from published sources is that only the specimens from Monte Albán V period are clearly culinary shoe-pots; the others might be.

D. *Highland Guatemala:*

Lake Amatitlán; 500–300 B.C. (Providencia-Sacatepéquez Phase).

(Borhegyi 1958:125, and personal correspondence for dating) 1 specimen: handle. Red-on-buff ware (?). Length: 18 cm.

Zaculeu; 300–600 A.D.

(Woodbury and Trik 1953:132, fig. 240, *b–d*) 3 vessels, 4 sherds: three with handle, tail lugs. Length: 12, 14, and 17 cm.

Los Terrenos; 1000–1300 A.D.

(Borhegyi 1950:12, pl. 1, *24*) 1 specimen: handle. Micaceous cooking ware.

Chipal; 1000–1300 A.D.

(Butler 1940: fig. 24, *L*) 2 specimens: one plain, length ca. 16 cm.

Quetzaltenango: date ?

(Gamio 1927:131) 4 specimens.

*Comment:* A "shoe-pot" that has frequently been referred to in the literature is the early Las Charcas Phase specimen from Kaminaljuyú (Shook 1951: fig. 1, *E*); Borhegyi has informed me it is definitely not a *culinary* shoe-pot. Since the specimen brought up from the waters of Lake Amatitlán is at present the earliest reported culinary shoe-pot in North America, it is important to stress that Borhegyi feels sure of the phase placement. Another group of "shoe-pots," with effigy faces in appliqué and modeling on the projecting end of the pot, may not be culinary. They range from the nearly round specimens from Nebaj (Smith and Kidder 1951:68, fig. 74, *q*, *r*) to the more pointed specimens such as those from Zacualpa (Lothrop 1936:16, pl. 6, *e*) and Stephen's Zaculeu specimen (Stephens 1848: facing p. 231). Lothrop compares the Zacualpa "shoe-pot" with culinary shoe-pots he saw being used in Chile; however, I suspect that the blackening of the tip by fire was incidental—despite the single handle, the plain ware, and the prolonged effigy tip, the effective form of the body and orifice does not suggest the special uses of the culinary shoe-pot. Employment as censers would seem more in keeping with the form and decoration. Seler (1904:110, fig. 25, *b*) illustrates an extremely elongated example of this form and says they are "properly called xe lahuh,

'foot of the ten' "; my cursory attempt to discover the possible significance of this in the Popul Vuh and elsewhere had no meaningful results. This type might possibly grade into the culinary form—Bransford (1881:56–7), who apparently examined hundreds of asymmetrical vessels, saw gradual transitions from round to longest oblong, and from plain to obvious elaborated effigies. Whether or not the doubtful specimens discussed here are included, the general view of culinary shoe-pot distribution in time and space is not materially affected.

E. *Lowland Guatemala:*

Holmul; 400–600 A.D.

(Merwin and Vaillant 1932:67–8, pl. 20, *c*) 1 specimen: pouring spout opposite prolongation, possible wing and tail lugs. Length: ca. 29 cm. Classification as *culinary* shoe-pot not certain.

Poptún; ca. 900–1000 A.D. (?)

(Shook and Smith 1950:3, fig. 22, *c*) 1 specimen, not described; possibly wing and tail lugs.

*Comment:* Whether or not these two specimens be accepted as culinary shoe-pots, it seems clear that such vessels are not part of the typical lowland Maya ceramic complex.

F. *Honduras:*

Northeast Coast; 800–1500 A.D.

(Stone 1941:30, 33, fig. 15; Strong 1948a:78, pl. 2, *f*) 7 specimens: with and without handles, some with two handles; concave bases.

G. *Nicaragua—Costa Rica:*

Pacific Coast; 500–1600 A.D.

(Squier 1852:87–8; Yarrow 1881: fig. 6, *c;* Bransford 1881:56–7, figs. 1–3, 8–10, fig. 114, #28660, #28739; Lothrop 1926:254–6, pls. 120, *a, b, d, e,* 121, *d, e,* 122, *e, g,* 123, *b–e,* possibly fig. 236, *b*; Strong 1948b: fig. 19; for dating, Willey and Coe, personal correspondence) Hundreds of specimens said to be known: most plain, some with handle, appliqué decoration, painted red streaks. Length: range of Bransford's illustrated specimens 16–70 cm. Bransford states that the smaller specimens "seem to have been designed for water and food, as shown by the remains of bones, &c." though one wonders if they might contain cremations instead; the largest are of unusual size and their classification as *culinary* shoe-pots is not certain. Most of the culinary specimens seen by Coe have two handles.

Highlands; 1100–1600 A.D.

(Hartman 1901:23, pl. 6, *1*; Strong 1948b: fig. 24, after Lothrop 1926: pl. 194; M. Coe, personal correspondence) Hartman's specimen: handle, ring (?) base, incised decoration and red streaks around rim, length ca. 12 cm.; the whole vessel was covered with soot and was filled with "soil showing traces of charcoal." Lothrop's specimen: handle, tripod support, appliqué decoration.

## IV. SOUTH AMERICA

The difficulties in tracing the distribution of Middle American "shoe-pots" are duplicated here, but in magnified form. Descriptions tend to be less complete, dating is less secure, and relevant publications have been more difficult to obtain. I owe an especial debt to Olaf Holm of Guayaquil for aid in tracing references. About 95 specimens are mentioned, with hints that several hundred more have been found.

A. *Colombia:*

Río Sinú; ca. 1000–1600 A.D. (Betancí Complex)

(Reichel-Dolmatoff 1956:260, pl. 33, *4*; Reichel-Dolmatoff 1957: 70, 84, 129, 144, pl. 7, *6*) 3 specimens: one plain, one with handle, one with two adjoining lip lugs; two have incised fillet decoration. Lengths: 10.5, 11, and 19 cm.

Tairona zone; 1000–1500 A.D.

(Mason 1939:292–4, pls. 169, fig. 2, fig. 1, *g*, fig. 22, *l*, pl. 222, figs. 2, 3; Bolinder 1942:18, fig. 4; Bennett 1944: fig. 23, *d* and 1946b: fig. 95, *f*, after Mason) Mason reports 5 specimens: three with handle, one with lip tab, one with ring base, one with appliqué human face. Lengths: 12.5, 18, 26, 36, and 38 cm. Bolinder found 1 specimen: handle, possible tail lug, minor incised decoration. Length: 20 cm.

Quimbaya zone: 1–1000 A.D.

(Bennett 1944:74, no illus.) "Shoe-shaped vessels, either plain or with appliqué design."

Chibcha zone; 1000–1500 A.D.

(Bennett 1944:85, fig. 20, *a*) Some with handle.

Quebrada Seca complex; 1000–1500 A.D.

(Ford 1944:65, fig. 18, *d*) 2 specimens: handles. Length: largest is 22 cm. long.

Nariño zone; 1–500 A.D.

(Bennett 1944:49, no illus.) 1 specimen: "a plain shoe-shape vessel."

B. *Ecuador:*

Guayas Province; 500 B.C.—500 A.D. (Guangala Phase)

(Bushnell 1951:48, fig. 16, *p*) 3 fragmentary specimens in Guangala Sombre Ware: one has streaks of light paint; length of illustrated specimen is 13.5 cm. Disselhoff (1949:368, 370) mentions three specimens from the same area, which probably belong to the same culture (Olaf Holm, personal correspondence); two have finger-paint decoration, and one has incised appliqué strips.

Cañar Valley; 1–500 A.D.

(Collier and Murra 1943: pl. 19, figs. 1–4) Sherds only: "shoe-shaped vessels, with a notched or punched-in welt running to the toe along the middle of the upper. From this vertebral welt, parallel, thick luster lines run perpendicularly toward the bottom. The uppers are slipped a dull red." Classification as *culinary* shoe-pots not certain. Collier informs me the ware is culinary, but that the shape must be derived from sherds and is therefore dubious.

Manabí Province; date ?

(Saville 1907: vol. 1, 74, pl. 42, *8*) 1 specimen: appliqué and incised design around neck. Length: 13 cm. Classification as *culinary* shoe-pot not certain.

Esmeraldas Province; date ?

(d'Harcourt 1947:82, 142, pl. 2, *7*) 1 specimen: plain, length ca. 25 cm.

Carchi Province; date ?

(Verneau and Rivet 1922: pl. 40, *5, 7*) 2 specimens: one with handle. Lengths: 12 and 32 cm. (Pl. 40, *14* and *15*, are probably not *culinary* shoe-pots.)

Imbabura Province; date ?

(Jijón y Caamaño 1914:129, 130, 138, pl. 24, *2*; Jijón y Caamaño 1920:24, 25, 83, 120, figs. 18, 19, pl. 17, *1*) The single specimen reported in 1920 is plain. Jijón reported 8 specimens in 1914 from three sites—five have tripod supports and all seem to be plain; illustrated tripod specimen is 20 cm. long.

Pichincha Province (or perhaps Imbabura Province); date ?

(Bamps 1879:125, pl. 16, *1–3*) 3 specimens: plain. Lengths: 14.5, 17.5, and 21.5 cm. The bottom of at least one is smoked and blackened from use.

*Comment:* A fragment from Ecuador (Chorrera Phase, ca. 1500–500 B.C.), reported by Estrada (1958: fig. 45, *2*), may be a culinary shoe-pot, but the ware does not seem appropriate; it would be the earliest specimen yet reported from South America.

C. *Perú:*

Virú Valley; 300 B.C.—100 A.D. (Gallinazo Phase)

(Bennett 1939:62, no illus.; Bennett 1950:93, no illus.) 2 specimens: one has handle and was burned black. (The specimens cannot be located for further data as of this writing.)

D. *Chile-Argentina:*

Atacameño; 500–1400 A.D.

(Boman 1908:307, fig. 44, *b;* Uhle 1919:33–35, pl. 26, *3;* Latcham 1928:86, 92, figs. 1–4 on p. 84, fig. 92 on p. 98, pl. 8, *7*, pl. 9, *3, 4;* Bird 1943:202; Bird 1946:593, no illus.; Rydén 1944:135–136, fig. 79, *h;* Bennett 1946a:611, no illus.) Rydén's specimen has handle, bulging portion of body shows use in fire; length: 12 cm. Uhle reports 5 specimens from the late "Chincha-Atacameño" period of north Chile (none earlier known to him), with either one handle at "rear" or two handles at sides of neck; illustrated specimen from Pará is 15 cm. long. Boman's specimen, from Pucará de Lerma, has handle, incised fillet decoration; length: 15 cm. Latcham reports 6 specimens: handle, two with incised fillets, one miniature.

Diaguita; 800–1450 A.D.

(Ambrosetti 1906:58–9, fig. 53; Ambrosetti 1908:301–3, fig. 141; Bruch 1913:80–2, figs. 79–80; Debenedetti 1917:152–3, fig. 98; Latcham 1928:144, 170, 172, pl. 22, *10, 11*, pls. 23, *7*, 33, *1*, 47, *1–3;* Liberani and Hernández 1950:117, pl. 21, *4;* Lothrop 1946:634, pl. 139, *g;* Cornely 1956:81–2, 130–1, figs. 18, *a, b*, 28, *a, c, e*) Lothrop's specimen: handle, length 16.5 cm. The Liberani specimen has a handle. The two Debenedetti specimens: handle, one with wing and tail nubs, incised lines, lengths 16.5 and 18 cm. Latcham reports 7 specimens: five with handle, one with incised fillets (some are from as far south as near Santiago, and may be Araucanian). Ambrosetti illustrates 14 clear examples, each with handle, length

range 8–17 cm.; he reports about 50 specimens in his collection, most of which show marks of use over a fire. Bruch reports 2 specimens: handles, one with platform base, one tripod possibly with zoomorphic feet, soot-coated; lengths 12 and 17 cm. Cornely reports them to be common, describes 8 specimens: handles, some with wing and tail nubs, others with anthropomorphic appliqué decoration; length ca. 15 cm., some smaller, some up to 45 cm.

Isla de Tilcara, Juyuy Province; date ?

(Debenedetti 1910:199–203, figs. 145–148) 8 specimens: at least four have one handle each. Length range: 9–16 cm. Heavily coated with soot. Debenedetti suggests these vessels were traded or imitated from the Calchaquí Diaguita.

Candelaria; 300–500 A.D.

(Rydén 1936: 162–167, figs. 92, 93, *a*) 3 specimens: all with handle. Length: one is apparently ca. 8 cm.

Mapuches (Araucanians) of Chile; ethnographic present

(Lothrop 1936:16)

*Comment:* I wish to emphasize that I have been unsure in placing some of these specimens in time and cultures. A specimen from Santiago, Chile, reported by Toribio (1952:430, fig. 211), may be a culinary shoe-pot (handle, rather small orifice, length ca. 16 cm.). Bregante (1926:239–42, 307–8, figs. 290–2, pl. 15) repeats data and illustrations from earlier sources, mentions the locations of unpublished specimens, and provides a distribution map of "shoe-pots" in northwestern Argentina.

## OTHER AREAS AND CULTURES

The "shoe-pots" that some authors have mentioned for other areas and cultures, such as early Pueblo (Southwestern U.S.), the middle Mississippi Valley, Brazil, west México, etc., are not culinary shoe-pots judging by the evidence available in cited sources; they presumably form a separate and, in most cases, unrelated series of problems.

To my knowledge, there are no culinary shoe-pots in the Old World. Bamps (1879:125) states that a vessel of this type was found in Basses-Alpes (southeastern France) in 1877. But this in all probability is the rude specimen later published by Nadaillac (1892:99, fig. 26) It is more likely that this vessel's prolongation was only a handle—the effective vessel shape would not make it appropriate for the uses postulated here for the culinary shoe-pot. Nor should the pitcher forms of the Old World, such as the ruder *askoi* (e.g., Compton 1956: fig. 11, *p-s*), be confused with culinary shoe-pots.

## SUMMARY

In published sources, about 215 culinary shoe-pots are specifically mentioned, and relatively few of these are described in detail; there are hints that many hundreds more have been found. But imperfect as the available data may now be, a broad historical pattern seems to have emerged.

*Mesoamerica:*

The earliest culinary shoe-pot is the single specimen from Lake Amatitlán in highland Guatemala, if the early date for the Providencia-Sacatepéquez Phase is accepted (500-300 B.C.). Otherwise, in the period before 200 or 300 A.D., culinary shoe-pots were present in abundance only in the Lerma River drainage of México; there is only one possibly early specimen from Oaxaca reported so far. Except for the Lake Amatitlán vessel, all specimen could have been later than 1 A.D.

In the period ca. 200–1000 A.D., culinary shoe-pots may possibly have oc-

curred in the Teotihuacán culture, but if so they were rare. They seem to have been present in highland Guatemala at that time, and may have been more abundant in western Central America.

After 1000 A.D., they were present in Oaxaca and on the Gulf Coast in Veracruz. They also continued in highland Guatemala, and in western Central America where they continued to be most abundant.

At present, they are in use only among some peoples centering in the Oaxaca region.

*South America:*

Among South American specimens, the ones from the Peruvian Gallinazo Phase are perhaps the most likely to be the earliest (300 B.C.—100 A.D.), since the Ecuadorian Guangala Phase specimens may date anywhere between 500 B.C. and 500 A.D., and thus may have been contemporaneous with the specimens from the Nariño zone of Colombia and from Candelaria, Argentina. All specimens could have been later than 1 A.D.

In the period 500–1000 A.D., they were probably present in Colombia, Ecuador, and Chile-Argentina.

After 1000 A.D., they continued in the same regions, but became most abundant in the Chile-Argentina region.

At present, they are used only by the Araucanians of Chile.

*Southwestern U.S.:*

All Southwestern specimens were within the period 1250–1700 A.D., and the form seems not to have lasted into the historic period. Only some Rio Grande specimens, of uncertain identification as culinary shoe-pots, may have been earlier than 1250 A.D. It seems most likely that the form diffused from México between 1200 and 1300 A.D., even though there is no likely source known at this time (the northernmost Postclassic Mexican specimens are from southern Veracruz). Whether the form arrived first in the Rio Grande Valley or in southern Arizona is not known; lip tab handles on "shoe-pots" and other cooking vessels may give a clue to diffusion patterns within the Southwest. It should be noted that other culture elements, especially of an artistic and religious nature, arrived in both Southwestern areas from Mexico at this same time level.

*Eastern U.S.:*

The last area where culinary shoe-pots appeared seems to have been in southern Illinois and eastern Tennessee in late Mississippian sites that were influenced by the Southern Cult. The four known specimens seem to date after 1600 A.D. There is no good reason to doubt their identification as culinary shoe-pots, except for their rarity and distance from the rest of the form's distribution. Therefore, there are four possible explanations: 1) these vessels are accidentally asymmetrical products, no different in use from the other local vessels; 2) they are true culinary shoe-pots, independently invented in this area; 3) they represent a very late diffusion from the Rio Grande Valley; and

4) they represent a very late diffusion from México. The fourth alternative might seem most reasonable on the grounds that strong Mexican influences are known in other traits of the late Mississippian cultures, although no likely Mexican sources for "shoe-pots" are yet known at this time period.

*Discussion:*

Culinary shoe-pots are clearly Nuclear American, and first appear in the late Preclassic or Formative stage in both Mesoamerica and South America. The earliest specimen, ca. 500-300 B.C., is from highland Guatemala. At this stage, they are relatively more abundant in Mesoamerica, which suggests the form originated there. Diffusion of other traits to South America at even earlier periods, probably by a sea route, has been well established (e.g., Coe 1960). Apparent lack of early specimens in Central America suggests that this area was not the diffusion route.

In both Middle and South America the form spread to a limited number of cultures, but over a wide area. Finally, after 1200 A.D., it reached the Southwestern U.S., and perhaps eventually the Eastern U.S. as well. It has survived to recent times only in Oaxaca and north Chile.

The assumption in this paper has been that the wide distribution of the culinary shoe-pot is accounted for by diffusion from a single place of origin, rather than two or more independent inventions in different areas or times. However, as with most problems of this kind, it is hard to muster positive proof. Instead, it is a question of relative probability. Given a fairly uniform food and food-preparation complex in the area of the form's distribution, multiple inventions as responses to similar needs are a possibility; but the weight of this possibility is lessened, and the case for diffusion strengthened, when the role of the vessel in food preparation complexes is examined (see Discussion, below). Diffusion also seems more probable in view of the compact distribution, which is limited to Nuclear America and to marginal cultures that also received other extensive influences from Nuclear America.

## DISCUSSION

The results of the analysis thus far can be conveniently summarized in terms of Thompson's four steps in the inferential process (1958:1–8, 27-8, 148–9): 1) The *indicative data* are the relatively plain asymmetrical pottery vessels (a special class of "shoe-pots") made in cooking ware, which are spottily distributed in archeological context from northern Arizona, through Nuclear America, to central Chile. 2) The *indicated conclusion* is that these pottery vessels represent a special cooking technique of such value they were widely diffused from one center of origin. 3) The *probative data* are the limited possibilities of use of the form itself, consistent association of the essential shape attributes with each other and with cooking ware, appropriate marks of contact with fire, and observation of use of similar vessels by a few peoples during the ethnographic present within the area of prehistoric distribution. 4) The *probable inference*, then, is that there is a special class of "shoe-pots" quite

different in use and history from the total group of vessels usually classified by this term—namely, the *culinary shoe-pot* form, which diffused widely through Nuclear America and adjacent areas because it was convenient for long boiling of foods, especially when the contents needed frequent attention or the hearth was crowded.

Given the probability of the inferences, certain wider problems of archeological interpretation logically follow. Four interdependent questions will be considered here: 1) What significance does the culinary shoe-pot have for problems of inter-culture relationships? 2) What was the manner of diffusion of the "shoe-pot"? 3) What was the role of the culinary shoe-pot in the food-preparation complexes of the cultures where it was used? 4) Why was the culinary shoe-pot absent from many of the cultures within its broad area of distribution?

Although the analysis began with certain physical objects recognized by their attributes as a valid class in material culture, the true subject of analysis has become not so much a vessel *form* as a vessel *use* represented by the form. The vessel use, in turn, represents a cooking technique within the food preparation complex of a culture. Since the vessels are made of local cooking wares wherever they are found, it follows that what was diffused (or re-invented) was the idea of the cooking technique, which found material expression in the vessel form made recognizable to the archeologist by its essential attributes (see definition of the form, above).

The concept of the culinary shoe-pot as representing a special cooking technique can therefore be considered an archeological "type" that serves two useful purposes at once: 1) it can be used as a culture trait that may aid in tracing culture relationships in space and time, and 2) it can be used as the kind of culture trait which contributes to reconstruction of culture content and cultural behavior.[2] The significance of the culinary shoe-pot for the first purpose is of necessity closely related to its significance for the second purpose, as will be demonstrated in the following discussion.

As shown above, the culinary shoe-pot was by no means universally used by all peoples within its area of distribution. It was logical, therefore, that Kidder (Smith and Kidder 1951:68) should point out that as humble, utilitarian household utensils, their distribution "might reveal, more clearly than that of fine and ceremonial pieces, the basic relationships of cultures." In other words, the presence of the culinary shoe-pot in two cultures might be interpreted as evidence for their common derivation, or for a kind of contact between them that was more intensive, more intimate, or more pervasive (e.g., conquest or colonization) than the more superficial kind of contact that might spread an attractive art style, a prestigeful religious cult, or interesting gadgets, curiosities, and traded luxury goods.

The utility of the culinary shoe-pot as an indicator of the nature of the relationships of cultures depends, therefore, on understanding the possible reasons for acceptance or rejection of the shoe-pot cooking technique throughout its broad area of distribution. This in turn must be based on an understanding of the role of this cooking technique in the cultures where it is found. Unfortu-

nately, there are few ethnographic data available to me that are relevant to this question, but some inferences may be drawn by turning largely to archeological context.

In considering first the reasons for acceptance and persistence of the shoe-pot cooking technique, several alternative hypotheses can be discarded on the basis of discussion in the body of the text: a) The culinary shoe-pot's distribution can be explained as the consequence of repeated accidental products of inept potters or by a "play" factor. While this hypothesis may possibly account for several origins of the form, it seems logical to disregard it as a general explanation for its persistence. b) The distribution of the shoe-pot cooking technique is simply the result of the trade of a curious vessel form from one or more centers. This hypothesis may be discarded because the culinary shoe-pot is always reported to be made in local culinary wares. c) The culinary shoe-pot diffused because it has esthetic appeal in the context of Nuclear American cultures. This hypothesis may be discarded on the grounds that the "shoe-pot" is never flamboyantly elaborated and because objects of primarily esthetic appeal were rarely made in cooking ware. d) The culinary shoe-pot diffused as part of a religious cult. We may discard this hypothesis because there is no indication of consistent ceremonial uses or associations with any religious manifestation either in ethnographical or archeological context, with the possible exception of Oaxaca (see above), which is evidently a local development.

There are two remaining hypotheses that could account for the wide diffusion pattern of the culinary shoe-pot. 1) The cooking technique (and its material expression as the pot) was an essential response to some basic need common only to the peoples using the technique; e.g., its use is necessary to the preparation of certain foods or for certain hearth types. 2) The cooking technique and the pot were a non-essential, alternative response to a need shared both by peoples who used and who did not use the technique—a convenient gadget of no great importance, in somewhat the same category as our own fads in automatic ashtrays and tricky potato peelers.

In examining evidence for these two hypotheses, then, a key factor is the nature and importance of the need relative to the special use of the vessel. The most immediate observation is that the shoe-pot cooking technique is limited entirely to peoples with a sedentary village settlement pattern and a stable agricultural economy. That this is no accident is evident from the preceding text and from reasons discussed by Linton (1944), which explains why "shoe-pots" were rejected (or not invented) by less sedentary, non-agricultural peoples within the broad area of the form's distribution.

However, present distributional evidence indicates that many peoples did not use the culinary shoe-pot but did have sedentary villages and stable agricultural economies and were in contact with users of the "shoe-pots". We must therefore search for a more specific need common only to those who used the form and cooking technique.

The distribution shows that shoe-pots were limited to seed-eating agricultural peoples, and were not used by those emphasizing root-crops. Among such

peoples, the most common food that is usually prepared by long boiling consists of several kinds of beans. The "shoe-pot" seems to have been used only among peoples who, to my knowledge, did use beans (though, as ethnographic evidence shows, other things are also cooked in "shoe-pots"). However, the correlation is far from perfect. Many more bean-eating peoples did not use "shoe-pots" than did use them. The same seems to be true of any other seed-food that requires boiling. Furthermore, distributions suggest that there is no interdependent relationship of the "shoe-pot" and a particular hearth type; that is, among cultures with the same kinds of hearths, some did and some did not use "shoe-pots."

Thus, for the present time at least, the attempt to correlate the invention and diffusion of the shoe-pot cooking technique with the distribution of a particular food or hearth type fails, and the first hypothesis suggested to account for the acceptance of the shoe-pot cooking technique may be temporarily rejected in favor of the second.

Turning now to reasons for the absence of the shoe-pot cooking technique in cultures where it might be expected, specific hypotheses are more difficult to propose and test. Several hypotheses may be tentatively rejected: a) "Shoe-pots" were absent in a culture because of lack of contact with people who did use them. This is unlikely in most cases because of known patterns of trade and influence demonstrating contact over long periods of time; the extraordinary breadth of distribution of this special form and technique also argues against a lack-of-contact explanation. b) "Shoe-pots" are absent because the foods that need to be prepared by this technique are absent, or because the hearth type favoring use of the form is absent. This hypothesis does not seem to apply because those peoples who used "shoe-pots" and those who did not seem often to prepare the same basic foods in the same basic way; no correspondence with a special food or hearth type of parallel distribution with "shoe-pots" has been discovered. c) The apparent absence of "shoe-pots" may be due to faulty reporting, insufficient investigation, or poor preservation of whole pottery vessels. However, this explanation surely does not apply to such areas as the Valley of México or to the Yucatán peninsula.

While any of these hypotheses may apply in specific cases, neither singly nor together do they seem to explain the majority of cases among seed-growing peoples, within the broad area of distribution, where "shoe-pots" seem never to have been used or where they died out. For example, culinary shoe-pots are abundant in the late Preclassic of the Chupícuaro area and are present in Oaxaca later but are rare or absent in the intermediate Valley of México cultures, where so much more excavation has been done. They were present both early and late in highland Guatemala, but not in Yucatán. If present in Perú at all, they are apparently early, whereas they are relatively abundant both to the north and south in later times.

There is no direct evidence for the manner of diffusion of the culinary shoe-pot to shed light on the nature of the contact between groups. In most cases,

one might expect the shoe-pot concept to pass from woman to woman, in their usual role of either cook or potter. However, it would seem entirely possible that men could carry the idea (but not necessarily the cooking pots themselves) on trading expeditions over great distances—for example, between México and the Southwest, or between Mesoamerica and Ecuador.[3] Such expeditions have usually been associated with the spread of luxury goods, of decorative styles and techniques, and of ideas concerning agriculture and religion, which are in fact the principal evidences of contact between these areas. There is the possibility that trading expeditions or colonies did include women who played a role in the contact situations. But the culinary shoe-pot cooking technique cannot be considered at present as good evidence for interpretations of this kind.

It remains to be determined how important the culinary shoe-pot was to the people who did use it. The best data would be the number of such vessels per person or per household at a particular time in various villages; however, there are no ethnographic data bearing on this problem, and reconstruction of "shoe-pots" from sherds is usually not sufficiently reliable for archeological data to be of help. Another indication would be the proportion of "shoe-pots" to other kinds of cooking vessels in a village; again, there are no ethnographic data, but archeological information can be considered relevant when there is a large sample of whole or reconstructed vessels of all kinds and a functional interpretation of these vessels.

The report on Tumacacori, a small village in southern Arizona, describes the greatest number of "shoe-pots" from a single site and also offers a functional classification of other restorable vessels (DiPeso 1956:280 ff.). Here, the 31 culinary shoe-pots are about 23% of the total of small ("personal") cooking pots, a category DiPeso interprets as little cooking vessels "in which the individual heated or kept warm his portion of the family meal" (cf. an interesting parallel in Argentina, in Ambrosetti 1908:301–2). These small cooking vessels outnumbered the large ones, perhaps used for cooking the whole family meal, by a proportion of 2:1. Whether or not DiPeso's interpretations of the functions of different size vessels are correct, the culinary shoe-pots at Tumacacori form a reasonable proportion (15%) of all the restorable cooking vessels and may therefore be considered a standard, but perhaps not essential, household item. Since they cannot be matched to a use or food different from that of the other "personal" cooking pots, they are probably best interpreted as simply an alternative response to the same need.

While the proportion of "shoe-pots" to other cooking vessels is relatively high at Tumacacori, the archeological record shows the form to be much more rare in all other sites. It is conceivable that the overall impression of rarity may be due to patterns of publication and, more important, to the difficulty of recognizing the form in sherd material (Kidder and Shepard 1936:338). But on the whole, it does not seem probable that the culinary shoe-pot will prove to be an essential item of household use, even in cultures where it was frequent.

## CONCLUSIONS

This paper has had the purpose of testing the significance of a postulated special kind of asymmetrical vessel ("culinary shoe-pot"), separated on grounds of physical attributes and inferences of use from the other kinds of "shoe-pots" with which it has traditionally been classified. The general category of "shoe-pots" is meaningless; instead, there are various kinds of asymmetrical vessels, each with its own history and significance.

The culinary shoe-pot probably originated among a seed-growing agricultural people in Mesoamerica in the middle or late Formative stage (in the centuries before 1 A.D.). During the same period it was probably brought by a sea route to the coast of Perú or Ecuador. In South America, it had spread north to Colombia and south to Chile and Argentina at least by 500 A.D. In Mesoamerica, the form also spread to a limited number of cultures, among which it came to be most abundant in Oaxaca, highland Guatemala, and western Central America. Along with other Mesoamerican influences, the culinary shoe-pot reached the Southwestern U.S. between 1200 and 1300 A.D., and perhaps the Eastern U.S. by 1600 A.D. The form apparently survives only in Oaxaca and Chile.

On the basis of available evidence, I would suggest that the cooking technique represented by the culinary shoe-pot diffused because in the context of the food-preparation complex of the peoples accepting it, it was a convenient way of boiling foods over a long period; by shoving the bulging side of the pot over the coals, with the orifice toward the outer edge of the hearth, the vessel may be moved and the contents may be stirred or ladled out with minimum risk of burning one's hand, and more vessels may be set over the shoe-pot body so that other foods may cook, thus saving time and fuel.

However, the unique advantages of the form were probably not essential to food preparation since other pot shapes and hearth arrangements could be used for the same basic needs of cooking food. It is surprising that refinements which would seem of such minor advantage to the ordinary cook should be the reasons for the odd form's extraordinarily wide diffusion; its appeal as a gadget is admittedly not a very dramatic explanation, but there seems to be little else to account for its spread and persistence.

While the form was apparently attractive as a convenient gadget, it was "rejected" by some cultures, and by some families in cultures where it was known, for reasons that remain obscure. Perhaps the answer lies in differential receptiveness to innovations in gadgetry in the various cultures, which might also be reflected in other aspects of those cultures. However, the explanation for the rarity or even lack of "shoe-pots" in any culture where they might otherwise be expected should probably also be sought on the particular rather than the general level, in analysis of the whole food preparation complex of that culture, including such aspects as hearth types, numbers of vessels usually on the hearth at one time, styles of preparation of various foods, spacing of meals, cooking habits, and social patterns connected with eating. Preliminary at-

tempts along these lines have proved fruitless for lack of data, and only emphasize how little is known in detail of either ancient or recent American Indian food preparation complexes.

On the basis of these conclusions, it would seem that the diffusion of the shoe-pot cooking technique does not have any unusual relevance for problems of the nature of inter-culture relationships, even though this humble, everyday trait is quite different in kind from the majority of those that are usually emphasized in problems of wide inter-culture diffusion. In addition, suggestions that the culinary shoe-pot might be an especially significant indicator of the "basic relationships" among different cultures are not supported by present evidence for the role of the technique because it does not seem to be a trait that is relatively stable or resistant to replacement and does not seem to have had an essential role in food preparation complexes. Such questions require formulation on a far more abstract plane, for which a particular cooking technique such as this would seem to have only minor relevance.

Nevertheless, the culinary shoe-pot, when precisely defined both in form and use, should have a clear and important place among the series of traits most useful to the archeologist and ethnologist in studying the growth and development of New World cultures, but only when its role in the whole culture is understood.

NOTES

[1] Earlier versions of this paper were given at the annual meetings of the American Anthropological Association in Santa Monica, California, in 1956, at the Southwestern Anthropological Association meetings in Berkeley, 1962, and at the XXXV International Congress of Americanists, Mexico City, 1962. I am deeply indebted to many people for reading parts of the MS in various stages of its preparation and for offering help in locating published and unpublished data on unfamiliar areas. I wish explicitly to absolve my colleagues from any inadequacies of the paper or misinterpretations of what they have so kindly contributed to it. I wish especially to thank Ralph L. Beals, Stephan F. Borhegyi, the late George W. Brainerd, J. O. Brew, Michael D. Coe, Donald Collier, Charles C. DiPeso, Hal Eberhart, Robert F. Heizer, Olaf Holm, A. V. Kidder, Carmen Leonard, J. Alden Mason, Charles H. McNutt, Florencia J. Muller, Ella L. Robinson, Arturo Romano and the personnel of the Museo Nacional in Mexico City, Irving Rouse, the late Stanley A. Stubbs, Carr Tuthill, Paul Van de Velde, Gordon R. Willey, and Hasso von Winning.

[2] However, the culinary shoe-pots themselves that are found in either archeological or ethnographical context can be broken down into more sensitive, detailed types for specific purposes, on the basis of such attributes as degree of asymmetry, size and capacity, handle type and placement, and decorative styles. Detailed types may be defined differently, of course, depending on their purpose—as time-space markers or for culture content reconstruction. Certain obvious possibilities have been purposely omitted from this paper for lack of space; examples are the distributional significance and possible meanings of applied notched fillets and zoomorphic-anthropomorphic appliqué figures on culinary shoe-pots, which are found in Mesoamerica and South America. Instead, this paper has concentrated on the shoe-pot cooking technique as a broad trait.

[3] In 1961, I searched for "shoe-pots" among women pottery venders in markets in the states of Michoacán, Jalisco, México, Guanajuato, and Querétaro. Each time, I first explained the form of cooking vessel I wanted and how it was intended to be used, and finally drew one on paper. None had ever seen such a form, but about half the women seemed intrigued by it and acknowledged its utility; a few took the trouble to tell me exactly where I could have some made to my specifications. It would be interesting if the "shoe-pot" should now have a latter-day spread, because of brief contact with a male foreigner.

REFERENCES CITED

AMBROSETTI, JUAN B.
1906 Exploraciones arqueológicas en la Pampa Grande (Provincia de Salta). Publicaciones de la Sección Antropológica No. 1, Facultad de Filosofía y Letras, Universidad Nacional de Buenos Aires. Buenos Aires.
1908 Exploraciones arqueológicas de la ciudad prehistórica de "La Paya" (Valle Calchaquí—Provincia de Salta), campañas de 1906 y 1907; Segunda Parte (Descripción del material arqueológico). Publicaciones de la Sección Antropológica No. 3 (2a parte), Facultad de Filosofía y Letras, Universidad Nacional de Buenos Aires. Buenos Aires.

BAMPS, A.
1879 Les antiquités Équatoriennes du Musée Royal d'Antiquités de Bruxelles. III Congrès International des Américanistes, vol. 2 and Atlas. Bruxelles.

BEALS, RALPH L.
1945 Ethnology of the Western Mixe. University of California Publications in American Archaeology and Ethnology 42(1):1–176.

BENNETT, W. C.
1939 Archaeology of the North Coast of Peru; an account of exploration and excavation in Viru and Lambayeque Valleys. American Museum of Natural History Anthropological Papers 37(1).
1944 Archaeological regions of Colombia: a ceramic survey. Yale University Publications in Anthropology 30.
1946a The Atacameño. *In* Handbook of South American Indians, Bureau of American Ethnology Bulletin 143(2):599–618.
1946b The archeology of Colombia. *In* Handbook of South American Indians, Bureau of American Ethnology Bulletin 143(2):823–50.
1950 The Gallinazo Group, Viru Valley, Peru. Yale University Publications in Anthropology 43.

BERNAL, IGNACIO
1949 La cerámica de Monte Albán IIIA. (Mimeographed; Tésis presentada para obtener el Doctorado en Letras, Sección de Antropología.) México, D. F., Universidad Nacional Autónoma de México.

BIRD, J. B.
1943 Excavations in northern Chile. American Museum of Natural History Anthropological Papers 38(4).
1946 The cultural sequence of the north Chilean coast. *In* Handbook of South American Indians, Bureau of American Ethnology Bulletin 143(2):587–594.

BOLINDER, G.
1942 Urn-burials in full-size mortuary urns in Sierra Nevada de Santa Marta, Colombia: a preliminary report. Ethnos 7(1).

BOMAN, ÉRIC
1908 Antiquités de la région Andine de la République Argentine et du Désert d'Atacama, Vol. 1. Paris.

BORHEGYI, STEPHAN F.
1950 Estudio arqueológico en la falda norte del Volcán de Agua. Antropología e Historia de Guatemala 2(1):3–22. Guatemala.
1958 Aqualung archeology. Natural History 67(3):120–5.

BRANSFORD, J. F.
1881 Archaeological researches in Nicaragua. Smithsonian Institution Contributions to Knowledge 25.

BREGANTE, ODILLA
1926 Ensayo de clasificación de la cerámica del noroeste argentino. Facultad de Filosofía y Letras, Universidad Nacional de Buenos Aires. Buenos Aires.

BRUCH, CARLOS
1913 Exploraciones arqueológicas en las provincias de Tucumán y Catamarca. Revista

del Museo de La Plata 19(1):1–209. Buenos Aires, Universidad Nacional de La Plata.

BUSHNELL, G. H. S.
1951 The archaeology of the Santa Elena Peninsula in south-west Ecuador. Occasional Publications No. 1. Cambridge, Cambridge University Museum of Archaeology and Ethnology.

BUSHNELL, G. H. S. AND A. DIGBY
1955 Ancient American pottery. London, Faber and Faber.

BUTLER, MARY
1940 A pottery sequence from the Alta Verapaz, Guatemala. *In* The Maya and their neighbors. New York.

CASO, ALFONSO
1938 Exploraciones en Oaxaca, quinta y sexta temporadas, 1936–1937. Instituto Panamericano de Geografía e Historia Publicación 34.
1941 Cultura mixteca y zapoteca. Culturas Precortesianas tomo I. México, D. F., "El Nacional."

CASO, ALFONSO AND D. F. RUBÍN DE LA BORBOLLA
1936 Exploraciones en Mitla 1934–35. Instituto Panamericano de Geografía e Historia Publicación 21.

COE, MICHAEL D.
1960 Archeological linkages with North and South America at La Victoria, Guatemala. American Anthropologist 62(3):363–93.
1961 La Victoria, an early site on the Pacific coast of Guatemala. Harvard University, Peabody Museum of Archaeology and Ethnology Papers 53.

COLLIER, DONALD AND J. V. MURRA
1943 Survey and excavations in southern Ecuador. Chicago Natural History Museum Anthropological Series 35.

COMPTON, CARL B.
1956 An introductory survey of bird-form vessels. Texas Archeological Society Bulletin 27:79–110.

CORNELY, F. L.
1956 Cultura Diaguita Chilena y Cultura de El Molle. Editorial del Pacífico, S. A. Santiago de Chile.

DEBENEDETTI, SALVADOR
1910 Exploración arqueológica en los cementerios prehistóricos de la Isla de Tilcara (Quebrada de Humahuaca, Provincia de Jujuy), campaña de 1908. Publicaciones de la Sección Antropológica No. 6, Facultad de Filosofía y Letras, Universidad Nacional de Buenos Aires. Buenos Aires.
1917 Investigaciones arqueológicas en los valles preandinos de la Provincia de San Juan. Publicaciones de la Sección Antropológica No. 15, Facultad de Filosofía y Letras, Universidad Nacional de Buenos Aires. Buenos Aires.

DIPESO, CHARLES C.
1951 The Babocomari Village site on the Babocomari River, southeastern Arizona. Amerind Foundation Papers 5.
1953 The Sobaipuri Indians of the Upper San Pedro River Valley, southeastern Arizona. Amerind Foundation Papers 6.
1956 The Upper Pima of San Cayetano del Tumacacori. Amerind Foundation Papers 7.

DISSELHOFF, H. D.
1949 Grabungen und Funde im Canton Sta. Elena (Ecuador). El México Antiguo 7:343–410.

DRUCKER, P.
1943 Ceramic sequences at Tres Zapotes, Veracruz, Mexico. Bureau of American Ethnology Bulletin 140.

ESTRADA, EMILIO
1958 Las culturas pre-clásicas, formativas, o arcaicas del Ecuador. Museo Víctor Emilio Estrada Publicación No. 5. Guayaquil.

FEWKES, J. W.
1898a Archaeological expedition to Arizona in 1895. Bureau of American Ethnology Annual Report 17(2).
1898b A preliminary account of archaeological field work in Arizona in 1897. Smithsonian Institution Annual Report for 1897:601–624.
1904 Two summers' work in Pueblo ruins. Bureau of American Ethnology Annual Report 22(1).

FORD, J. A.
1944 Excavations in the vicinity of Cali, Colombia. Yale University Publications in Anthropology 31.

DE LA FUENTE, JULIO
1949 Yalálag, una villa zapoteca serrana. Museo Nacional de Antropología Serie Científica No. 1. México, D. F.

GAMIO, MANUEL
1922 La población del Valle de Teotihuacán, vol. 1, pt. 1. México, D.F., Secretaría de Agricultura y Fomento, Dirección de Antropología.
1927 Cultural evolution in Guatemala and its geographic and historic handicaps. Art and Archaeology 28(3):129–133.

GRIFFIN, JAMES B.
1943 The Fort Ancient Aspect, its cultural and chronological position in Mississippi Valley archaeology. Ann Arbor, University of Michigan Press.

D'HARCOURT, R.
1947 Archéologie de la Province d'Esmeraldas (Équateur). Journal de la Société des Américanistes n.s. 34:61–200.

HARTMAN, C. V.
1901 Archaeological researches in Costa Rica. Stockholm, The Royal Ethnographical Museum.

HAURY, E. W.
1945 The excavations of Los Muertos and neighboring ruins of the Salt River Valley, southern Arizona. Harvard University, Peabody Museum of American Archaeology and Ethnology Papers 24(1).

HEWETT, E. L.
1906 Antiquities of the Jemez Plateau, New Mexico. Bureau of American Ethnology Bulletin 32.
1908 Les Communautés anciennes dans le Désert Américain. Geneva, Librairie Kündig.

HODGE, F. W.
1918 Excavations at Hawikuh, New Mexico. Smithsonian Institution Miscellaneous Collections 68(12):61–72.
1923 Circular kivas near Hawikuh, New Mexico. Museum of the American Indian, Heye Foundation, Contributions 7(1).

HOLMES, W. H.
1903 Aboriginal pottery of the Eastern United States. Bureau of American Ethnology Annual Report 20:1–237.

JEANÇON, J. A.
1923 Excavations in the Chama Valley, New Mexico. Bureau of American Ethnology Bulletin 81.

JIJÓN Y CAAMAÑO, JACINTO
1914 Contribución al conocimiento de los aborígenes de la Provincia de Imbabura en la República del Ecuador. Estudios de Prehistoria Americana II. Madrid.
1920 Nueva contribución al conocimiento de los aborígenes de la Provincia de Imbabura de la República del Ecuador. Boletín de la Sociedad Ecuatoriana de Estudios Históricos Americanos 4(10–11):1–120, 183–245.

KIDDER, A. V.
1915 Pottery of the Pajarito Plateau and of some adjacent regions in New Mexico. American Anthropological Association Memoirs 2(6).

KIDDER, A. V., H. S. COSGROVE, AND C. B. COSGROVE
1949 The Pendleton ruin, Hidalgo County, New Mexico. Carnegie Institution of Washington Contributions to American Anthropology and History 50, Publication 585:107–152.

KIDDER, A. V. AND A. O. SHEPARD
1936 The pottery of Pecos, volume II, glaze-paint, culinary, and other wares. Phillips Academy Southwestern Expedition Papers 7. New Haven, Yale University Press.

LAMBERT, M. F.
1954 Paa-ko, archaeological chronicle of an Indian village in north central New Mexico. School of American Research Monograph 19. Santa Fe.

LATCHAM, RICARDO E.
1928 La alfarería indígena chilena. Santiago, Chile.

LIBERANI, INOCENCIO AND J. RAFAEL HERNÁNDEZ
1950 Excursión arqueológica en los valles de Santa María, Catamarca, 1877. Instituto de Antropología Publicación 563, Universidad Nacional de Tucumán. Tucumán.

LINNÉ, S.
1938 Zapotecan antiquities and the Paulson Collection in the Ethnographical Museum of Sweden. Ethnographical Museum of Sweden, New Series, Publication 4. Stockholm.
1942 Mexican highland cultures. Ethnographical Museum of Sweden, New Series, Publication 7. Stockholm.

LINTON, RALPH L.
1944 North American cooking pots. American Antiquity 9(4):369–80.

LOTHROP, S. K.
1926 Pottery of Costa Rica and Nicaragua. Museum of the American Indian, Heye Foundation, Contributions 8.
1936 Zacualpa, a study of ancient Quiche artifacts. Carnegie Institution of Washington Publication 472.
1946 The Diaguita of Chile. *In* Handbook of South American Indians, Bureau of American Ethnology Bulletin 143(2):633–6.

LUMHOLTZ, CARL
1902 Unknown Mexico, a record of five years' exploration among the tribes of the Western Sierra Madre, vol. 2. New York, Charles Scribner's Sons.

MASON, J. ALDEN
1939 Archaeology of Santa Marta, Colombia: the Tairona culture, part 2, section 2, objects of pottery. Field Museum of Natural History Anthropological Series 20(3).

MERWIN, R. E. AND G. C. VAILLANT
1932 The ruins of Holmul, Guatemala. Harvard University Peabody Museum Memoirs 3(2).

NADAILLAC, MARQUIS DE
1892 Manners and monuments of prehistoric peoples, translated by Nancy Bell (N. D'Anvers). New York, G. P. Putnam's Sons.

NEYS, H. AND H. VON WINNING
1946 The treble scroll symbol in the Teotihuacan and Zapotec cultures. Carnegie Institution of Washington, Division of Historical Research, Notes on Middle American Archaeology and Ethnology vol. 3, no. 74.

NOGUERA, E.
1930 Algunas características de la cerámica de México. Société des Americanistes de Paris Journal, n.s., 22:249–310.

ORR, KENNETH G.
1951 Change at Kincaid: a study of cultural dynamics. *In* Kincaid, a prehistoric Illinois metropolis, by Fay-Cooper Cole, et al., appendix II:293–359. University of Chicago Publications in Anthropology, Archeological Series. Chicago.

PADDOCK, J.
1955 The first three seasons at Yagul. *In* Excavations at Yagul—I. Mexico City College, Department of Anthropology, Mesoamerican Notes 4:25–48. México, D.F.
PARSONS, E. C.
1936 Mitla, town of souls. Chicago, University of Chicago Press.
PETERSON, F. A.
1955 "Doughnut-shaped" vessels and bird bowls of Chupícuaro, Mexico. Ethnos 20(2–3):137–145.
PORTER, M. N.
1956 Excavations at Chupícuaro, Guanajuato, Mexico. American Philosophical Society Transactions, n.s., 46(5).
REICHEL-DOLMATOFF, G. AND A.
1956 Momíl, excavaciones en el Sinú. Revista Colombiana de Antropología 5:109–333.
1957 Reconocimiento arqueológico de la hoya del Río Sinú. Revista Colombiana de Antropología 6:29–158.
REITER, P.
1938 The Jemez pueblo of Unshagi, New Mexico, with notes on the earlier excavations at "Amoxiumqua" and Giusewa. School of American Research Monographs 5 and 6.
ROWE, JOHN H.
1946 Inca culture at the time of the Spanish conquest. *In* Handbook of South American Indians, Bureau of American Ethnology Bulletin 143(2):183–330.
RUSSELL, F.
1908 The Pima Indians. Bureau of American Ethnology Annual Report 26.
RYDÉN, S.
1936 Archaeological researches in the Department of La Candelaria, Prov. Salta, Argentina. Etnologiska Studier 3. Göteborg.
1944 Contributions to the archaeology of the Río Loa region. Göteborg.
SAVILLE, M.
1907 The antiquities of Manabi, Ecuador: a preliminary report. The George G.Heye Expedition, Contributions to South American Archaeology. New York.
SEJOURNÉ, L.
1959 Un palacio en la Ciudad de los Dioses. México, D.F., Instituto Nacional de Antropología e Historia.
SELER, E.
1904 Antiquities of Guatemala. *In* Mexican and Central American Antiquities, Calendar Systems, and History, Bureau of American Ethnology Bulletin 28:77–121.
SHOOK, E. M.
1951 The present status of research on the pre-classic horizons in Guatemala. *In* The Civilizations of Ancient America: Selected Papers of the XXIXth International Congress of Americanists, ed. by Sol Tax, pp. 93–100. Chicago, University of Chicago Press.
SHOOK, E. M. AND R. E. SMITH
1950 Descubrimientos arqueológicos en Poptún. Antropología e Historia de Guatemala 2(2):3–15. Guatemala.
SMITH, A. L. AND A. V. KIDDER
1951 Excavations at Nebaj, Guatemala. Carnegie Institution of Washington Publication 594.
SQUIER, E. G.
1852 Nicaragua; its people, scenery, monuments, and the proposed interoceanic canal, vol. 2. New York, D. Appleton & Co.
STEPHENS, JOHN L.
1848 Incidents of travel in Central America, Chiapas, and Yucatan, 2 vols., 12th ed. New York, Harper and Brothers.

STONE, DORIS
1941 Archaeology of the north coast of Honduras. Harvard University Peabody Museum of American Archaeology and Ethnology Memoirs 9(1).
1948 The basic cultures of Central America. *In* Handbook of South American Indians, Bureau of American Ethnology Bulletin 143(4):169–193.

STRONG, W. D.
1948a The archeology of Honduras. *In* Handbook of South American Indians, Bureau of American Ethnology Bulletin 143(4):71–120.
1948b The archeology of Costa Rica and Nicaragua. *In* Handbook of South American Indians, Bureau of American Ethnology Bulletin 143(4):121–42.

STUBBS, S. A. AND W. S. STALLINGS, JR.
1953 The excavation of Pindi Pueblo, New Mexico. School of American Research and Laboratory of Anthropology Monograph 18.

THOMAS, CYRUS
1894 Report on the mound explorations of the Bureau of Ethnology. Bureau of American Ethnology Annual Report 12.

THOMPSON, RAYMOND H.
1958 Modern Yucatecan Maya pottery making. Society for American Archaeology Memoir 15.

TORIBIO MEDINA, JOSÉ
1952 Los aborígenes de Chile, 2nd ed. Santiago de Chile, Fondo Histórico y Bibliográfico José Toribio Medina.

TUTHILL, C.
1947 The Tres Alamos site on the San Pedro River, southeastern Arizona. Amerind Foundation Paper 4.

UHLE, MAX
1919 La arqueología de Arica y Tacna. Boletín de la Sociedad Ecuatoriana de Estudios Históricos Americanos 3(7–8):1–48.

VERNEAU, R. AND R. RIVET
1922 Ethnographie ancienne de l'Équateur, vol. 2. Mission du Service Géographique de l'Armée pour la Mesure d'un Arc de Méridien Équatorial en Amérique du Sud, vol. 6. Paris, Ministère de l'Instruction Publique.

WILLEY, GORDON R.
1958 Estimated correlations and dating of South and Central American culture sequences. American Antiquity 23(4):353–378.

WOODBURY, R. B. AND A. S. TRIK
1953 The ruins of Zaculeu, Guatemala, 2 vols. United Fruit Company.

YARROW, H. C.
1881 A further contribution to the study of the mortuary customs of the North American Indians. Bureau of American Ethnology Annual Report 1.