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THE ARCHAIC TRADITION IN PUERTO RICO

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BOTH HISTORICAL and archaeological sources on the West Indies provide evidence that these islands were once occupied by peoples with a culture markedly different from that of the agricultural, pottery-making Arawak. The archaeological remains of this Archaic mode of life are found on several of the islands in contexts which indicate their separateness from the pottery horizons and imply their greater antiquity. The ethnohistorical sources also attest to the survival of this Archaic tradition into early historic times (Martyr 1912 Vol. 1: 100, 380; Las Casas 1867: 35; 1951 Vol. 2: 240; Velásquez 1869: 424-5; Oviedo 1852 Vol. 1: 90).

The characteristics of this West Indian Archaic tradition, as revealed by archaeology and supplemented by the ethnohistoric accounts, are: absence of agriculture and pottery; seminomadic living in small bands; frequent use of caves for shelter and burial; crude artifacts made of conch shells, flint, and other classes of stone; use of hematite or red ocher; and the absence of cranial deformation as practiced by the agricultural peoples of the Antilles.

Cultural tradition is here defined, following Phillips and Willey (1953), as "a major large-scale space-time-cultural continuity, defined with reference to persistent configurations in single technologies or total (archaeological) culture, occupying a relatively long interval of time and a quantitatively variable but environmentally significant space."

In Cuba the Archaic tradition is represented by the preceramic finds of Harrington (1921), labeled by him with the controversial ethnic term, "Ciboney," and by those of Rouse (1942: 131), Osgood (1942), Ortiz (1943), Cosculluela (1922), and others. Rock-shelter and coastal shell-midden sites are typical of the Cuban Archaic. Shell gouges, shell celts, vessels and dishes made of conch shells, shell or stone pendants of simple design, pitted hammerstones, hammer-grinders, stone balls, slightly retouched flint flakes, peg-shaped stones or *gladiolitos*, and pieces of red ocher are diagnostic features of the preceramic assemblage on this island. Harrington also found burials in cave floors; the skulls were undeformed and the bones often stained with red ocher. The antiquity of these Cuban Archaic finds is demonstrated by their association with the bones of *Megalocnus*, an extinct ground sloth.

The Archaic of Cuba has been divided into 2 distinct phases, perhaps chronologically sequent, called by Rouse (1951a: 253) Guayabo Blanco and Cayo Redondo. The former contains no evidence of stone grinding and is characterized by what Rouse refers to as the "battering stone" and deep vessels made of the conch. Cayo Redondo, on the other hand, lacks the deep conch shell vessels, and has a ground-stone inventory consisting of various grinding implements, stone balls, and the curious peg-shaped stones, the gladiolitos.

On the island of Hispaniola the existence of Archaic cultures in prehistoric times has been demonstrated by the work of Gabb (1881), Krieger (1929), and Rouse (1939; 1941). The early historical accounts also mention the existence of primitive pre-agricultural groups who lived in the Peninsula of Guacayarima up to the time of the conquest, and who may have been marginal surviving remnants of the old tradition (Martyr 1912 Vol. 1: 380; Oviedo 1852 Vol. 1: 90).

Rouse subdivides the Archaic of Haiti into 3 phases: Couri (northern); Cabaret (central); and Bay of Conch (southern) (Rouse 1951a: 253). The chief diagnostic of Couri is an assemblage of crude stone tools "made by finely rechipping the edges of large lamellar flakes" (p. 253). Ground stone is also well represented in this phase and includes single- and double-bitted axes, balls, dishes, beads, gladiolitos, mortars and pestles, and milling and polishing stones. The Bay of Conch inventory is similar to Couri, with the addition of pointed stone tools and single-bitted eared stone axes. Cabaret is much the simplest of the 3 phases. Only

chipped stone work is found, comparable to Cuba rather than Couri or Bay of Conch.

In the Dominican Republic both Gabb and Krieger dug into cave stratifications in the vicinity of Samaná Bay in which upper level deposits held pottery while the lower strata contained only implements of shell, bone, and stone. Krieger (1929: 68) holds that these artifacts show great similarity to those found by Harrington in his preceramic sites in Cuba.

For Puerto Rico there are no ethnohistorical references to nonagricultural groups similar to those mentioned by the chroniclers in Cuba and Hispaniola; however, their prehistoric existence has been postulated by Rouse (1952: 355). During his survey of Puerto Rico and Vieques, Rouse located several sites with small shell heaps which appeared to contain no pottery. Excavation at 5 of these sites verified this absence of pottery, but the material recovered was so meager and of such dubious artifactual character that Rouse hesitated to claim with certainty that a genuine preceramic occupation of these islands had been demonstrated. Although he felt that it was unlikely that these nonceramic shell heaps were "the by-product of a later Indian or Spanish occupation" (Rouse 1952: 382), he was convinced that further excavations were necessary before the problem could be resolved. All the sites were located close to the shore in regions where shellfish were, or had been, abundant. In all cases "there is a bay in the immediate vicinity, backed by a mud flat or a swamp which could have been used as a base for hunting and fishing" (p. 335). In these respects the sites resemble the nonceramic shell heaps of Cuba and Hispaniola. The possible stone artifacts described by Rouse from these Puerto Rican nonceramic sites include: "several pebbles battered on their ends, another with several grinding facets, a number of sharp-edged pieces of flint or other stone, and several flat stone slabs" (p. 335).

To date, no evidence of the Archaic has appeared in Jamaica. Krieger has reported a possible nonceramic assemblage from the Bahamas (Krieger 1937: 98), but it has not been fully described or illustrated. In the Virgin Islands Hatt (1924) reported nonceramic refuse deposits in shell heaps at Krum Bay, St. Thomas. Hammerstone grinders, red ocher, and a "peculiar long and narrow type of stone axe" are listed as associated artifacts, but the full assemblage has never been thoroughly described. No Archaic remains have as yet been reported from the Lesser Antilles, but much of this area is an archaeological terra incognita. It is not until Trinidad (Rouse 1953) and Venezuela (Rouse 1951b) are reached that evidence occurs of comparable nonceramic phases.

The putative preceramic or Archaic manifestation in Puerto Rico, which Rouse has labeled the Coroso, is the subject of this paper. Recent excavations have brought to light new evidence which proves its existence. We also wish to make some comparisons which have not been made before.

The Loiza Cave Excavations

One of the most obvious desiderata connected with the problem of a possible preceramic occupation of Puerto Rico was the locating of an actual occupation site over and above the scanty shellheaps investigated by Rouse. In 1948, Ricardo Alegría, as part of the program of the newly organized Centro de Investigaciones Arqueológicas of the University of Puerto Rico, initiated excavations at a rich ceramic site near Loiza Aldea, close to the northeast coast. A few hundred yards southwest of this site is a large limestone cave, known locally as Cueva María de la Cruz. Portions of its rocky floor had long been utilized as a stone quarry, but near the western entrance was a fairly extensive area of hard-packed earth mixed with detritus fallen from the ceiling which appeared to be relatively undisturbed. Supplementary to the excavation of the ceramic site, 2 test pits, totaling 5 sq. m. in area, were dug into a portion of this floor near the western wall of the cave.

The pits were dug by 1-foot levels. The 1st level yielded a number of Igneri phase sherds, including 1 large rim fragment of the diagnostic Cuevas white-on-red ware, 7 stone artifacts quite unlike those found in the nearby ceramic site (all artifacts will be described in the next section), large numbers of shells, animal and fish bones, nondescript fragments of rock, and a few scattered human bones. The 2nd level yielded only 5 sherds, plus 5 artifacts of stone and an even thicker deposit of shells and animal bones. The 3rd and 4th levels were completely pottery-free. The heavy concentration of animal bones (many of them fossilized) and shells continued. Most importantly, many of the animal bones showed evidence of burning, and thick deposits of gray ash were en-

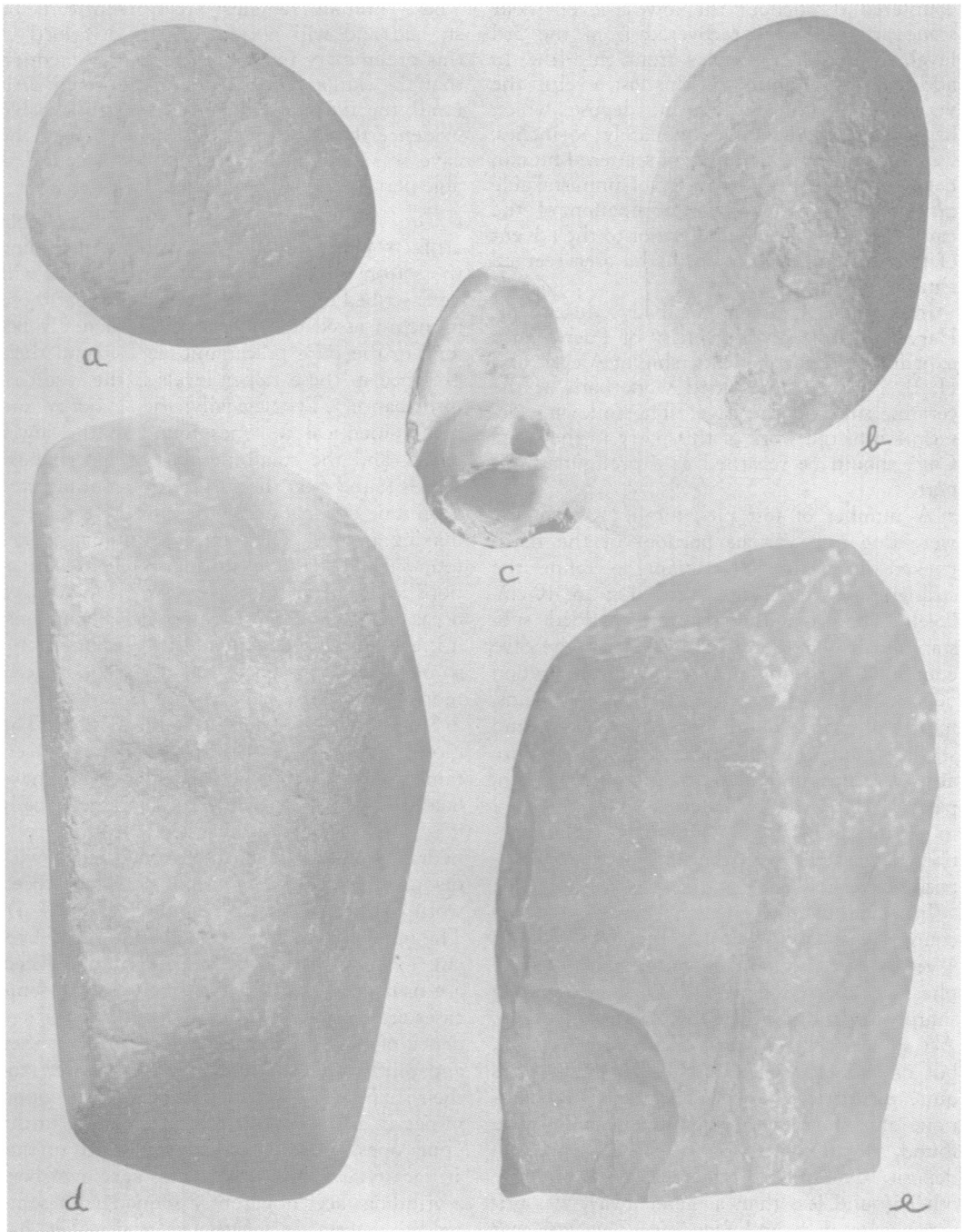

FIG. 37. Tools from the preceramic or Archaic levels of the Loiza Cave, Puerto Rico. *a*, circular pitted hammerstone; *b*, rectangulate pitted hammerstone with one edge (right side) smoothed by grinding; *c*, scraper made from conch shell; *d*, pebble grinder showing grinding surface at left; *e*, pebble chopper showing chopping edge at left. The pebble grinder and chopper are the most distinctive types of this Loiza assemblage. (Dimensions: *a*, 8.5 by 4 cm.; *b*, 11 by 8 by 3.5 cm.; *c*, 10 by 6.5 cm.; *d*, 12.5 by 6 by 4 cm.; *e*, 10 by 7.5 by 4.5 cm.)

countered throughout the lowest level. Four stone artifacts were recovered from the 3rd level, 2 possible examples from the 4th. In addition, at the bottom of this last level in the very top of the sterile sand deposit which began at a depth of approximately 48 inches, were encountered a number of scattered human bones. In spite of the paucity of unmistakable artifacts, the evidence for occupation of the cave by a nonceramic group prior to the advent of the Igneri-phase people in the area seemed almost conclusive.

In July, 1954, a joint Peabody Museum of Harvard University-University of Puerto Rico expedition, under the leadership of Alegría and H. B. Nicholson, resumed work both at the ceramic site and the cave. The following description of the work of this party in the Loiza Cave should be regarded as a preliminary report.

A number of test pits, totaling 56 sq. m., were dug into various portions of the hard-packed floor. In an attempt to refine the stratigraphy, these pits were dug in 10-cm. levels. The material recovered added substantial corroboration to the view that the cave contained a genuine preceramic occupation deposit. Thick concentrations of food remains, mostly animal and fish bones, crab jaws, and shells, together with stratified layers of pure ash, were encountered in nearly every trench, particularly in the lower levels. All pits ended in clean sterile sand, whose light color contrasted markedly with the dark occupation deposit above it.

In some of the pits no sherds were encountered at any level; in others, the topmost 4 or 5 levels contained scatterings of Igneri-phase pottery fragments, always decreasing sharply in numbers with increasing depth. Actual artifacts of stone or shell were rare, but one type, described in detail below, was quite distinctive. Two burials in poor condition, plus fragments of a human skull, were found, all at the top of the sterile sand subdeposit. One of the burials was secondary; the other, found less than a meter away, was primary, extended, and face up. This last was the deepest evidence of human occupation found in the cave; 20 cm. of sterile sand lay between the base of the occupation deposit and the top of the skull, which was encountered at a depth of 150 cm. from the cave floor. These human remains are presently being studied and will not further be described in this preliminary report, other than to mention that the skulls appear to be undeformed. All in all, the 1954 excavations added considerable evidence that at least the front portion of the cave was intensively occupied for a considerable period by a preceramic group.

The Artifacts. In this section all possible artifacts found in both excavations, including those from the upper sherd-bearing levels, will be described together. It seems likely that those found in association with pottery actually belong to the pure preceramic deposit and their presence in these upper levels is the result of disturbance. Typologically the majority are nearly identical to types found in the lower levels, and the small number of Igneri-phase sherds found near the surface does not indicate a genuine occupation of the cave by a pottery-making group. The scattered human bones found in the 1st level during the 1948 excavations suggest that the Igneri people may have occasionally used the cave for burial purposes; it is even more probable that this striking grotto so near the ceramic site was the scene of ceremonial activities.

Stone artifacts will be described first. The most common type (11 specimens), and certainly the most distinctive, is what we have labeled the "pebble grinder." Characteristically it is simply a large, waterworn, irregular, polyhedral pebble of hard fine-grained stone with distinct edges, one or more of which has been worn flat by rubbing or grinding (Fig. 37 *d*). The implements range from about 12 by 6 by 4 cm. to 6 by 5 by 3 cm. The grinding facets are usually long and very narrow, but in some cases are short and fairly broad. No other evidence of human workmanship is present; they apparently were natural pebbles chosen for their shape. These pebble grinders were found in nearly all levels, but more commonly in the upper ones. The precise function of this unique artifact type is uncertain. One specimen bore a grinding facet apparently stained with some reddish substance. Although red ocher has been reported from other Greater Antillean preceramic sites, none has so far been reported from any possibly preceramic deposit in Puerto Rico. The narrowness of the average grinding facet may indicate a somewhat specialized use.

A possible subtype consists of the same polyhedral pebble form with one entire face, rather than an edge, so smooth that it was apparently the result of rubbing or grinding. It is doubtful whether water action or other natural cause could have produced such a regular, perfectly flat surface.

The second most distinctive stone artifact is the hammerstone (3 certain and 2 probable specimens; Fig. 37 *a, b*). Two are irregular in shape, 1 more or less rectangular, 1 teardrop, and 1 discoidal and pitted. Only the rectangular and the discoidal examples show evidence of artificial shaping; all display use nicks on the striking surface.

The remainder of the stone artifacts consist of what we have called "pebble choppers" and sharp edged flakes (3 of the former; 6 of the latter). The pebble choppers are irregular pebbles with a rough, broken striking edge. One of the largest and most complete measures 10 by 7.5 by 4.5 cm. (Fig. 37 *e*). The flakes have sharp cutting edges with use nicks; they may have been employed for both cutting and scraping. Evidence of secondary retouching, or even indubitable primary flaking, was not present on any of these flakes.

One shell artifact was unmistakable, a small scraper manufactured from a "Cobos" shell, found in the pottery-free deposit above the 2 burials (Fig. 37 *c*). The flattish section of the outer whorl of a *Strombus* shell was found at a deeper level in the same pit (80-90 cm.), which is almost identical in shape to a smaller one found in the topmost level of one of the 1948 pits, as well as with examples illustrated by Rouse and Osgood from various nonceramic deposits in Cuba, Haiti, and others in Puerto Rico. While the artifactual character of these "shell plates," as these 2 archaeologists call them, has not been conclusively demonstrated, the wide distribution of this distinctive form makes a good prima facie case. (For a discussion of the possible function and West Indian distribution of these objects, see Osgood 1942: 35, 42.)

Two objects of what appear to be cut bone wind up this somewhat meager artifact list. One, a small stub, was associated with the secondary burial; the other, a manatee rib with a possible pared end, was found on a higher level in the same pit.

COMPARISONS

The West Indies and Venezuela. In Puerto Rico itself, the Loiza Cave pebble grinders might be compared with the pebble "with several grinding facets," which Rouse mentions in his summary description of Coroso culture (Rouse 1952: 335). Later in his description of the artifacts recovered from a shell heap at Jobos, he mentions "two possible grinders of stone" (p. 539); whether his pebble with the grinding facets is one of these is not clear. Unfortunately, none of these objects are illustrated.

The Loiza Cave hammerstones might also be compared with the "pebbles battered on their ends," which Rouse found in some of his nonceramic shellheaps (Rouse 1952: 335, Pl. 8 G). Their simplicity probably rules out any detailed typological comparison. Rouse also illustrates (1952, Pl. 8 *D*) a "*Strombus* shell plate," which, as previously indicated, is almost identical in form to the 2 specimens found in the Loiza Cave; he further mentions the finding of other shell plates in his Puerto Rican nonceramic sites. These objects are also common in some of the ceramic sites.

The Loiza Cave flakes also appear to be very similar to Rouse's "sharp-edged pieces of flint or other stone" (Rouse 1952: 355), but his one illustration (Pl. 8 *A*) is not adequate for real comparison. In sum, a possible tie between the "Coroso Culture" of Rouse in Puerto Rico and Vieques and the preceramic phase represented by the Loiza Cave material appears to rest more on shared negative features, particularly the absence of pottery, than on clear typological similarities between artifacts that are common to both.

Turning now to the best described preceramic phase in the West Indies, that of Cuba, whose chief diagnostic features were summarized in the introduction, we find that among stone artifacts only the Loiza Cave hammerstones, particularly the discoidal pitted specimen, can be fairly compared with Cuban types. This discoidal pitted type is in fact one of the best diagnostics of the Cuban preceramic; its presence in the Loiza Cave assemblage may be of considerable significance. The Loiza Cave pebble grinder, on the other hand, has no real parallel in Cuba. The Guayabo Blanco phase is distinguished by a lack of either grinders or ground-stone objects, although Harrington (1921 Vol. 2: 340) did mention the discovery

of "thin slender grinding or whetstones" from one site (not illustrated). In the Cayo Redondo phase what Rouse and Osgood call "hammer-grinders" are common, most of which possess grinding facets, but from the published illustrations they do not bear much resemblance to the pebble grinder (Osgood 1942, Pls. 4, 5; Rouse 1941, Pl. 2). Osgood also describes a type which he calls "polishing stone," which from his description and one illustration does seem to bear a generalized resemblance to the Loiza Cave pebble grinder subtype previously mentioned which has one large face completely smooth (Osgood 1942: 30-1, Pl. 4 C).

Harrington also lists as a diagnostic of the Taino (ceramic) phase of Cuba what he calls the "rubbing stone for celt-making" (Harrington 1921 Vol. 2: 299, Fig. 82). Apart from its inclusion in the post-Ciboney ceramic phase, it bears little typological resemblance to the Loiza Cave pebble grinder and was probably employed for a different purpose. The only other Cuban preceramic artifacts resembling those from the Loiza Cave are the previously mentioned shell plates, but the significance of these distinctive but apparently unworked objects found over a large area requires further analysis (compare Osgood 1942, Pl. 3 *H, T*; Rouse 1942, Pl. 2 *P*).

Far more striking than the vague similarities between the Loiza Cave artifacts and those from Cuban preceramic sites, are the absences in the artifact inventory of the former site of a number of types which are important diagnostics of those of the latter, such as: red ocher, mortars and pestles, shell gouges, shell cups, stone balls, retouched stone flakes, and gladiolitos. If further research corroborates these absences in the Puerto Rican preceramic, it will be clear that as between this island and Cuba the archaeological culture content on this early level was quite distinct.

Moving to Haiti, we find that hammer-grinders again are common in the best-known preceramic phase of that country, Couri. They are very similar to those of Cuba and often bear distinct grinding facets, but to judge from the published illustrations (Rouse 1941, Pls. 1, 4, 5), they bear little typological similarity to the Loiza Cave pebble grinders. They especially differ in that the majority seem to have been artificially shaped to a fairly regular form, perhaps more through use than design. Rouse describes another type which he labels "rubbing stone," but these slablike forms also bear little resemblance to the pebble grinder (Rouse 1941: 42, Pl. 1, *16*). As in the Cuban preceramic phases, the number of Couri-phase diagnostics lacking in the Loiza Cave artifact list is much more striking than any casual similarities, for example: the large lamellar flakes with secondary retouching, stone dishes, single- and double-bitted axes, stone balls, beads, gladiolitos, mortars and pestles, and carved shell pendants. The culture contents of the other 2 Haitian preceramic phases have not been fully described, but appear to contain little that can be compared with the Loiza Cave material on a specific level.

The preceramic of the Dominican Republic has only been described in a preliminary way, making comparisons especially difficult. From its geographical position it might be expected to bear a particularly close relationship to that of Puerto Rico. At the base of the preceramic deposit in Railroad Cave in the Samaná Peninsula Krieger found a multifaceted grinding stone similar to those found by Harrington in Cuba (not illustrated). From Krieger's description (1929: 63) and from the fact that he compares it so definitely with the Cuban types, it is probably quite distinct from the Loiza Cave pebble grinder. A number of hammerstones were also found in possibly preceramic deposits in caves by Krieger, some of which he illustrates (1929, Pls. 1, 2), but it is worth stressing again that such generalized artifacts offer little opportunity for establishing cultural connections on the basis of typological similarities.

The putative preceramic of the Virgin Islands (Hatt 1924) has also never been adequately described. Two of the artifacts mentioned, rectangular stone adzes and clam shell scrapers, are absent from the Loiza Cave finds, as is red ocher, also reported from the Krum Bay deposit. Only Hatt's "hammerstone grinder" might offer some basis for comparison, but this type is neither described at greater length nor illustrated.

The nonceramic assemblage of Trinidad has only been described in a very preliminary fashion by Rouse (1953: 94-5); fruitful comparison with the Loiza Cave material is impossible until the final report, in process of preparation, appears. Rouse's preliminary report on the preceramic phase at Manicuare in northeastern Venezuela is somewhat more com-

plete (Rouse 1951b). Manicuare is important because to date it is the only indubitable preceramic assemblage discovered in the southern Circum-Caribbean area. Its artifact inventory appears to bear some typological resemblance to the Guayabo Blanco phase of the Cuban preceramic. With the possible exception of the ubiquitous hammerstone, there seems to be nothing in the Manicuare materials which compares closely with the Loiza Cave assemblage. Final judgment must await the published report, but apparently nothing like the pebble grinder has been found here or elsewhere in Venezuela.

To briefly sum up this comparative survey, it can be said that on the basis of available evidence the most distinctive Loiza Cave artifact, the pebble grinder, seemingly has no close parallels in any comparable West Indian or Venezuelan preceramic phase discovered and adequately described up to the present time. Only the rather nondescript stone flakes, hammerstones, and shell "plates" have some typological counterparts in other areas, mostly in Cuba and Haiti. The absences in the Loiza Cave material of artifacts which are leading diagnostics of preceramic phases of other regions is particularly striking. If future work confirms these absences, as well as the uniqueness of the pebble grinder, it will strengthen Rouse's view of this West Indian preceramic level (1951a: 254-5): "While the various islands are linked together by negative traits, such as the absence of pottery, of agricultural implements, and of ceremonial structures, each differs in its more common positive traits and thereby constitutes a separate cultural unit."

Panama. The similarity of the Loiza Cave pebble grinders and pebble choppers to artifacts of the Monagrillo culture of Panama is surprising and noteworthy. Although these grinders and choppers are crude and simple tool types they are not, apparently, widespread in the Americas. In searching for similarities to the Monagrillo implements (Willey and McGimsey 1954) we were unable to locate any close parallels. The Puerto Rican Archaic occurrence of these artifact types is, therefore, to the best of our knowledge, the only other reported instance outside of Panama.

The Monagrillo pebble grinders and choppers were found in shellmound sites on an old abandoned shore line of Parita Bay in western Panama (Willey and McGimsey 1952: 178, Fig. 9). The Monagrillo cultural phase is, quite probably, the earliest evidence of human occupation yet found in Panama. It is known to precede the later polychrome pottery horizon in the same region, including such cultures as the Coclé. Monagrillo differs from these later archaeological cultures in that it is characterized by extremely simple plain and incised pottery and the crude pebble tools. Further, there is a high probability that the Monagrillo culture was nonagricultural or marginal agricultural as opposed to the intensive farming cultures of Coclé or Veraguas. In sum, the Monagrillo complex represents a relatively early culture of a level of development similar to that of the cultures of the West Indian Archaic tradition.

The Monagrillo pebble grinders, like those from Loiza, are waterworn polyhedral boulders with one edge ground smooth by use. The nature of the grinding work done with these implements, as is the case with the Loiza specimens, is unknown. Several large, crude metates or mortars were found at one of the Monagrillo sites, and the pebble grinders may, possibly, have been used in conjunction with these. It is, however, curious as to why a small edge surface of the stones was utilized rather than one of the larger flat surfaces. The Monagrillo pebble grinders range in size from 17 by 10 by 7 cm. to 11 by 7 by 5 cm. This size range overlaps with the dimensions of the Loiza grinders which are, on the average, slightly smaller than their Monagrillo counterparts.

The Monagrillo pebble choppers are also made from waterworn polyhedral boulders. This type, like the grinder, has one edge shaped from use. In this case the use has been pounding or chopping rather than grinding or rubbing, and, in consequence, the edge of the pebble has been transformed into a rough, bifacially chipped cutting surface. Monagrillo choppers ranged in size from 14 by 13 by 6 cm. to 11 by 9 by 6 cm. The larger Loiza specimens fall within this range.

In addition to the choppers and grinders, the Monagrillo complex resembles the Loiza in the possession of rectangulate hammering or grinding stones. These differ from the more specialized choppers and grinders in that they show evidence of pounding, pecking, and grinding on all edges. This kind of stone tool is, of course, ubiquitous in its American distribution.

Conclusions

There is ample evidence, both archaeological and historical, that the West Indies were first occupied by peoples who followed a non-agricultural way of life. This mode of life has been referred to as the West Indian Archaic cultural tradition. Archaeological sites of this tradition are well represented in Cuba and Hispaniola, and they have been reported from the Bahamas, Puerto Rico, the Virgin Islands, and Trinidad.

The present paper has described excavations in a Puerto Rican cave site which offers stratigraphic proof of a preceramic, presumably non-agricultural, complex underlying the pottery-bearing strata of the Igneri phase. The Igneri phase has been attributed to early agricultural Arawakans.

The preceramic strata in the Loiza Cave yielded abundant crab claws, shells, and animal and fish bones as well as ash. A primary extended and secondary burial, neither accompanied by grave goods, were found near the base of the deposits. The artifacts of the preceramic strata include pebble grinders, pebble choppers, hammerstones, flint flakes with use nicking, a shell scraping tool, a shell fragment, and 2 scraps of bone, possibly cut.

The Archaic culture of the Loiza Cave shows some similarities to the Coroso culture which Rouse has defined tentatively from several sites in Puerto Rico. The plates made of conch shells, the hammerstones, and the flint flakes are shared by Loiza and the Coroso complex. On the other hand, the pebble grinders and choppers of the Loiza type seem to be missing from Coroso. Similarly, in Cuba and Hispaniola the preceramic cultures differ from Loiza in that the peculiar pebble tools are absent. Other grinding stones obtain, but these are of different form. As yet there is not sufficient information from the Virgin Islands, Trinidad, and Venezuela to make adequate comparisons.

The most striking parallels to the Loiza artifacts are seen in the pebble grinders and choppers of the Monagrillo culture of Panama. The Monagrillo implements are identical with those of the Loiza assemblage. The implications of this similarity are by no means clear. The Monagrillo culture of the Parita Bay region of western Panama is a relatively early manifestation, probably preagricultural. It differs from Loiza, and the West Indian Archaic tradition at large, in that it possesses a simple pottery. The location of the Monagrillo sites and the evidence for a marine economy are, however, consistent with most of the West Indian preceramic sites. If the pebble grinding and chopping tools were widely distributed throughout the West Indies and northern South America on an early horizon, a reasonable case for the diffusion of an Archaic tradition and stone tool industry that linked Panama with the rest of the Caribbean could be postulated. Lacking such a distribution we can only remark upon the curious Loiza occurrences of pebble grinders typical of Panamanian Monagrillo. An independent development of this tool type in both Panama and Puerto Rico is not ruled out, yet the artifact is just sufficiently distinctive to give cause for wonder. Is it possible that similar pebble grinders and choppers have been overlooked in the Caribbean area? We call attention to this type of implement, with all the above-mentioned possibilities in mind.

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