

Preliminary Report on Pottery Finds in Tonga

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During the period September 1963 to September 1964 archaeological field work was carried out in Tonga for the Australian National University. The investigations have been limited to Tongatapu, the main island of Tonga. Attention was concentrated upon excavation because there is no lack of known rich sites. A team of local Tongan workers under the leadership of an excellent Tongan interpreter and excavation assistant was a considerable help to the expedition.

The establishment of an archaeological relative chronology has never been attempted for any period of the prehistory of Tonga. This is the main purpose of the investigations in progress, as a relative chronology must form the basis for all other efficient and successful archaeological investigations within the area. From this point of view it appeared that it would be best to concentrate upon the excavation of a selected few of the many habitation sites producing pottery.

TONGAN POTTERY

The first finds of prehistoric pottery were made in Tonga by W. C. McKern during his stay 1920-21; and this was also the first time that prehistoric pottery was recognized in Polynesia (McKern 1929: 115-119). One of his observations was that pottery must have been in common use during the time when it was known (1929: 111 and 117). This impression was confirmed by later investigations in Tonga, carried out by J. Golson in 1957, by T. L. Birks in 1959 (Golson 1961: 172-174), and not the least by the investigations going on at present. Pottery can be found at numerous locations all over the island, present in abundance both on the surface and in the cultural deposits below the surface. Potsherds form the dominant artifact group on our excavation sites.

The potsherds seem to reflect a marked range of pot shapes with curved as well as angular profiles and with both flat and rounded bottoms. Pot sizes seem to have involved both very small pots and very large pots, varying in diameter from about 7 cm to 40 cm at least—a few being considerably bigger—including both very shallow dishes and deep bowls. Generally speaking the pottery is brick red in colour. On some sherds other colours can be observed, such as dark brown, dark grey and black, but they seem only to reflect the firing technique used in making the pottery. A whitish layer on top of the brick-red clay has been observed on the outside of a few sherds. This might turn out to be traces of paint.

On our sites the proportion of decorated sherds to undecorated sherds is not very great, but still it can be maintained that decorated pottery was not uncommon. This differs somewhat from the conclusions reached by the earlier investigators

at other sites where only a very small proportion of the pottery is reported as decorated (McKern 1929: 116; and Golson 1961: 174).

The pottery ornamentation is geometrical, including a remarkable range of patterns (see Figs. 1-23). The most common technique was that of making toothed stick impressions in the wet clay. Incising and impressing with the edge of a shell, were seldom used. In a few cases both these were used together with toothed stick patterns on the same pot. Rather common is a relief decoration of one or two horizontal ribs, often very strong and provided with vertical incisions.

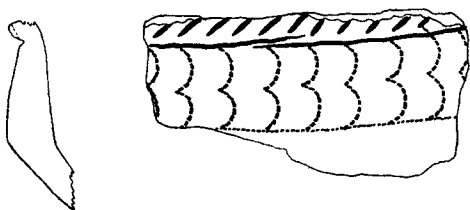
Toothed stamp or toothed stick technique are not very convenient terms, but they are both more precise than the terms 'incised' and 'rouletted'. The term 'incised' should be limited to a motif made by pressing, for example, a pointed tool into the clay and drawing it along the surface. The term 'roulette' should be limited to a motif made by rolling a wheel with toothed edge along the surface. This will produce a sort of a stippled line. The only difference between 'roulette' technique and 'toothed stick' technique is that the first involves the use of no less than a wheel, whereas the second only demands the straight or slightly curved edge of a stick of wood or bone. So the term 'rouletted' should be limited to cases where it can be definitely proved that the tool used was a wheel. [Toothed stamp in Southeast Asia has also been called *Impressed: compound tool* (dentate stamped). In the same way the use of a roulette is called *Impressed: compound tool* (roulette stamped). Solheim 1964: 9.—*Ed.*]

What strikes one first about the decorated potsherds is that many of the motifs have parallels among the sherds from Site 13 Lapita, in New Caledonia (Gifford and Shutler 1956: pls. 16, 22, and 23). This is also true for the material from excavations in the Ile des Pins, in New Caledonia (Golson 1959: 37, and more recent work by Golson at St. Maurice, Golson 1961: 174) and in older collections from Vuatom, New Britain (Golson 1959: 37; some Vuatom sherds are in the Musée de l'Homme, Paris, and were examined there by the writer).

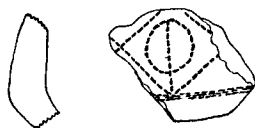
Gifford seems to have been the first to make comparisons between potsherds with related ornamentation from New Britain, New Caledonia, Fiji, and Tonga (1951: 236; also Gifford and Shutler 1956: 94). Golson, who followed, stressed the importance of these observations (1959: 36-38). The investigations going on at present cannot leave any doubt as to the similarities between the decorated pottery finds in Tonga and in these other islands. However, it should be remembered that the motifs are more numerous, elaborate and varied in New Britain and New Caledonia than they are in Tonga, where the style seems to have reached a typologically later stage than that further west. But it is beyond doubt that the same cultural movements account for the spread of this pottery complex from the west to the east in Oceania.

Other prehistoric pottery styles known from New Caledonia and Fiji through the work of Gifford and Shutler do not seem to be represented in the material being excavated at present. One potsherd collected from the surface at Maka'unga, Tonga, is probably an exception, having parallels both in Fiji and New Caledonia (cf. our Fig. 23 with Gifford 1951: pl. 21, and Gifford and Shutler 1956: pl. 14).

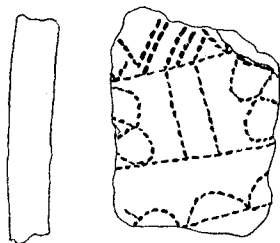
A local feature of Tongan pottery seems to be the combination of toothed stick-impressed decoration with the rather common rib decoration.



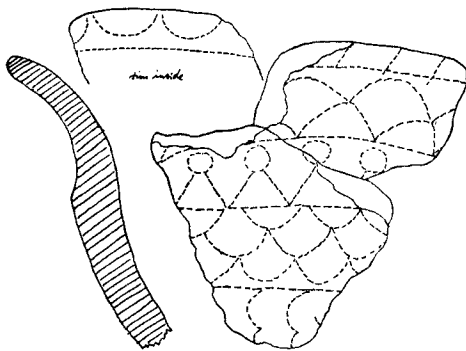
To. 1: Fig. 1



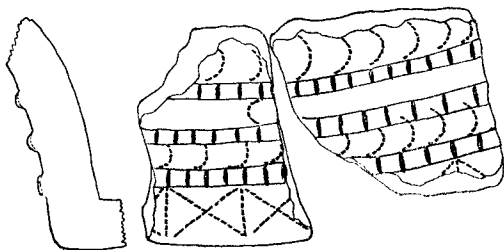
To. 1: Fig. 4



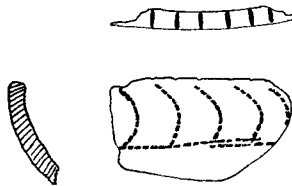
To. 1: Fig. 2



To. 1: Fig. 5

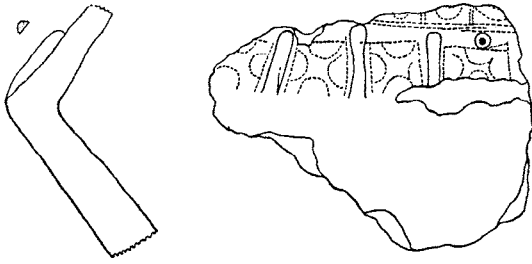


To. 1: Fig. 3

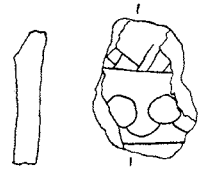


To. 1: Fig. 6

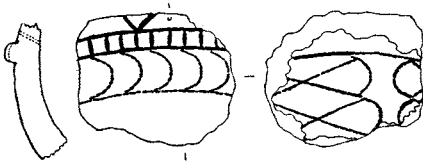
FIGS. 1-6. Potsherds from Pea Site, Tongatapu.



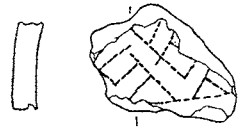
To. 2: Fig. 7



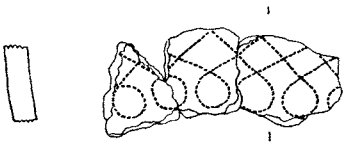
To. 1: Fig. 12



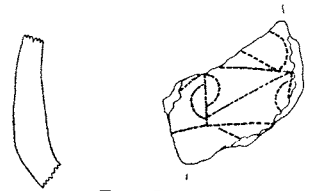
To. 1: Fig. 8



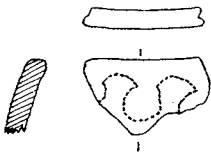
To. 1: Fig. 13



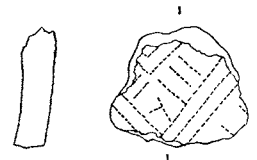
To. 1: Fig. 9



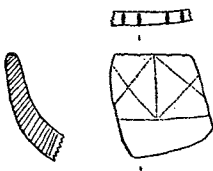
To. 1: Fig. 14



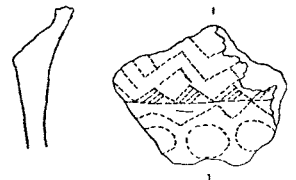
To. 1: Fig. 10



To. 2: Fig. 15

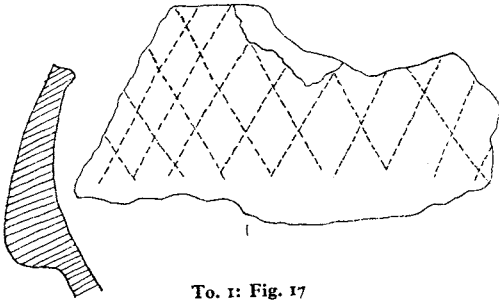


To. 1: Fig. 11

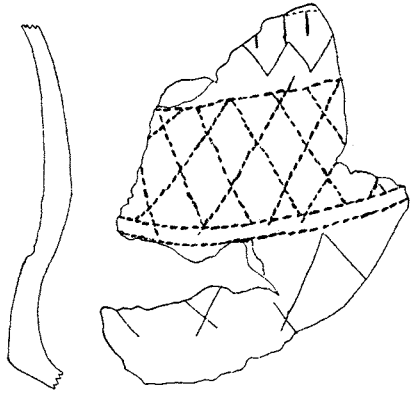


To. 1: Fig. 16

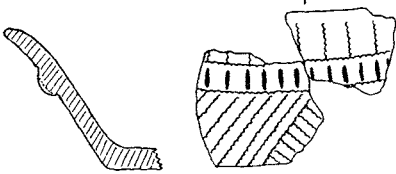
FIGS. 7-16. Potsherds from Pea Site, Tongatapu.



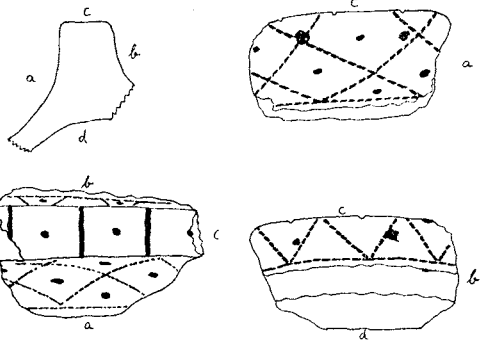
To. 1: Fig. 17



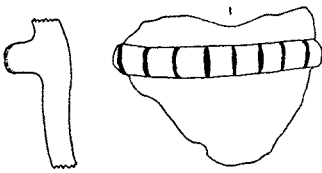
To. 2: Fig. 21



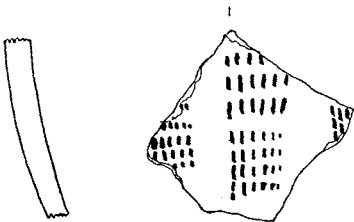
To. 1: Fig. 18



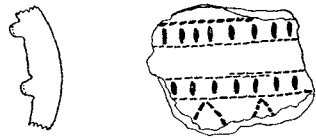
To. 1: Fig. 22



To. 1: Fig. 19

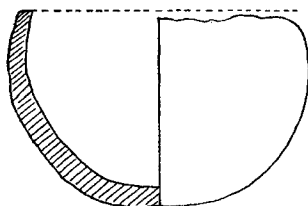


To. 1: Fig. 20

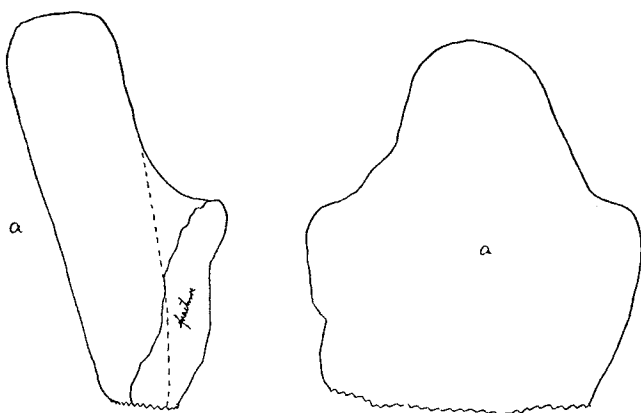


Maka'unga, Tonga: Fig. 23

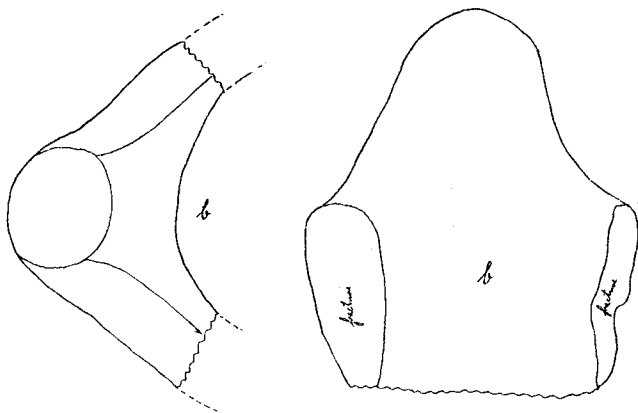
FIGS. 17-23. Potsherds from Pea Site, Tongatapu.



To. 1: Fig. 24

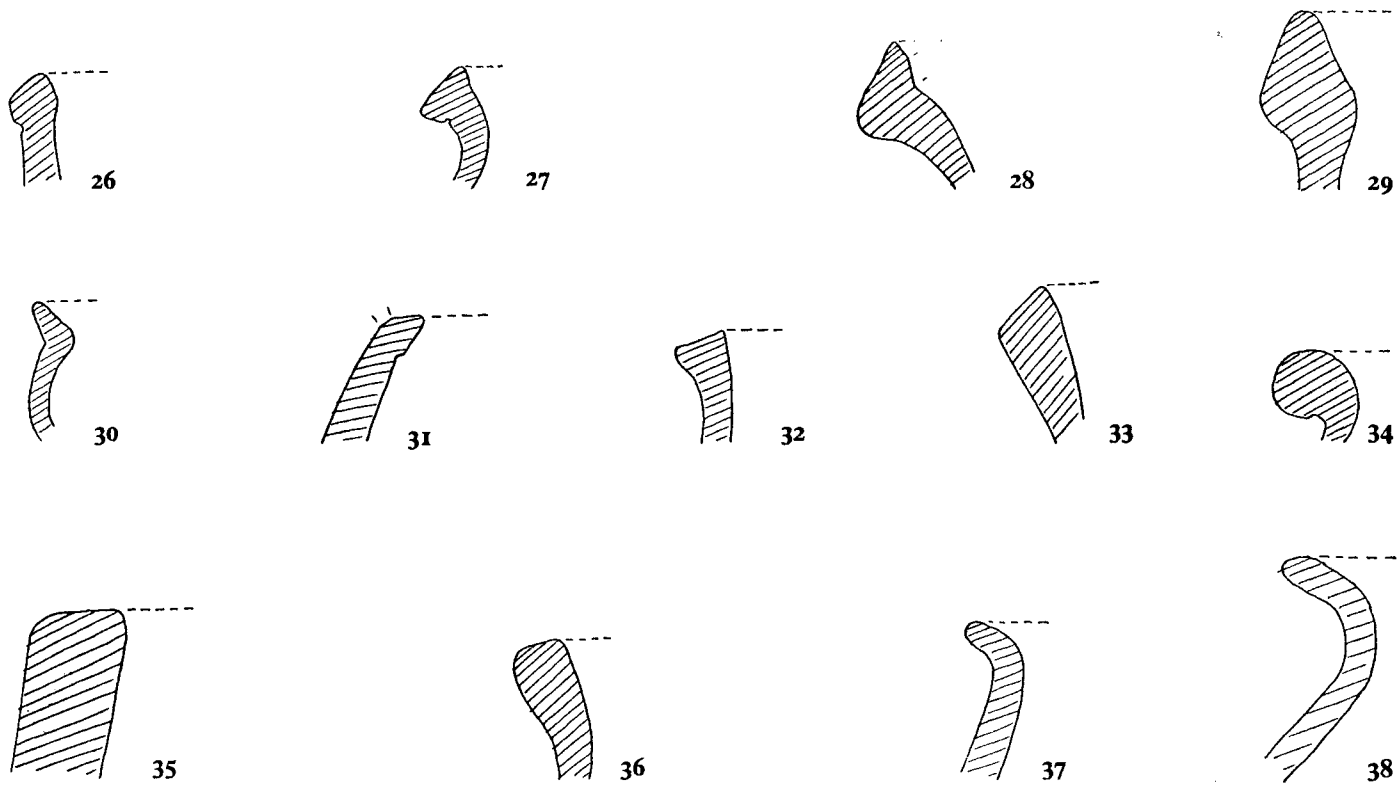


To. 1: Fig. 25a



To. 1: Fig. 25b

FIGS. 24-25. Potsherds from Pea Site, Tongatapu.



FIGS. 26-38. Cross-sections of rim types from Tongatapu.

As regards rim and lip types of the pottery found to date, the rim forms include straight, outcurved, and incurved profiles. The lips are normally flat or rounded, and of the same width as the rim. No grooved lips have appeared (Figs. 5, 6, 10, 11, 17, 18, 24, 26-38).

McKern (1929: 116) mentions a doubtful type of ornamentation consisting of corrugations, placed laterally about the vessel and roughly parallel. We have a considerable number of such sherds which together form a distinct group. On some of these sherds the corrugations are very clear and look like leaf impressions.

The probable age of Tongan pottery can only be guessed at by comparing it with related pottery finds at Lapita in New Caledonia. C-14 dates for this are 846 ± 350 B.C. and 481 ± 400 B.C. (Gifford and Shutler 1956: 89). One charcoal sample from our first site has been sent to the Radio Carbon Dating Laboratory in Copenhagen. See *Postscript*, p. 195.

We still do not know how recently the pottery type concerned—and also pottery as a whole—was manufactured and used in Tonga. Was the industry active right up to the time when contact with Europeans began or did it die out before then, and if so, when?

Cook and other early discoverers observed clay pots in use in Tonga (McKern 1929: 117-18), but their opinions about their origin are conflicting. Some think that the pots were of local manufacture, others that they were imported. Mariner, who stayed quite a long time in Tonga, says that the earthen pots he saw in use were imported from Fiji (Martin 1817: Vol. II, 284). Fijian pottery has not yet been reported archæologically from Tonga. There is abundant raw material for pottery manufacture; plenty of clay is present at least in Tongatapu and also in the neighbouring Island of Eua. Up in the hills of Eua extensive areas of pure red clay are exposed, all probably of volcanic origin. Laboratory analyses will be carried out on samples of these clays as well as on potsherds and will no doubt give useful information on this point.

In many respects pottery finds in Tonga are of the utmost importance to the study of the prehistory of the island group. Pottery will no doubt provide the best basis for the study of the local relative chronology. Already we have hints about relative chronological differences from our first site, based on its 'horizontal' stratigraphy. Certain differences among other sites might also point in the same direction. If we can establish a relative chronology for some part of the prehistory of Tonga, it might eventually be possible to link this up with related pottery sequences further west in Oceania.

ASSOCIATED MATERIALS

The habitation sites from which pottery comes are all shell middens. Numerous post-holes and pits of various sizes and forms indicate that some sort of building activity must have taken place within the kitchen midden areas. Unfortunately there are so many holes that it is almost impossible to estimate the form of the huts, except for one case where the post-holes seem to belong to a rather big hut with curved sides. In one of the deep pits was a compact layer of red burnt soil and charcoal. A considerable part of this charcoal was of coconut shell and

husk, showing that the coconut was known by the prehistoric kitchen midden dwellers in Tonga. This extraordinarily useful plant may have been introduced by the same people. We have preserved fragments of this coconut charcoal in case the variety of coconut can be identified. The writer would be most pleased to get in touch with a scientist who could assist in this respect.

Shellfish seem to have formed the basic animal food for the midden dwellers. The shell deposits are often very compact. Shell middens provide ideal conditions for the preservation of bones and artifacts made of bone, but these occur only very rarely in our shell middens. The amount of fish bones is very small indeed. This is surprising, for the fishing possibilities are excellent in Tonga, both in the lagoon and in the surrounding sea. The only fishing gear we have found is one simple fish gouge of bone. This is of the same size and form as one illustrated by Emory and Sinoto (1961: fig. 47*a*). Among the few animal bones identified are rat, turtle, and fowl. Fragments of human bones have been found scattered about in the shell midden. We have excavated a grave situated within the shell midden area of our Pea Site (To. 1.) The grave was dug into the subsoil and was well sealed by the shell deposits above. Various observations prove the grave to be contemporaneous with the formation of the shell midden. It is a shallow, circular pit about one metre in diameter. The skeleton was supine with the legs drawn up along the left side of the body, elbows close to the body, hands close to the shoulders, and the head oriented towards the east. Some of the soil under the skeleton was burned red. Four centimetres from the right elbow was a small shell adze (Fig. 40).

Another shell adze of the same type was found, together with others, and a number of fragments of basalt adzes. We have only one whole basalt adze (Fig. 39 *a-b*) which is contemporaneous with the pottery. This is the first time pottery has been securely associated with an adze in Tonga. The adze form is not related to the types previously supposed to belong to the Tongan pottery makers (Golson 1961: 174). The literature available in the field has not enabled us to find any parallels to our Pea adze, but a few somewhat similar forms have been noted from Fiji and New Caledonia (Gifford 1951: figs. 2*m*, 3*m*, 4*s*, *e*, and *k*; Gifford and Shutler 1956: fig. 1*c*; Duff 1956: fig. 36 bottom right). One of these (Gifford and Shutler 1956: fig. 1*c*) came from the surface of Site 13, Lapita, in New Caledonia. A closer study of these adze problems will no doubt open up interesting perspectives.

Shell artifacts are also associated with the pottery. These (Figs. 41-46) include fragments of bracelets, beads of various forms and four small, flat tattooing tools (for parallels in Hawaii see Emory and Sinoto 1961: fig. 70*a-b*). To these can be added two big, strong coral branch files and a few hammerstones of volcanic stone.

On the island of Tongatapu the number of earth mounds is exceedingly large—roughly estimated between 1,000 and 1,500—and many of them are enormous. Almost nothing is known about these mounds (the *langi* are not included in this connection). Are they house mounds or burial mounds or both, and are other categories of mounds included in their number? How old are they? What can they tell about the habitation pattern? It is obvious that some study should soon be made of them, not least because future agricultural development in Tonga may jeopardize

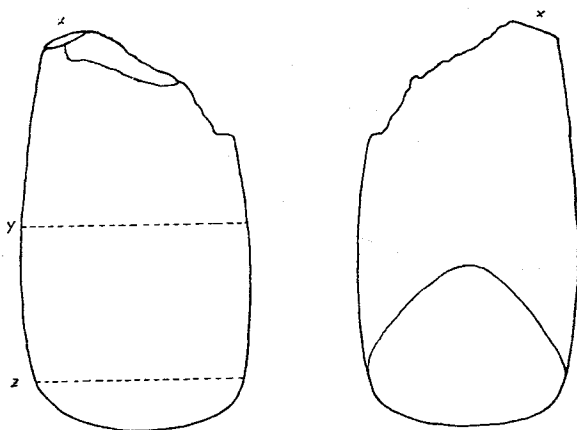


Fig. 39a X = undamaged part of butt end

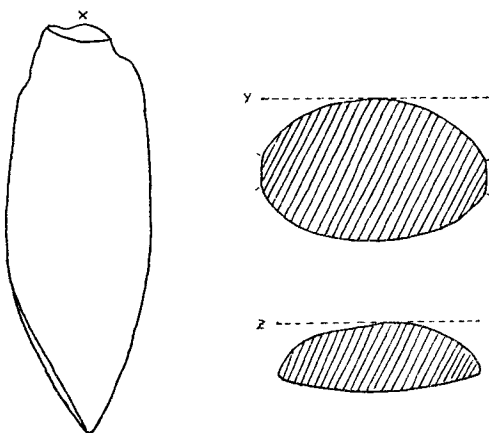


Fig. 39b

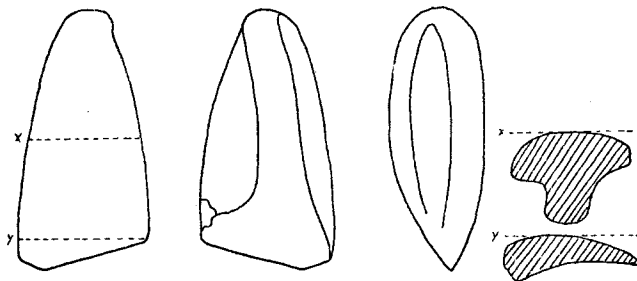
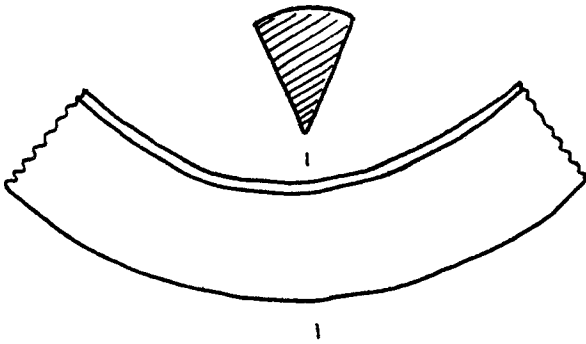
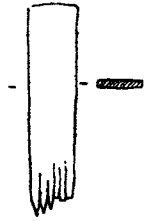


Fig. 40

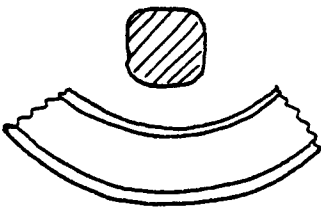
FIGS. 39-40. Stone adze and shell adze from Pea Site, Tongatapu.



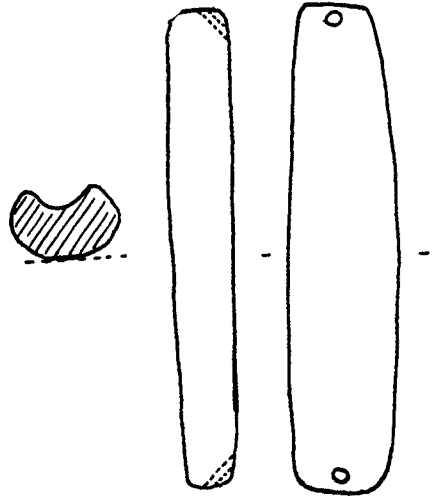
To. 2: Fig. 41



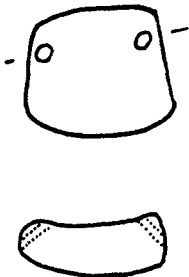
To. 1: Fig. 44



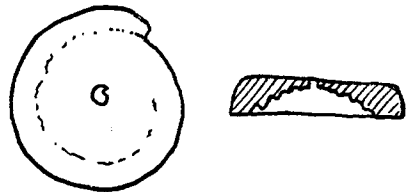
To. 1: Fig. 42



To. 1: Fig. 45



To. 1: Fig. 43



To. 1: Fig. 46

FIGS. 41-46. Shell artifacts recovered from Tongatapu.

the existence of many of them. I should like to note that the investigation of the the mounds is beyond the capabilities of a small team of field workers and will require a major expedition.

Postscript

Since the manuscript of this paper was submitted, a few radiocarbon dates have been obtained from the investigated shell-midden sites in Tongatapu. The samples were analysed by the Carbon-14 Dating Laboratory in Copenhagen (quoted as Copenhagen in the following) and by the Institute of Nuclear Sciences in New Zealand (quoted as New Zealand in the following). The radiocarbon dates have not yet been interpreted on the background of the archaeological evidence from the sites. They will therefore only be listed as follows:

1. 820 ± 100 B.C. Shell sample from site To. 1, Pea. (Copenhagen).
2. 430 ± 51 B.C. Charcoal sample from site To. 6, Tufu Mahina near Pea. (New Zealand).
3. $350 \pm$ A.D. 60 Charcoal sample from site To. 2, Nukuleka. (New Zealand).
4. $350 \pm$ A.D. 87 Charcoal sample from site To. 5, north of Atele College. (New Zealand).
5. $1,486 \pm$ A.D. 82 Charcoal sample from site To. 1, Pea. (New Zealand).
6. $1,530 \pm$ A.D. 100 Charcoal sample from site To. 1, Pea. (New Zealand).

REFERENCES

- DUFF, R.
1956 *The Moa-hunter period of Maori culture*. Wellington, Department of Internal Affairs, 2nd ed.
- EMORY, K. P. and SINOTO, Y.
1961 Oahu excavations, *Bernice P. Bishop Museum Special Publication*, 49.
- GIFFORD, E. W.
1951 Archaeological excavations in Fiji, *AR*, 13(3): 189-288.
- GIFFORD, E. W. and SHUTLER, D. JR.
1956 Archaeological excavations in New Caledonia, *AR*, 18(1): 1-148.
- GOLSON, J.
1959 L'archéologie du Pacifique Sud. Resultats et perspectives, *JSO*, 15(15): 1-54.
1961 Report on New Zealand, Western Polynesia, New Caledonia, and Fiji, *AP*, 5(2): 166-180.
- MCKERN, W. C.
1929 Archaeology of Tonga, *Bernice P. Bishop Museum Bulletin*, 60.
- MARTIN, JOHN
1817 *An account of the natives of the Tonga Islands, compiled and arranged from the extensive communications of Mr. William Mariner, several years resident in those islands*, Vols. I and II, London, Constable.
- SOLHEIM II, WILHELM G.
1964 *The Archæology of Central Philippines*. Manila, Monographs of the National Institute of Science and Technology, 10.