



NEW ZEALAND  
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**NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION NEWSLETTER**



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## EXCAVATIONS AT KAROBO, VITI LEVU

J. B. Palmer

### Introduction:

The south coast of Viti Levu contains some interesting archaeological sites which are regarded as some of the key ones for the reconstruction of Fijian prehistory, indeed for much of the South Pacific itself. The best known of these is the extensive sand dune site (VL 16/1) at the western side of the mouth of the Sigatoka River. Surface evidence there is exposed by deflation for a quarter of a mile or more along the seaward face of high dunes.

Gifford was the first to draw attention to the site and some of his sherd illustrations (Gifford 1951: pl. 19c, d.) relating to VL 16/1 include the distinctive pointillè decoration which he and Shutler have shown to be typical of Site 13, Lapita, New Caledonia (Gifford and Shutler 1956). Golson has compared the Sigatoka pointillè sherds with some similar ones from Lapita, from his own excavations on the Isle of Pines, New Caledonia, and from Tongan sites (Golson 1959: 28). There are strong affinities in this type of decorated pottery in all four areas. Despite these comparisons, it is clear that pointillè pottery is not representative of Site VL 16/1. In fact, the two figured sherds are the only examples amongst the tens of thousands examined at Sigatoka. Gifford has described them as being from flat-bottomed dishes but this must now be amended as, at my request, Dr Shutler has examined these sherds recently. He states that they are from bowls and not from flat-bottomed dishes (Shutler: pers. comm. 1965). The significance of the Lapita type pottery in the Sigatoka assemblage has yet to be defined.

One could say that most of the VL 16/1 pottery consists of flat-bottomed trays or dishes, which helped to give the site its initial unique character. The bases of these dishes show leaf impressions, some being davo, a fairly common coastal tree, and one restored dish has what is thought to be banana leaf impressions. Other base sherds show matting imprints, one of these having a double twill in parts with a design suggestive of coloured strands. This mat was made from a flattened reed identified as kuta, one of the sedge family found in Sigatoka swamps. The rim walls of these dishes show a wide variety of profiles but all have been mainly hand-moulded, although a paddle was probably used for making the initial clay slab. Finishing techniques were finger smoothing, sometimes scraping with an implement but with little or no attempt at decoration. The use to which these dishes were put has previously been a matter of speculation.

Paddle impressed pottery of the cross-relief was also present in small quantities, together with a little extremely thin-walled incised pottery and plain jugs decorated at the shoulders with pinched nubbins. Other artefacts among the oven debris were rare: a sub-rectangular adze identical with an

example figured from the Maupiti Island burials in the Society Group (Emory & Sinoto 1964: pl. 3); a fragment of a straight sided lenticular adze and a serrated coral coconut grater (laterally reduced for hafting to a wooden base) which is similar to some eastern Polynesian examples. This completes the Sigatoka inventory as far as is known at present.

Excavations at Karobo (VL 18/1):

Attention has been directed during the last few months to a deeply stratified site at Karobo, half-way between Suva and Sigatoka. Situated on what is now a narrow, sandy, bush shaded spit at the mouth of a small stream and backed by mangrove swamp this new site promises to help clarify the Sigatoka pottery sequence particularly as a considerable quantity of similar pottery is being obtained. To date five squares and two quadrants of another square have been investigated by the Fiji Museum and another quadrant has been partially excavated by Jack Golson, to whom we owe much for his detailed report (Golson 1964) and valuable advice on interpretation. The stratigraphic sequence is long and not as yet completely understood.

The present surface is a thin humus layer of recent vegetation litter covering a thin, white sandy layer similar to the present beach sand. This gives way sharply to a compacted brown sand, rich in humus and containing a little pumice and stones. This is taken to be an old dune horizon. Beneath this there is towards the bank, a dense black firing layer with charcoal well spread through it. It is not continuous over the site and beyond its inland margin is replaced by a slightly lighter and greyer sand which is the bottom of layer 3. Beneath the black layer there is an area of grey staining, again found only within the spatial limits of the black layer above it. Across the whole site there is below this a yellow sand, quite deep at the bank and thinning out inland, mottled on its lower margins with the sodden grey sand below it, which contains the main occupation levels. The mottling may be due to shoreline crabs active at the time the yellow sand was being laid down. Such mottling activities have been observed at Matavatuou Beach where piles of grey sand have been brought up and left on the black sand.

Excavation was difficult because of the high water table and with no pump available, sumps and other devices were used to keep the squares dry. It soon became clear that the cultural levels in situ in the grey sand of the lowest layer would need to be related to present mean sea level and spring tide level. Mr L. Thompson, a surveyor of the Lands Department in Suva who has surveyed sites in Tonga (Thompson 1965:6), took the necessary levels. It can be stated that the pottery horizon in the lowest layer of Sq. A2 is well below mean Spring Tide level, while pottery was obtained in three squares a little below mean sea level. In the absence of control through pumps the latter finding will need to be looked at critically in the future. Although all possible care was taken in excavating, the implications of this finding are too profound to be accepted without further examination under the strictest conditions of control. The possibility of displacement must be faced. One merely records at this stage that pottery and a leaf occur at below sea level, whatever the final explanation may be. Of more

significance is the fact that a true pottery horizon occurs in this layer, a finding which Jack Golson and myself have arrived at independently. That this pottery horizon occurs below MHW Spring tide level and just above MSL is of considerable importance and it is of interest to note that recent work in New Caledonia has shown archaeological material can be expected below present sea level (Shutler: pers. comm. 1965).

### Pottery at Karobo:

Although pottery is still being studied, the lowest level pottery has the following proportions by weight: - 16 flat bottomed dish sherds: 2 cross-relief: 1 wicker relief, with minor frequencies of plain and nubbin relief pottery. Preliminary study shows that flat bottomed dishes range from those with high curved walls, to very low roughly scraped and smoothed ones generally of finer temper than the Sigatoka specimens. Matting imprints of extremely fine texture (strand 2mm wide) show on some bases while two kinds of leaf impression have been noted, one possibly being banana leaf. Cross-relief sherds are of three types: - square, diamond and rectangular checks, in the proportion by number of 4:2:1 in square A2 but in the other squares the diamond check seems to be more significant. These sherds come from shallow pottery vessels with flaring plain rims and flat lips. One sherd shows both cross-relief and wicker relief on it. The latter is a term used by Gifford for those sherds in his early period which appear to be basket impressed, i. e. wicker-work impressed (Gifford 1951:228). On one Karobo sherd the wicker relief is plainly vertically oriented. Detailed pottery analysis must await the final excavation report, but the latest period of excavation showed that in one part of the site, wavy relief pottery occurs in shallow circular fire-pits dug into the yellow sand. Above these firepits are small, stonepiled fireplaces with cross-relief pottery scattered around them at the base. The latest of this series consists of large, oval, stone-packed firepits above the fireplaces, also with cross-relief pottery. With this complex of relief-ware there is at least one vessel with flaring rim and incised body, consisting of diagonally set parallel incised lines. This is as yet only the second example of incised ware from Karobo.

### Evidence of Fishing Gear

A surprising find in the lowest layer of Square A2, at the level of the pottery horizon, was an artefact which appears to be a fish hook. It was obtained at a depth of 4 ft (i. e. at the level of the pottery horizon), and made of wood. It seems to be a one-piece, U-shaped hook. Although rather crude looking it has all the elements of a hook: a marked even bend and smooth taper towards the point tip; the plane of the point limb is offset to the vertical plain of the shank limb and there is a definite shank head. Overall measurements are: length, 3 15/16 in; greatest width, 2 1/8 in; from the straight outer surface of the bend to the broken point tip, 2 in. From the same sector of the quadrant but slightly nearer the north wall and 2 in. deeper we excavated a flat, rough disc of stone with what seems to be a broken perforation at one end. The association of possible hook and sinker, (although both are crude specimens and probably affected by the waterlogged conditions), shows that the people of this pottery horizon knew line-fishing techniques.

Botanical Evidence:

The presence of so much lower level botanical material raises the question as to whether it is related to cultural usage, a natural deposition at time of occupation, or even secondary deposition through roots or crab-burrowed agency. This is the crux of the interpretation of the site, as an attempted reconstruction of cultural activities must account for the presence and significance of such a variety of nuts and leaves. Samples were submitted to Dr A. C. Smith of University of Hawaii who has kindly identified them provisionally.

The present strand line shows occasional makita, Barringtonia and candlenuts which have, no doubt, been brought down by the streams, rewashed and finally deposited by the tide. Inspection shows however, no marked concentration under normal conditions such as exists in the lowest layer. A possibility could be increased quantities after heavy flooding and hurricanes. Three recent hurricanes have, in effect, created a thick deposit of nuts against the site, and also left a six inches thick layer of pumice which has not been met with in digging.

Roots and crab burrows may be the agency of some deposition and here a distinction must be made between small shoreline crabs and larger land crabs which also inhabit mangrove swamps. I am happy to concede that roots and shoreline crabs caused deposition of smaller botanical specimens, however it is necessary to consider some factors concerning deposition by crabs. Crab holes spiral, and in pure sand they dry out quickly and sand-drift impedes movement downwards of intrusive material. At Matavatuou, on a leaf-littered beach with a strong wind blowing leaves along, only 3% of crab holes had leaves in them, and most of these were blocked from further downward movement by sand collapse, although conditions would be better in any stabilized dune where humus binds the sand. Makita and Tahitian Chestnut (ivi) are such massive nuts that it would be impossible for them to move down holes such as shoreline crabs make in pure sand. On January 22nd, 1965, over 100 land crab holes were measured on an old archaeological site in the Botanical Gardens, Suva. The average minimum measurement was 1.54, while the largest recorded was 3.5 in. Eleven per cent of the random sample had a minimum width of 2.5 in. or more. For comparison one should note that the large archaeological fruit measured (a) Ivi 3 in. by 2  $\frac{3}{4}$  in, (b) makita (specimen 1) 3 in. by 2  $\frac{1}{2}$  in., (c) makita (specimen 2) 2  $\frac{3}{4}$  in. by 2 in. From these figures it is unlikely that they would roll down any but the largest crab hole, and even then with difficulty; certainly not in shoreline crabholes at or near time of occupation (shoreline holes average  $\frac{3}{4}$  in.). That these fruits do not occur generally in the humus litter on top of the site, or in any of the upper layers where they would be more likely to be impeded, is strong evidence that the larger low-level nuts are cultural in origin.

The most important factor is that in square A7 near the western end of the site, Layer 3 showed no sherds at all, although they occurred in layers 4 and 5 with only an occasional broken candlenut. If sherd and nuts moved up or down through crab agency one would expect to find (a) both nuts and sherds in upper layers, with (b) concentrations similar to the main excavation squares in the lowest layer. Therefore, natural deposition does not seem to be the full explanation although some of

it can be explained as stated earlier, by shoreline crab activity when the earlier sea level was more favourable for such activity and deposition, particularly nearer the mouth of the stream where more botanical material might be expected. But after the rapid build-up of the yellow sand, conditions were more favourable for land crabs and penetration of lower levels was not so intense although it would still be considerable after a prolonged period.

In his report Mr Golson states that the strongest evidence for cultural association lies in the fact that the nearest present-day candlenut source is over  $\frac{1}{4}$  mile from the site, hence must have been brought to the site by man (Golson 1964:6). If distance from site to source is accepted as a criterion of cultural usage, then an equally strong case can be made for the kabi or sivia nut (*Elaeocarpus Chelonimorphus* Gillespie) which is reported by Parham to be moderately common above 300 ft (Parham 1964:6), but it may occur at just over 100 ft. Dr Smith suspects this nut might possibly reach lower levels on South Viti Levu (Smith 1953: 543 & pers. comm. 1964). The nearest point anywhere near 300 ft is over a mile away from the site. Perhaps the most significant circumstantial evidence at present lies in the provisional identifications by Dr Smith. Of 8 identified fruits from the lowest layers, 5 are edible while of the 3 previously identified fruits not submitted to Hawaii, one is edible (ivi) and two (candlenut and makita) are essential ingredients in coconut oil processing. This seems hardly fortuitous and must be considered significant.

A further point of interest is that apart from the humus litter on the top of the site, no fruit of the mangrove (also edible) was found despite one part of the site being overhung by them. If crab activity was significant, one would expect to find mangrove pods all through the deposits. While it does not affect the interpretation of the archaeological deposits, it seems that the latter is earlier than the mangroves and cultural material might well extend under the present swamp.

Undeniable evidence supporting the presence of pandanus at the time of occupation was shown by the most recent period of digging. In the lowest layer at least two pandanus nuts were underneath large almost horizontally-bedded sherds, thus disposing of any likelihood of crab deposition.

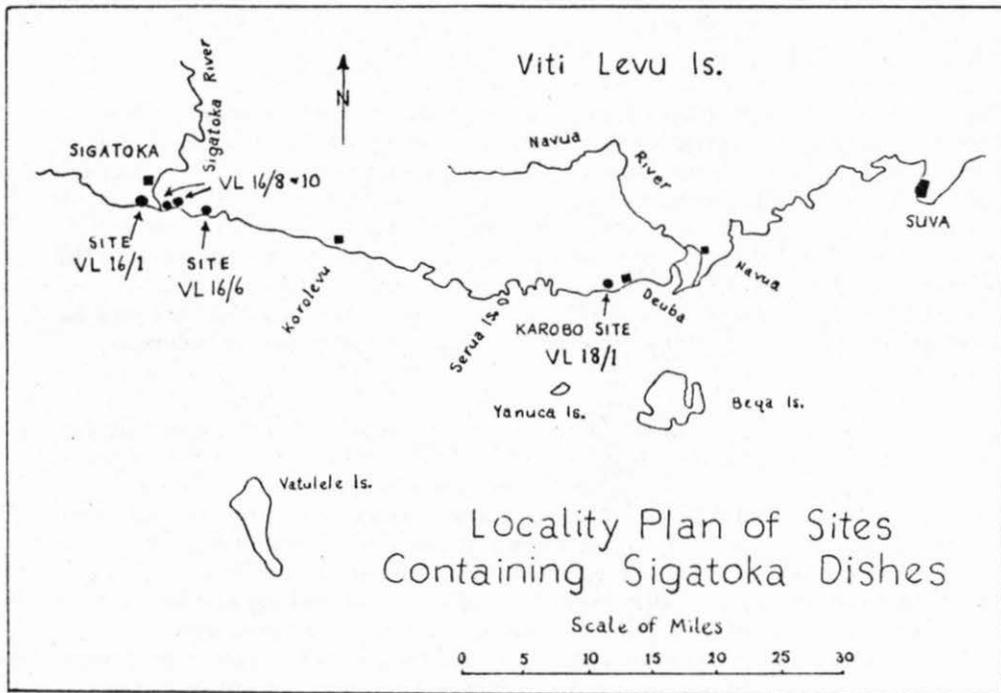
Perhaps most important is the presumptive evidence from the N.W. quadrant of square A2. In layer 5 there was a hearth of stones surrounded and covered by an uneven packing of ash and charcoal. Sitting on this was a quite massive piece of flat-bottomed dish, surrounded by other sherds, with a makita nut next to it. This level coincided with the projection of Golson's pottery horizon in the next quadrant. Other points must be considered concerning these dishes: They are crude hand-moulded dishes with remarkably uneven bases; they are difficult to handle with

any heavy load; they have been found only on coastal dune sites; similar dishes (enamel or pottery basins) are used today for making coconut oil. I propose that the Sigatoka and Karobo dishes were used in the making of coconut oil. The presence of makita and candlenut, two ingredients of coconut oil, suggests that a crude receptacle was made on the spot, placed in position over the fire, and the nuts heated to break the shell and free the kernel for later grating into the mixture. The fire is used today to aid separation of the oil which is skimmed off the surface. In association with the hearth was a large flat stone suitable for beating nuts, as has been described by the botanist Seemann in 1862 for dilo nut processing (Seeman 1862:283).

Support for this hypothesis is found in the presence at the eastern end of the Sigatoka site of large mounds of oven stones, pottery and candlenut. Some of the pottery appeared to be the basin or dari type and might well represent a later refinement of the flat-bottomed dish, which could have been used in the sun as well as in fires. The large surface area of the dishes is consistent with solar separation of the oil, but they were used on fires when weather conditions warranted. The advantage of the basin over the flat-bottomed dish needs no stressing and the latter could well be an early vessel for coconut oil making. In fact, upward extension of the high rim walls on some dishes and reduced diameter could create a prototype of the dari or basin bowl. Present-day pottery bowls are made by the flat slab technique in Sigatoka, the method used for making the flat-bottomed dishes found in the archaeological deposits.

This presupposes that the Sigatoka and Karobo coast dwellers knew of the coconut; support comes from a piece of cut palm wood, thought to be coconut, which was found in the lowest layer at Karobo. Other evidence has been cited, e.g. the coral coconut grater from Sigatoka already illustrated and described (Green & Palmer 1964: Fig 5). The mounting evidence suggests that either the Viti Levu south coast people of the Sigatoka phase might have introduced the coconut to that part of Fiji or the coconut was already maturing there when they were first in occupation, assuming that flat-bottomed dishes are typical of the first settlement of the sites, as they appear to be at Karobo.

The Karobo pottery horizon peoples are identified as those of Green's proto-Polynesian culture of the Sigatoka phase, and the south coast of Viti Levu can be regarded as an ancestral proto-Polynesian homeland, a term revived by Green (Green 1963:247). The relationship of these sites to that of Gifford's Early Period (or Navatu Phase of Green) which dates back to 46 B.C. is not clear. Wavy relief pottery is dominant in Gifford's earliest layers and flat-bottomed dishes are absent, unless they are as yet unidentified in the plain pottery category. This becomes important when one considers that wavy relief pottery is not common on the south coast. Recently, matting-imprinted sherds from flat-bottomed dishes have been found on a coastal site near a river mouth, not too far away from Gifford's Navatu site, so that future work might clarify the relationships in that area.

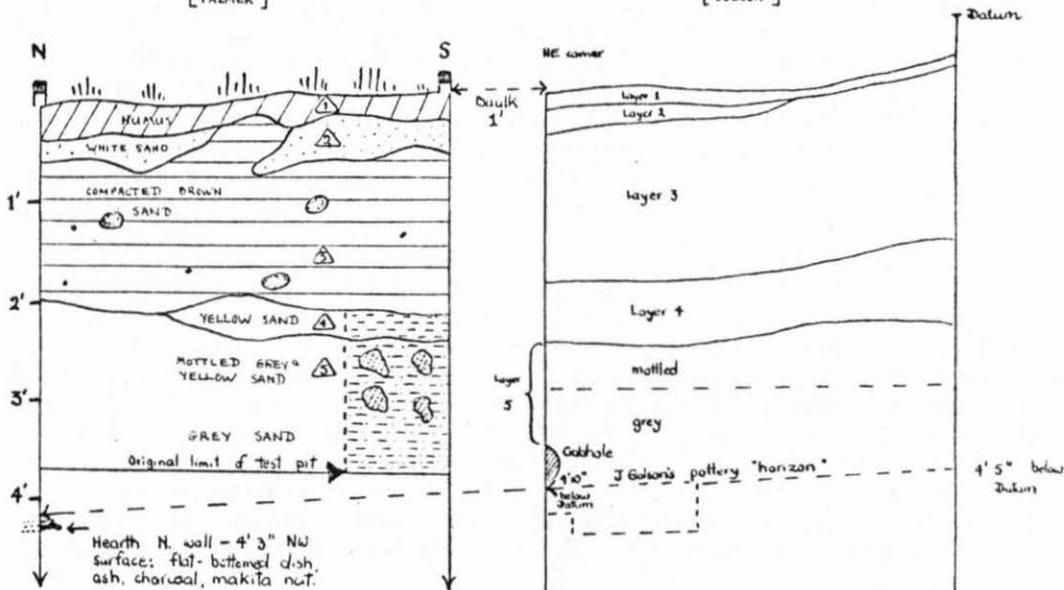


East Face - SECTIONS IN QUADRANTS

SQUARE A2 (Q3) NW      KAROBO      - East Face

20. 6. 64      VITI LEVU      SQUARE A2 (Q2) SW

[PALMER]      F.I.J.I.      [GOLSON]



No dates for recently excavated sites have been obtained, but Solheim (Solheim 1964:383) believes that the earliest pottery-making peoples in Fiji belong to the Sa-huynh-Kalanay tradition and that they were ancestral to the early potters of Samoa and the Marquesas. He gives 500 B.C. as a probable date for Fiji, but recent evidence in excavations outside Fiji suggests that the figure may be older, perhaps over 800 B.C. for the Lapita-style pottery. It is now a priority to define the relationship of the Karobo pottery to the Lapita style and define the Sa-huynh-Kalanay tradition a little more precisely in this part of the south west Pacific.

In conclusion, one would say that the Sigatoka peoples were proto-Polynesian in origin and possessed certain adze forms similar to some found in parts of Polynesia. They also knew the techniques of line fishing and camped at the mouths of streams and rivers near gaps in the reef. From the forest they gathered kabi, ivi, and makita, and candlenuts. They also made crude dishes for coconut oil. In addition, they possessed plain basins and plain cooking pots with flaring rims and notch-impressed lips, as well as relief and incised decorated pots which also have flaring rims and plain flat lips. These are quite distinct from the incised pottery vessels of the Ra Phase. Mats of coarser strands were made from kuta while finer mats were probably made from pandanus. These proto-Polynesians could have introduced both the coconut and banana into the south coast region. The major task ahead is to extend our knowledge of their artefact assemblage and define their relationship with the early peoples of the north-east coast of Viti Levu.

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SEE PLATE I

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PETROGLYPHS IN TONGA

J. B. Palmer

There is a very little information recorded about Tongan petroglyphs which occupy two pages only in McKern's general archaeological work (McKern: 1929). He stated that apart from some on Tonumea and on langi walls in Tongatabu, the only other island with petroglyphs showing was Telekivavau. McKern does not figure the latter but describes them as follows:

"seven ellipses, more or less circular, three of them with from one or two outer appendages and one of them with a series of more or less equidistant lines radiating outward from the rim. The remaining figures consist of an anthropomorphic representation with triangular body, closely associated with a small cross, and a line complex including as an important element a cross with arms terminating in three prongs...."  
(McKern 1929:78)

In view of the lack of illustrations of petroglyph material from this region, the accompanying figure in this note (Fig. 1) is included to fill out McKern's description. It is copied from a sketch in a Fiji Museum file, entered in 1958 by a former Curator, the late R. A. Derrick, M. B. E., who recorded the information from a Mr Wordsworth who was at that time a New Zealand surveyor in Tonga. Undoubtedly the figure refers to the site mentioned by McKern and a comparison of text and figure will enable the identification to be sustained. Wordsworth's notes are meagre and record little else except that the site was on a flat-topped, upraised



**View from Karobo around the Bay.**



**Excavation Site.**

**J. B. PALMER.**