PACIFIC STUDIES

Vol. III, No. 1 Fall 1979

EXCAVATIONS ON HUAHINE, FRENCH POLYNESIA

by Yosihiko H. Sinoto

Since 1973, the author has been excavating a large habitation site with cultural deposits submerged in the groundwater on Huahine, Society Islands, French Polynesia. The site is located on the grounds of the Hotel Bali Hai Huahine at Vaitoʻotia and Faʻahia, near the capital of Fare on Huahine Nui. The site was accidentally found while ponds were being dredged on the hotel grounds. The initial test excavation revealed that the site is the oldest known in the Society Islands, and the significant recovery of perishable vegetal materials and numerous wooden artifacts has not been matched by any site so far excavated in central Polynesia. In March 1977, Mr. Richard Soupene, architect for the Hotel Bali Hai Huahine, notified us that wooden hand clubs and beaters had been recovered from dredging at Faʻahia on the hotel grounds. In response to our urgent request, the National Geographic Society granted funds for archaeological salvage excavations. Fieldwork was carried out between 23 July and 2 September 1977. This article is a brief report on the Faʻahia site salvage excavations, previously submitted to the National Geographic Society.

Introduction

Faʻahia is located immediately north of the Vaitoʻotia site, where three sessions of extensive excavations were carried out between 1973 and 1975 (Sinoto 1974, Ms. a, and Ms. b; Sinoto & McCoy 1975 and Ms.). In 1977, backhoe excavation began in the Faʻahia area to obtain sand for a tennis court, and wooden, stone, and whalebone artifacts were uncovered. Mr. Soupene halted the dredging and moved it to another area; almost everywhere the backhoe excavated, however, artifacts were encountered. He kept all the artifacts and avoided further digging until our arrival.

After examining the bank of the dredged pond, it was evident to the author that the cultural deposits were spread out over almost the entire area of backhoe excavations. We salvaged a small remnant portion of a stone workshop area and partially uncovered a habitation area, the rest of which may still be intact under the undisturbed area.

The recovered artifacts obviously belong to the same cultural context as those from the Vaito'otia site. The Fa'ahia site is also waterlogged, and contains much vegetal material and many wooden objects. The material culture assemblage and site features of Fa'ahia and those of Vaito'otia may represent different segments of one large settlement complex.

Some of the significant discoveries were: (1) parts of a canoe and its accessories--a boom for an outrigger, planks from the platform of a large double canoe, a large steering paddle, a spreader, paddles, and a bailer; (2) two types of wooden handles for adzes; (3) a grooved, wooden tapa beater that was associated with a possible stone anvil; (4) whalebone and wooden hand clubs *(patu);* and (5) long wooden clubs. These large wooden artifacts were found below surface in an area that is lower than the surrounding ground; our test pits were placed in this depression between the hotel bungalows and the dredged area, extending to the beach. All the pits in this low area yielded wooden objects, such as posts and worked logs, and midden materials. After careful examination of the present beach next to one test pit (Square HH97, Section 5; Fig. l), we found a layer containing humus, charcoal, and midden that had been exposed by wave action. Near this pit, a complete basalt reversed-triangular adz (a so-called Tahitian triangular adz) was found. This is a very encouraging discovery because it indicates that further excavation of this area may yield cultural materials and features from the late-Tahitian prehistoric culture. Somewhere inland the settlement period and the late-period cultural deposits may overlap. If so, this discovery would fill the present gap in the prehistoric Tahitian cultural chronology. We did not have time, however, to excavate this area in the 1977 field session. An additional drawback was the seepage of groundwater into the pits, and it was difficult to pump it out with the available equipment. Since our limited time and funds did not allow for transporting the large, waterlogged, wooden objects, they were reburied and left intact at the site.

Realizing the extreme importance of the site for Tahitian prehistory, as well as for the rest of Polynesia, and because destruction of the site is imminent with expansion of the hotel complex, the author appealed to the Territorial Government of French Polynesia to protect the site and to provide financial assistance for further research. Government officials responded immediately and with great concern. The site was visited on 28 August 1977 by the then High Commissioner, the Honorable Charles

Schmitt; the Vice-President of the government council, Mr. Francis Sanford; the Director of the Territorial Assembly; the President of the Tahiti Tourism Board; and Mr. Jacques Drollet, Service de l'Enseignement, who has given his support and assistance to our work in the past. We were assured that the site would be protected and that they would work to secure funds for continuation of the research. Furthermore, they will try to provide laboratory facilities in the Territory for analysis of the recovered materials and for preservation of the wooden artifacts. The author submitted a proposal and budget to the High Commissioner in October 1977, and anticipates a reply in the near future.

Site Location

Fa'ahia is the traditional place name of a land section on the island of Huahine Nui, 600 meters northwest of Fare, capital of Huahine (Fig. 1). The site, formally designated ScH-1-2,* is situated on a flat coastal plain on the property of the Hotel Bali Hai Huahine. Fa'ahia borders Vaito'otia on the north. The precise boundary line between Vaito'otia and Fa'ahia is not known, but according to local information it runs in an east-west direction from the beach, along the bungalows on the northern side of the present hotel complex, to the road that leads toward Maeva village (Fig. 1). Test pits 12 through 14 in Area B of the Vaito'otia site, excavated in 1975 (Sinoto Ms. a), actually belong to Fa'ahia.

The Fa'ahia area is geomorphologically the same as Vaito'otia. This part of the island, built up by natural deposition of coral and other debris, completely blocked the lagoon that forms Fauna Nui lake toward the northeast. The area between the site and the lake is low and swampy, and there are numerous brackish-water pools.

The environmental setting of the site can be reconstructed from present conditions and from the results of the excavation. At the time of initial occupation of the site area, the ground level was lower than today, and it is possible that the action of tidal waves in the subsequent period covered the now waterlogged cultural deposits. The deposition patterns of debris such as wooden materials, coconut husks, and pandanus keys indicate that even in the occupational period the ground was damp, and perhaps was flooded after heavy rains.

The locality is well situated for marine exploitation in the lagoon or the deep sea, accessible through nearby Avamoa Pass. Taro could have been cultivated easily in the adjacent swampland without terracing. In recent years, in fact, returning islanders began taro farming in the swamp-

*S = Society Islands, H = Huahine Island, 1 = Quad, 2 = individual site number.

land. The thick soil deposit visible near the foot of the hill, about 500 meters inland, could have been utilized at one time to cultivate crops such as yams. There are two wells with stone alignments in this area. One of the wells was deepened recently, and the water it supplies is more than enough to accommodate the hotel's needs.

The Fa'ahia cultural deposits extend inland from the beach for about 300 meters, over a width of 200 meters. No physical features are visible on the surface of the site area.

Summary of Fieldwork

The main objective of the 1977 fieldwork was salvage of cultural resources before destruction. The dredging operation was postponed for about three months until our arrival. The operation resumed with our monitoring, and whenever cultural materials were brought up, the backhoe moved to other areas. As was noted earlier, the backhoe hit cultural deposits almost everywhere. It was fortunate that by that time most of the needed sand had been obtained, and dredging went as deep as possible to avoid horizontal expansion.

Test pits and grid systems (2-by-2-meter squares) were laid out next to the areas where cultural materials had been recovered. The site area was divided into five sections for facility of recording and description; Sections 1, 2, 3, and 4 designate individual grid systems and Section 5 designates the rest of the tested areas (Fig. 1).

Section 1: The first test pit (TP1) was put down in this area because four wooden clubs and beaters were uncovered by backhoe in the immediate vicinity, now in the dredged pond. Later, TP3 was placed next to TP1 and eventually both pits were incorporated into the grid system as Squares K11 and J11. We excavated a total of 30 square meters in Section 1, but these excavations revealed that the area was at the border of the main activity area of the Fa'ahia complex.

Section 2: Approximately 18 meters northwest of Section 1, a small peninsula-like area of undisturbed ground projects into the pond, with a coconut tree standing on the point. Based on the Section 1 excavation, we assumed that the center of occupation had been farther toward the middle of the pond, and decided to excavate this narrow peninsula. We found a large, flat, basalt grinding stone with two piles of *Turbo* shells *(Turbo argyrostoma)* next to it (Fig. 2a). On the same level were several unfinished adzes and completed and half-finished pearl-shell scrapers and graters. Raw materials for manufacturing these items--basalt fragments and pearl shells--were also scattered in the squares. Total excavated area was 32 square meters.

Section 3: While we were working in Section 2, the backhoe started digging in the area now designated Section 3, and immediately brought up worked logs, fragments of thick, wide planks, a piece of wood shaped like a surfboard, and numerous other wooden pieces. The surfboard-shaped board sank in the pond, but we retrieved it and determined that it was the blade portion of a paddle. The handle, which had been broken off at the blade by the backhoe, is over 1.85 meters long. This length and the size of the blade (1.97 meters long, 33 cm wide, and 4 cm thick) indicate that it must be the steering paddle for a large canoe (see Fig. 16c). We brought a small canoe to this part of the pond and searched with our hands along the bank, where the backhoe had scraped. Within a 6-meter area along the bank, we found five logs protruding as much as 50 cm into the pond, about 20 to 30 cm below the surface of the water.

We placed the grid system and excavated about 16 square meters, leaving a baulk by the pond. This section turned out to be the richest area for wooden artifacts, yielding specimens in enormous sizes and quantities.

Using a large water pump borrowed from the hotel, and our own 3-hp pump, we managed to lower the water by about 50 cm and were then able to lift and record the logs and other objects. We hit a plank over 7 meters long and 50 cm wide, and found another, similar plank about 30 cm below it. About 50 cm below the lower plank was a deposit of a pile of wooden pieces, and we decided not to dig down any farther. In searching for the end of the upper plank we had to relocate the road (to the hotel manager's house) two times before we finally exposed the complete length. The lower plank, however, extends still farther under the road and we did not reach its end.

The reason for such a volume of wooden materials in this area was evident after examining a profile of the pits. The original ground level in Section 3 was depressed and much lower than the surrounding area. It is possible that a swamp or small pond existed at the time of occupation. Our hypothesis (Sinoto & McCoy Ms.; Kitagawa Ms.) that tidal waves washed clean beach sand over the Vaitoʻotia site applies to the Faʻahia site also. After the flooding by tidal waves or heavy rains, wooden objects drifted with the receding water, accumulated where the water remained last, and finally were deposited in the depressed area of Section 3.

Based on the east to west profiles of the pits, we learned the limit of the depression in that orientation. In order to determine the limit in other directions, we placed a 2-by-2-meter square (U43) on the other side of the road, 15 meters from the pond. The depression continues toward this area, although it becomes shallow. Here we uncovered two heavy, flat logs, one with a pointed, perforated end. We expanded two more squares and found the end of one log, but the other continues even farther.

We reburied the logs and planks in situ. All other large wooden artifacts from the entire excavation were stored in the Section 3 pits and covered with beach sand, and a barbed-wire fence was built to protect the area.

Section 4: At the northwest bank of the pond, opposite Section 2, we found a thicker cultural deposit, mixed with small charcoal pieces and with a log protruding from it. Since we had not found any signs of fireplaces in the Vaito'otia excavations, and charcoal pieces may indicate a fireplace in the vicinity, we placed a grid system and excavated 60 square meters (Fig. 2b). We found standing post-bases, fallen posts, and a wooden piece, about 5 meters long, that looks like a ridgepole. However, we did not expand excavations enough to determine a reconstruction. Since some of the logs extend into the unexcavated area, further excavation will reveal more data.

Here, again, we were not successful in finding any evidence of a fireplace. However, important findings include a grooved, wooden tapa beater that was associated with a possible stone anvil, a whalebone hand club, similar to Maori *patu*, and oblong, flat, wooden beaters or clubs. Many basalt adzes and pearl-shell scrapers and graters were found from this section. Unfortunately, a good part of the site area may have been lost as a result of the dredging.

To search for the extent of the deposit in Section 4, we put four test pits (K21, L30, V20, and D35) northwest and west of the excavated area. The limit of the cultural deposit was found approximately 50 meters from the pond toward the northwest, but it continues outside of the excavated area to the west and northeast.

Section 5: Test pits were placed between the beach and the south portion of Section 1, in a narrow strip of low ground between the bungalows and the pond. From our experience with the Section 3 excavation we thought that this low area might be another depression containing wooden debris. We laid five test pits in the area between Section 3 and the beach, and one test pit between Sections 1 and 2. We found cultural materials and wooden objects from all pits except one, although the cultural layer is not deep. Square W72, which yielded no cultural evidence, is actually on higher ground than the other pits. In W53 a postbase standing in the hard-packed coral gravel and pebbles suggested a habitation floor. In pit HH97, at the beach bank, a row of fourteen wooden stick bases was uncovered, standing across the pit like a fence. These may be a fish-holding pen, or part of the side wall of a house. No portable artifacts were found from this pit, but a reversed-triangular adz found from the beach in the immediate vicinity indicates that the feature may belong to a much later cultural period than the rest of the Fa'ahia site.

Test pits 2, 4, and 5 were excavated on the west side of the pond, where a complete whalebone hand club (see Fig. 14a, left) had been found during dredging. However, the excavations revealed little cultural material, indicating that the area is marginal.

Stratigraphy of the Site

The sediment in the site, under the humus-mixed overburden, is beach sand, composed mainly of coral and particles of other lime-secreting organisms and silt. Colors are dominantly yellowish-gray to brownish-gray. Sections 1 and 2 are similar in stratigraphic formation and materials, although the backhoe moving through the area disturbed the ground extensively and probably compacted the deposits. Three layers are recognized in these sections, with an average total depth of about 40 cm. The top layer (I) is 10 to 20 cm thick and consists of humus, grass roots, and sand. The middle layer (II) is a yellowish-gray sand deposit, 6 to 17 cm thick. The cultural layer (III) is 10 to 15 cm thick and the deposit is brownish-gray with a higher silt content than the layers above. The groundwater level is affected by tides and by rainfall, so Layer III is submerged from time to time and is always wet (Fig. 3a). In Section 4 the stratigraphy and the depth are similar to that of Sections 1 and 2, but Layer II is whitish-gray with charcoal particles. Under Layer III in Sections 1, 2, and 4 lies white, clean beach sand--the materials that was sought by the dredging (Fig. 3b).

The stratigraphy of Section 3 is different from that of the above sections. The profile on the O-line, between grids 43 and 45, indicates that the road fill is about 50 cm deep. Under the fill, the dark, humus-mixed overburden (Layer I) is thicker than in other sections, but there is no equivalent of the Layer II recognized in other sections. However, there is a very dark humus lens (IIIa) with sporadic thick deposits of grass (*Costus* sp., Zingiberaceae family; identified by Dr. Pieter van Royen, Department of Botany, Bishop Museum) on top. This plant still grows on the present ground surface. The surface level of IIIa is submerged, and is approximately 25 cm lower than the top of Layer II in Section 2. Under IIIa is the deep, convexed Layer III; we did not reach the bottom of this layer because of water seepage, but it extends at least 1.10 meters from the lowest point of the lens (Fig. 4). In this thick Layer III deposit, major wooden objects were found, and many of them were still intact (Fig. 5).

In Section 5 the stratigraphy, especially the depth, varies from pit to pit. Basically it is the same as Sections 1 and 2, although it is shallower, with coral-pebble content increasing toward the beach.

Features

Only sporadic features were found. A grinding stone in Section 2 (Fig. 2a) shows that adz-finishing activity took place here. Next to it are two piles of *Turbo* shells (29 and 84 shells). Three shells in each pile contained articulated exoskeletons of hermit crabs. It is possible that they were used for food, or were living in the refuse piles, or were collected accidentally with live *Turbo* shells and were discarded after cooking.

In Section 4, standing post bases (Fig. 6a), and numerous fallen posts indicate that some structures were there (Fig. 6b), but our excavated area was too small to yield enough evidence for reconstructions. The scattered wooden beaters, whalebone hand club, and pearl-shell scrapers and graters give the impression that the area was disturbed and buried, probably by tidal waves or floods (Fig. 7). However, the main force of the tidal wave went along the south portion of Sections 1, 2, and 3 and hit the Vaitoʻotia site, where the scattering of stones and the whale rib evidence the direction of the water. In Section 4, the wave impact was not great, yet it probably drove the inhabitants out of the area. The fallen posts and logs are concentrated toward the lagoon, indicating that the receding water carried them at least for a short distance. The stone anvil may have stayed in its original location, and the standing post bases near it may indicate that tapa beating was done near the structure (house?), probably in the yard.

Artifacts

Although the artifact collection from the Faʻahia excavations and dredging is not as large as that from Vaitoʻotia, the artifact types and frequencies evidence some differences. The most characteristic of the Faʻahia artifacts are the large wooden objects, most related to canoes. Some smaller wooden artifacts, such as tapa beaters, were discovered for the first time in the context of a settlement-period culture. It is an interesting pheonmenon that the entire collection from Faʻahia includes only one small one-piece fishhook blank and fragments of two trolling hook shanks, while fishhook manufacture appears to have been the major work of the people at the Vaitoʻotia site. Detailed analysis of artifact types from both Vaitoʻotia and Faʻahia will indicate the differential specialities of the inhabitants and the contemporaneity of occupation periods.

Table 1 shows types of artifacts and their distribution in the Faʻahia site. A total of 367 artifacts was recovered. Most of the large wooden objects (61 pieces) were reburied in Section 3, and 109 of the smaller artifacts were turned over to the Musée de Tahiti et des Iles. Four artifacts

are on display at the Hotel Bali Hai Huahine. The rest of the artifacts, including small wooden objects, were temporarily exported to the Bishop Museum for study and conservation.

Stone, Shell, and Bone Artifacts

Basalt Adzes: Twelve classifiable adzes, one blank, and thirteen chips were uncovered from the excavation, and thirty-eight classifiable adzes and six blanks were recovered from the dredging (Table 1). The adzes are all classifiable within the forms described from Vaitoʻotia (Sinoto & McCoy 1975:156; Figs. 8, 9, & 10). Table 2 shows classifications and frequencies. Form 3A adzes are the most frequent, followed by Form 4. Both forms are also common in Vaitoʻotia; detailed comparative analysis will be discussed in a later paper.

Since only one layer with cultural material was recognized in the Faʻahia excavations the adzes recovered from dredging must have come from this layer. If the adzes from excavations and dredging are considered as a single collection, the ratio between completed and unfinished adzes is 25 to 32, respectively. Although the collection from the dredging tends to have more complete adzes than that from the excavation, at least fifty-seven percent of all adzes are unfinished; this indicates that the blanks were made elsewhere, and the finishing was done at Faʻahia. The large grinding stone found from Section 2 may substantiate this hypothesis.

One adz, which was embedded in the exposed deposit at the beach near test pit HH97, is of considerable importance. The adz is a typical late-Tahitian reversed-triangular type, and is the only specimen of this type found from Vaitoʻotia or Faʻahia. The relationship of the adz and the cultural deposit to the fence-like feature in HH97 is unclear. However, there is a good possibility that this relationship can be determined, in addition to clarifying the place of these features in the context of the Faʻahia site.

Chisels: Eleven *Terebra*-shell chisels were found from excavations and fifteen from dredging. Except for one *Terebra (oxymeris) crenulata* from the excavation, all are *Terebra (oxymeris) maculata.* The apex of the shell is beveled and the outer lip is chipped off for ease in holding. *Terebra* chisels are one of the common artifact types from both Vaitoʻotia and Faʻahia (Fig. 11a).

Peckers: *Terebra* shells *(Terebra [oxymeris] maculata)* were also used for the three pecking tools from the excavations. The apex of the shell has a blunt end for striking.

Scrapers: Two types of scrapers were recovered. Type A is spatula-like, long, and rectangular, with a sharpened edge on one end. Pearl shell

and turtle bone were used to make this type. Five complete, twelve broken, and eight blanks made of pearl shell (Fig. 11b), and three nearly complete, four broken sections, and one blank made of turtle cortal plates were excavated (Fig. 11c).

For Type B, small, whole pearl shells were used and two-thirds of the dorsal margin was sharpened for scraping. Three complete Type B scrapers were found (Fig. 11j). These scrapers are the most common type from Vaito'otia, but Type A is more common at Fa'ahia.

Graters: Three pearl-shell graters were excavated, similar to Type A scrapers in general form, but with serrated edges (Fig. 11d).

Fishing Gear: It is surprising that only four artifacts related to fishing were found at the Fa'ahia site. A pearl-shell one-piece hook, with a missing point and a 53-mm-long shank (Fig. 11e), and the head portion of an unfinished trolling hook shank (Fig. 11f) were found fom dredging. A trolling hook shank, missing the head portion (Fig. 11g), and a blank tab for a small one-piece hook were found from the excavations. The trolling shanks are of a typical early East Polynesian massive type.

Abraders: Two basalt abraders, used either for polishing or as whetstones, were found.

Grinding Stone: A large, flat grindstone, 80 by 63 cm in triangular form, was found in Square J22, Section 2 (Fig. 12a), in the peninsula-like point in the pond. It would be interesting to know the position of the grinding stone in relation to features such as a dwelling site, but unfortunately any features were probably destroyed by dredging.

Hammerstones: Three waterworn, round, basalt stones have striking marks on their sides. They fit the hand well, and most likely were used as hammers.

Basalt Scrapers: These scrapers, twenty specimens from excavation and one from dredging, are large flakes of mugearite with sharp edges worn by cutting or scraping (Fig. 11h).

Basalt Knives: These are also large mugearite flakes, but with bifacial chipping for cutting or sawing. Two were collected from excavation (Fig. 11k).

Pendant: One porpoise tooth was found from Square L23. It has a horizontal perforation near the base for suspension (Fig. 11i).

Stone Anvil: One stone anvil, 60 cm by 40 cm in semicircular form, was found in Square E21, Section 4. The surface is slightly concaved, with splitting evidenced. A wooden tapa beater found nearby indicates that the stone could have been used as a tapa anvil (Fig. 13a).

Hand Clubs *(Patu)*: One complete whalebone *patu* was found from Square F21, Section 4, and two additional whalebone *patu*, one complete and one broken, were uncovered by the dredging. The forms of the two

complete *patu* are different; the one from excavation (Fig. 14, right) is slender and the one from dredging (Fig. 14, left) is wider. The wider specimen has worn, concaved sides, indicating that the object was used for striking, as well as for thrusting. These indentations were noticed on the first specimen found in Vaito'otia (Sinoto & McCoy 1975:162). Hand clubs from Vaito'otia and Fa'ahia now total ten specimens, including fragments. These must be reexamined to determine their function as tools. It is doubtful that the wear evidenced by the indentations could have resulted from use as weapons during the settlement period in the Society Islands.

Wooden Artifacts

Tapa Beaters: Two tapa beaters were found--one from excavation (Square D22, Section 4) and one from dredging. The excavated beater has vertical grooves and is 43 cm long and 6 cm in diameter at the beating section, with a reduced diameter in the handle (Fig. 13b). The other beater is plain and smaller, 31 cm long and 4 cm in diameter, and the handle tapers to 1.75 cm in diameter.

Beaters: Five flat beaters, rectangular in cross section and with long, thin handles, were found--one from excavation and four from dredging. The handles may have been thicker originally, judging by the extent of the deterioration. One beater from Square F21, Section 4, is 47 cm long, 8.5 cm wide, and 4 cm thick, and the handle tapers to 1.5 cm in diameter (Fig. 13c).

Adz Handles: There are four unfinished adz handles in the Vaito'otia collection, and two unfinished handles were uncovered from dredging at Fa'ahia. Unfortunately, only the head portions were found, but these give us important information about the methods and forms of blade lashing.

The smaller head, roughly cut in rectangular form, measures 10.5 by 5 cm and has a flat surface for blade lashing. It is 3.5 cm thick at the base of the handle. The size and form of the lashing surface indicate that this was a handle for small to medium-sized adzes, of Form 2a or 3a. The handle is broken off, but probably measured about 1.5 cm in diameter and 50 cm long (Fig. 14b).

The other, larger handle head has a well-polished finish and a round, concaved groove for lashing a Form 5 adz with a lenticular cross section or a convexed back. This may be the first archaeological example of a handle for early Polynesian adzes. The head is 14.5 cm long and 6.75 cm wide at the base, narrowing slightly toward the top. The inside measurements of the concaved portion are 10.5 cm long, 4.5 cm wide at the base, and 1.5 cm deep. The handle portion, which was broken off, is 4 cm in

diameter and 15 cm long; the whole handle was probably 70 to 80 cm long (Fig. 14c).

Canoe Parts and Accessories

Canoe Brace (Spreader): This object has a V-shaped form with a flat base. The object is roughly rounded, about 8 cm in diameter, thickening to 11.5 cm at the base. One arm is 46 cm long and is stepped at one end, with a vertical groove. The other arm is 43 cm long and the end is missing. The inside measurement between the arms is 72 cm, and the outside of the base measures 9 cm long (Fig. 15a). Our best guess is that this object is a canoe spreader, but it may have had another function. The historically known canoe bases are more U-shaped, and to what extent braces were used in old Tahitian canoes is not known.

Canoe Bailer: One large unfinished bailer was found in Square 044, Section 3, lying on the plank. It is 49 cm long, 18 cm wide at the handle end, and 15 cm wide at the scoop end. In plan view, the handle end is rounded and the scoop edge is squared; in profile, the base tapers up to the scoop edge. The handle and its base were carved, but the area inside the scoop has not been hollowed out (Fig. 15b). The size of the bailer indicates that it would have been used for a large canoe.

Steering Paddle: This item was dredged up in Section 3 and the handle was broken off and into two pieces by the backhoe. The paddle is not quite finished--the blade surface has adz hewing marks on one side, and the other side has abrading marks. The blade is long and rectangular in form with a pointed tip, and in cross section shows slight curvature. It is 197 cm long, 30.5 to 33.5 cm wide, and 4 cm thick. The handle is round and nearly finished. The diameter of the handle at the blade is 11 cm, and it tapers toward the broken end to 7.5 cm. The handle measures 1.85 meters long, and may have been a meter longer (Fig. 16c).

The shape of the paddle is different from those in the ethnological collections from East Polynesia. It is interesting to point out, however, that the shape is amazingly identical to the large Marshallese steering paddles in the Bishop Museum collection.

Paddles: Two paddle-shaped wooden objects were found from test pit N45, Section 3. One has a round handle, 75 cm long, and the blade is a narrow, rectangular shape, 32 cm long, 9 cm wide, and 2.25 cm thick, with a pointed end (Fig. 5). The overall length of the complete object would be a little over 1 meter. The other object is a fragment of a blade, of the same shape and size. Since these seem to be too small to be functional canoe paddles, they must be dancing paddles.

Foreboom: A part of a canoe foreboom was found from dredging near Section 3. The piece is 1.71 meters long, and the end where it would be lashed to a canoe hull is missing. The broken end is 13 cm in diameter, tapering to 11 cm. The piece bends slightly and tapers again in oval cross section (Fig. 16a). Its form is similar to that of a boom for a Tahitian sailing canoe, and its size suggests that the canoe was quite large.

Platform Planks from a Double Canoe: Two huge planks were encountered in the Section 3 excavation. Both are L-shaped in cross section and were uncovered with the shorter side down and still buried, which at first led us to believe that they were canoe hull planks (see Fig. 17). The entire upper plank was finally exposed, but the other plank, about 30 cm below, still lies in the unexcavated area.

The intact section of the upper plank is 6.66 meters long, and the fragments remaining from the broken end indicate that it was at least another 50 cm longer (Fig. 16b). The base portion of the plank is 43 to 51 cm wide, forming a right angle with the standing portion, 24 cm wide. Average thickness is 3 cm. The outer edge of the base side is rounded. The outer edge of the standing side is reduced in thickness, like a step but smoothly rounded. The intact end of the plank is square-cut, and is shaped so that there is a projection on the base portion (see Figs. 16b and 17). There are three holes along this end, and twenty-one holes along the outer edge of the base portion. Six holes are in the center of the standing portion, closer to the broken end. The holes are 2.5 to 3 cm in diameter. The lower plank is identical in measurements, except that the length is not confirmed. Both planks are well finished, with smooth, polished surfaces. We could not raise the planks because of lack of time, facilities, and funds, so we reburied them *in situ.*

Preliminary research, using canoe models and early accounts, indicates that these planks were probably used on the front and back ends of the double canoe platform. The model in the Bishop Museum collection of the double sailing canoe from Fagatau, Tuamotu, has such L-shaped planks on the platform. If the Fa‘ahia planks were used in this position, the extrapolated length of the canoe would be 24 meters (80 ft).

Miscellaneous Wooden Objects: A number of posts, some with bases still standing *in situ,* and ridgepoles were found in Section 4. The distribution pattern of these standing and fallen posts may allow us to formulate reconstructions after expansion of excavations and gathering of additional evidence.

The most numerous fragments of worked wooden pieces were uncovered in Section 3. We have not been able to determine functions for some of these wooden objects (Fig. 18). Further excavation of Section 3 may reveal a greater range of wooden artifacts, although they may not lie in

their original contexts. One of the fragile specimens from Section 3 consists of two broken wooden pieces bound together with a sennit cord.

Midden Collection

All midden materials were collected by water-screening of sand and dirt. The main components of the midden are vegetal materials--pandanus keys and coconut shells--and bones of fish, turtle, and whale. Midden material is shown by weight on Table 3.

The shell remains show the usual trends evidenced in Central Polynesian sites. Tentative analysis shows that there are a number of different species, but the quantity of each is very small and they represent only a fraction of the inhabitants' diet. Yield per square in both Sections 2 and 4 is similar and seems to indicate that both areas had similar habitation activities. Evidence of dog was found at Vaitoʻotia, but not at Faʻahia. Bird bones are remarkably scarce, compared with those of the early sites in the Marquesas and Hawaiʻi. Land snails, which were found from Vaitoʻotia, are not present in Faʻahia (Sinoto Ms. a:6-7).

Summary and Conclusions

We were very fortunate to have an opportunity to salvage and excavate the Faʻahia site on such short notice. Mr. Richard Soupene, architect for the Hotel Bali Hai Huahine, took prompt action to protect the site area and informed me of the findings during dredging, and the National Geographic Society provided immediate and generous funding.

The Faʻahia site is an extension of the Vaiotʻotia site, but the two sites could have been separate clusters. We will have to wait for radiocarbon dates, but the Faʻahia complex might have been either contemporaneous with or slightly later than the Vaito'otia occupation. The materials related to large canoes and double canoes, uncovered at Faʻahia, reveal that the people were making and utilizing such ocean-going vessels. If the steering paddle, the canoe bailer, or the spreader display any diagnostic traits that can be traced to areas outside of Tahiti, this would provide information about migration and settlement patterns in Polynesia. So far, however, no comparable materials have been found elsewhere.

There are some indications of division of labor by household clusters in Vaitoʻotia and Faʻahia, but additional excavations at Faʻahia will be necessary to formulate any hypotheses. It is now much clearer that the occupation of the Vaitoʻotia and Faʻahia areas was not a short one, but rather that it spanned at least several hundred years, as indicated by the

Vaito'otia radiocarbon dates, A.D. 850-1200 (Sinoto & McCoy 1975:183), and the evidence of later-period occupation near the present beach.

The very recent excavation of the Vaihi site on Ra'iatea, Society Islands, yielded another discovery that is significant in Tahitian prehistory (Semah, Ouwen, and Charleux 1978). The Vaihi site is located near the Ra'iatea airport where a new road is being constructed. The site is similar to the Huahine sites--it is next to a pond, and the cultural deposit is waterlogged and contains preserved wooden objects and vegetal materials. Pearl-shell fishhooks, turtle-bone scrapers, and *Terebra* shell peckers are closely related to those from Vaito'otia. However, the characteristic artifacts from Vaihi are tattooing combs made of dog mandibles; the Vaito'otia combs are similar to early Marquesan combs. The Vaihi combs might be a later type, which probably persisted until the time of contact, with slight modifications. One complete basalt adz was found from Vaihi; it is only about 7 cm long and 3.2 cm wide, and is untanged. The cross section is not illustrated, but judging from the description and the plan view (Semah et al. 1978:pl. 12-2) it seems to be a flat trapezoidal form. The entire body is ground. This type and size of adz is not represented in the Huahine sites, if my assumption about the cross section is correct. The Vaihi site is dated at A.D. 1210 ± 80 (Semah et al. 1978:7), and it seems to be contemporary with the later part of the Huahine occupation. Whether or not the differences between the tattooing combs and adz types represent differences in the material cultures of the two islands or slight differences in time periods is not yet evident, but the latter seems to be the case. We hope that further excavation of the Vaihi site can be carried out to obtain more materials and broaden the data base for comparison with the Huahine sites.

Officials of the Territorial Government have expressed great interest in protecting the Fa'ahia site, and are willing to provide funding. I have submitted a proposal for three sessions of fieldwork, over a period of three years, with a wood-conservation facility to be established in Tahiti. At the conclusion of this writing (June 1978), no reply has been received. We must salvage, at least, the wooden objects that were reburied in Section 3. These materials, or materials of equivalent cultural value and age, are not found in any of the world's museums. We hope to receive a favorable answer from the Government, since this area offers an invaluable opportunity for preserving a portion of the Territory's cultural heritage for future generations.

Acknowledgments

I am most grateful for the generous financial support from the National Geographic Society. This was the third grant provided by the Society for the Huahine projects. I would like to thank a few of the many people who assisted us in carrying out our work: Mr. Hugh Kelley, owner of Hotel Bali Hai Huahine, for permission to excavate; Mr. Tim Drost and Mr. Richard Shamel, Bali Hai managers, for arranging convenient hotel accommodations and equipment, and for guarding the storage pit until the next field season; Mr. Richard Soupene, architect, for notifying us about the site and monitoring the dredging until our arrival. Without his interest and concern, the great value of the site would not have been recognized. Mr. Jacques Drollet, Director, Service de l'Enseignement, has always been helpful during our fieldwork sessions. He arranged for the then Honorable High Commissioner, Mr. Charles Schmitt, Mr. Francis Sanford, Vice-President of the Government Council, and other Government officials to visit our site. Our gratitude goes also to Mrs. Anne Lavondès, Directress of the Musée de Tahiti et des Iles, and her staff for helping us to obtain a temporary export permit for some of the artifacts. My special thanks go to Miss Giselle Lai, daughter of my long-time friend, Mr. Ah Leon in Fare, Huahine, for volunteer work during most of the field season. Finally, but not least, I must give credit to my assistants, Ms. Elaine Rogers-Jourdane, Ms. Toni Han, and Mr. Tim Lui-Kwan for their hard work in the field.

TABLE 1
Artifact Distribution in Fa'ahia Site.

Artifact Type	Provenience: Section 1	Section 2	Section 3	Section 4	Section 5	Collection from Dredging	Totals
Basalt Adzes							
Classifiable adzes							
Complete				1	1	11	13
Fragments	1	2	1			8	12
Unfinished		1		3	2	19	25
Unclassifiable adzes							
Blanks				1		6	7
Fragments	1	7		5			13
Chips		8		5			13
Terebra chisels		2		8	1	15	26
Terebra peckers		1	1	1			3
Scrapers							
Pearl shell, Type A		6	1	9	1	11	28
Pearl shell blanks, Type A		2		6		2	10
Turtle bone, Type A		2		5		2	9
Turtle bone blank, Type A				1			1
Pearl shell, Type B		2		1			3
Graters, pearl shell		1		2		5	8
Fishing Gear							
Fishhook, pearl shell						1	1
Tab, pearl shell	1						1
Trolling hook shanks	1					1	2

TABLE 1 (Continued)
Artifact Distribution in Fa'ahia Site.

Artifact Type	Provenience: Section 1	Section 2	Section 3	Section 4	Section 5	Collection from Dredging	Totals
Abraders, basalt		1		1			2
Grinding stone		1					1
Hammerstone	1			1		1	3
Flake scrapers	1	12		7		1	21
Flake knives	1	1					2
Pendant		1					1
Stone anvil				1			1
Hand club *(patu)*, whalebone				1		2	3
Wooden artifacts							
Tapa beaters				1		1	2
Beaters				1		4	5
Adz handles			2				2
Canoe brace			1				1
Canoe bailer			1				1
Steering paddle			1				1
Dancing paddles			2				2
Foreboom			1				1
Platform planks from double canoe			2				2
Misc. wooden objects			38	8	16	27	89
Cut shell						12	12
Cut bone				1			1
Worked pearl shell	1	7	1	6		24	39
	8	57	52	76	21	153	367

TABLE 2.
Adz Classification and Frequency

Form	Number of Classifiable Adzes	Percent of Classifiable Adzes
2 A	1	2%
B	6	12
3 A	18	36
B	6	12
4	13	26
5	6	12
Total	50	100%
Unclassifiable fragments	13	
Blanks	7	
Total	70	
Adz chips	13	

TABLE 3.
Midden Collection from Sections 1, 2, and 4 of Fa'ahia Site.

Material	Total Weight (grams) Section 1	Section 2	Section 4	Average Weight per Square (2 m^2) Section 1	Section 2	Section 4
Shell						
Univalve, c. 12 species	7.2	316.4	426.2	0.96	39.55	35.51
Bivalve, c. 23 species	829.8	1876.5	1,282.1	110.64	234.56	106.83
Bone						
Fish	149.1	770.3	600.4	19.86	96.28	50.03
Turtle	133.7	2,219.2	3,074.2	17.82	277.37	256.16
Whale	52.8	14.9	377.2	6.93	1.86	31.43
Porpoise	2.4	15.6	69.7	0.32	1.95	5.80
Bird	1.0	1.9	13.7	0.13	0.23	1.14
Teeth						
Shark	11.0	3.7	2.6	1.46	0.46	0.21
Pig	1.6	--	3.3	0.26	--	0.27
Rat	1.0	--	--	0.13	--	--
Human	--	--	8.8	--	--	0.73
Vegetal						
Wooden piece	1,167.0	540.0	654.0	155.60	67.50	54.50
Pandanus key	722.0	2,309.0	2,738.0	96.20	288.60	225.80
Coconut shell	668.0	1,931.0	2,709.0	89.10	242.30	825.80
Candle nut	13.0	54.0	1.0	1.70	6.80	0.10
Tamanu nut	28.0	--	--	3.70	--	--
Stone						
Mugearite	10,055.0	14,877.0	8,550.0	1,340.00	1,859.00	712.00
Basalt stone	35.0	2,367.0	4,777.0	47.00	295.80	398.10
Vesicular basalt	4874.0	24,211.0	35,438.0	649.90	3,026.40	2,953.20

TABLE 4.
Results of Radiocarbon Tests

The results of radiocarbon dating of two charcoal samples from Fa'ahia were received from Teledyne Isotopes in June 1979:

Sample No.	Laboratory No.	Sample Provenience	Years B.P. (1950) for Half Life of 5568	Adjusted Age in Calendar Years*
TRC-146	I-10.769	Layer III, N43 Section 3	1120±80	A.D. 830±90 or A.D. 860-880
TRC-147	I-10.770	Layer III, D19 Section 4	1145±80	A.D. 805±90 or A.D. 830-850

*Ralph et al. 1973

These two dates are in line with those from Vaito'otia, indicating that the occupation took place in this part of Huahine Nui between A.D. 850 and 1200. We do not know how the dated samples may have been affected by the French nuclear tests on Moruroa.

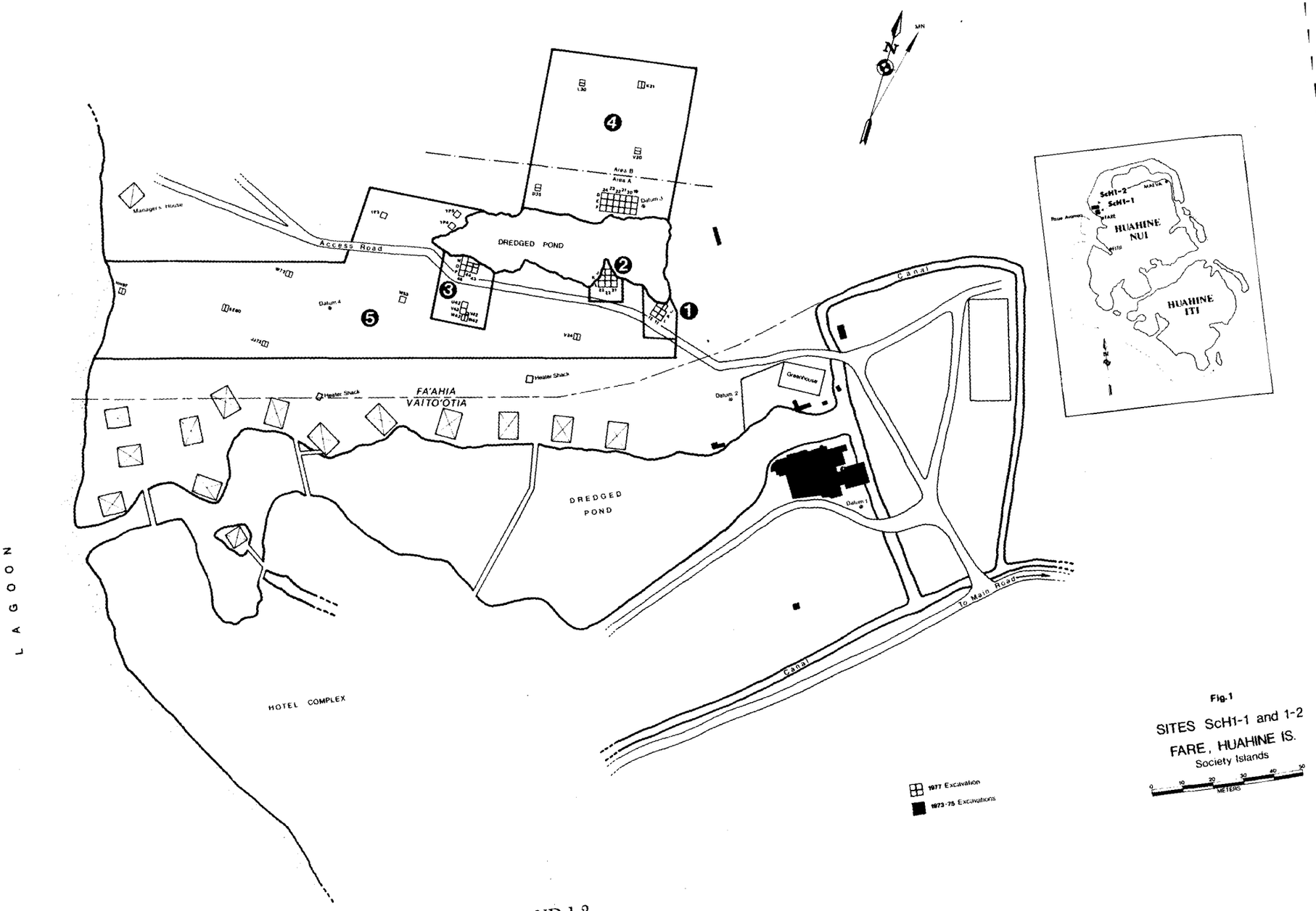
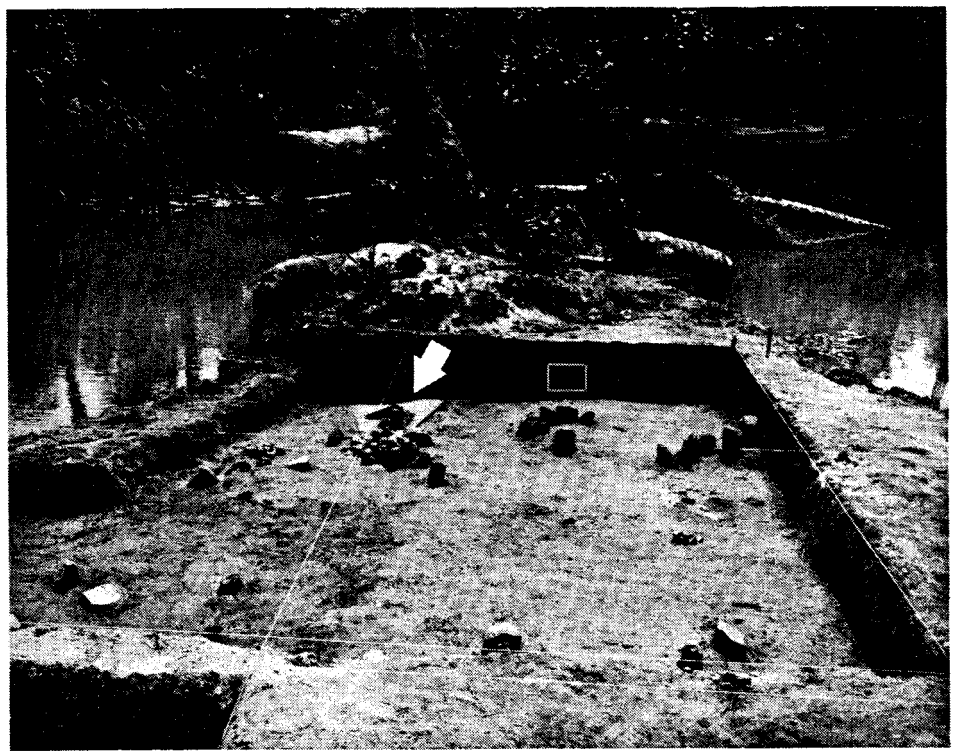


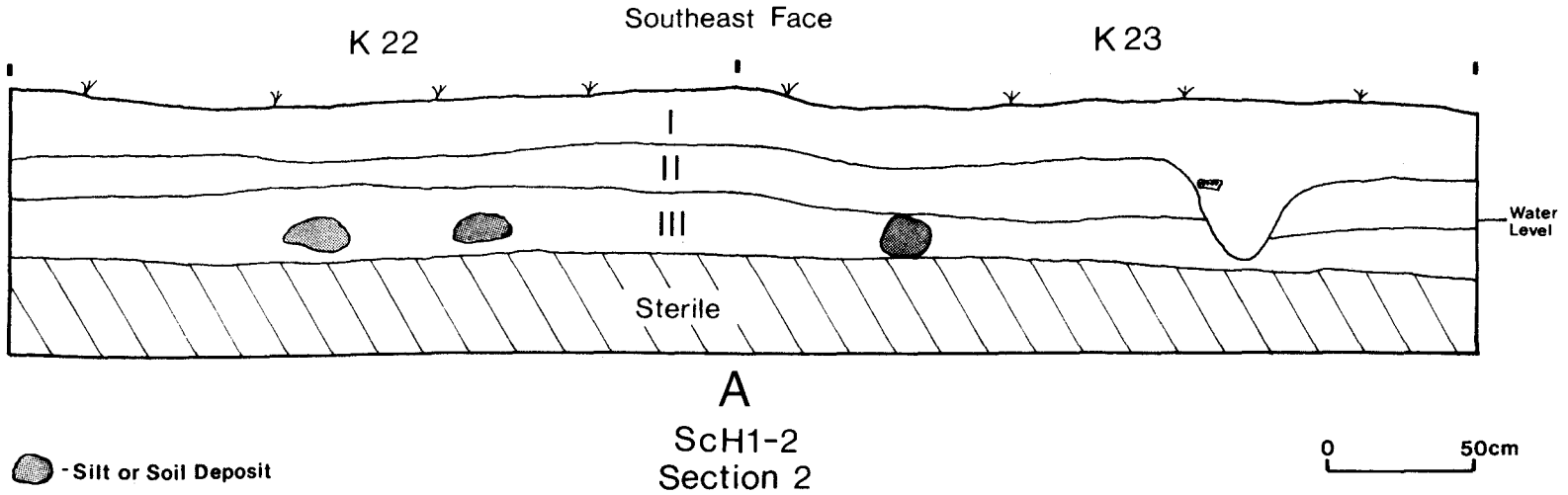
Fig. 1. SITES ScH1-1 AND 1-2.

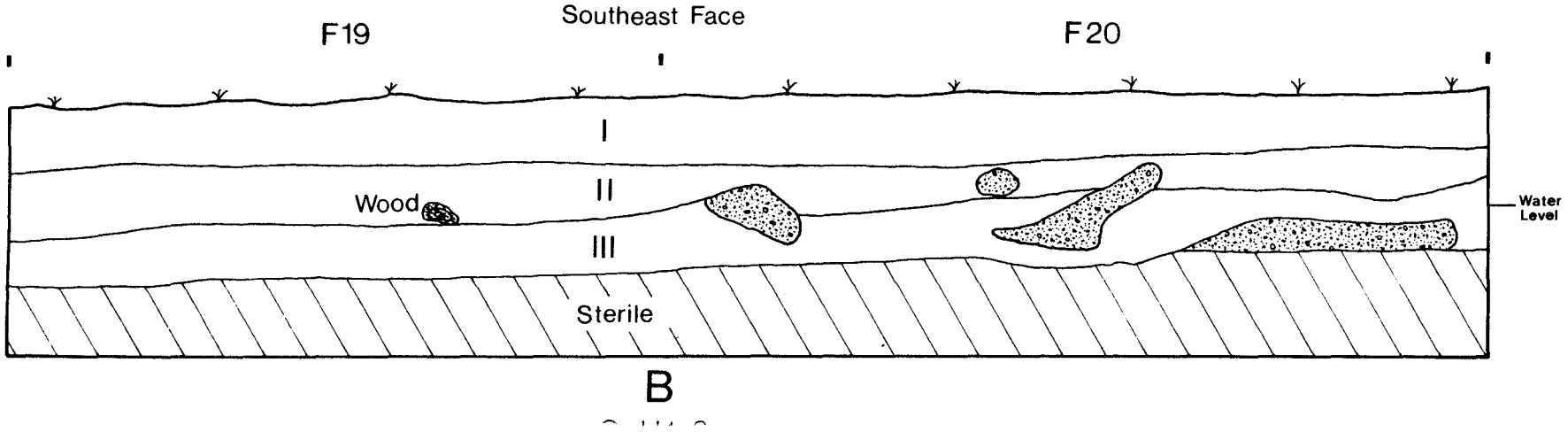


a. Grinding stone, near two piles of *Turbo* shells on top of Layer III, and scattered stones in Layer II, Section 2. Also see Fig. 12a.

b. Fallen logs and posts and stone flakes exposed in Section 4. Other logs lie under plastic sheets.

Fig. 2. EXCAVATIONS IN SECTIONS 2 AND 4.


Southeast Face
K 22
K 23
I
II
III
Water Level
Sterile
A
ScH1-2
Section 2
- Silt or Soil Deposit
0
50cm


Southeast Face
F19
F20
I
II
III
Wood
Water Level
Sterile
B

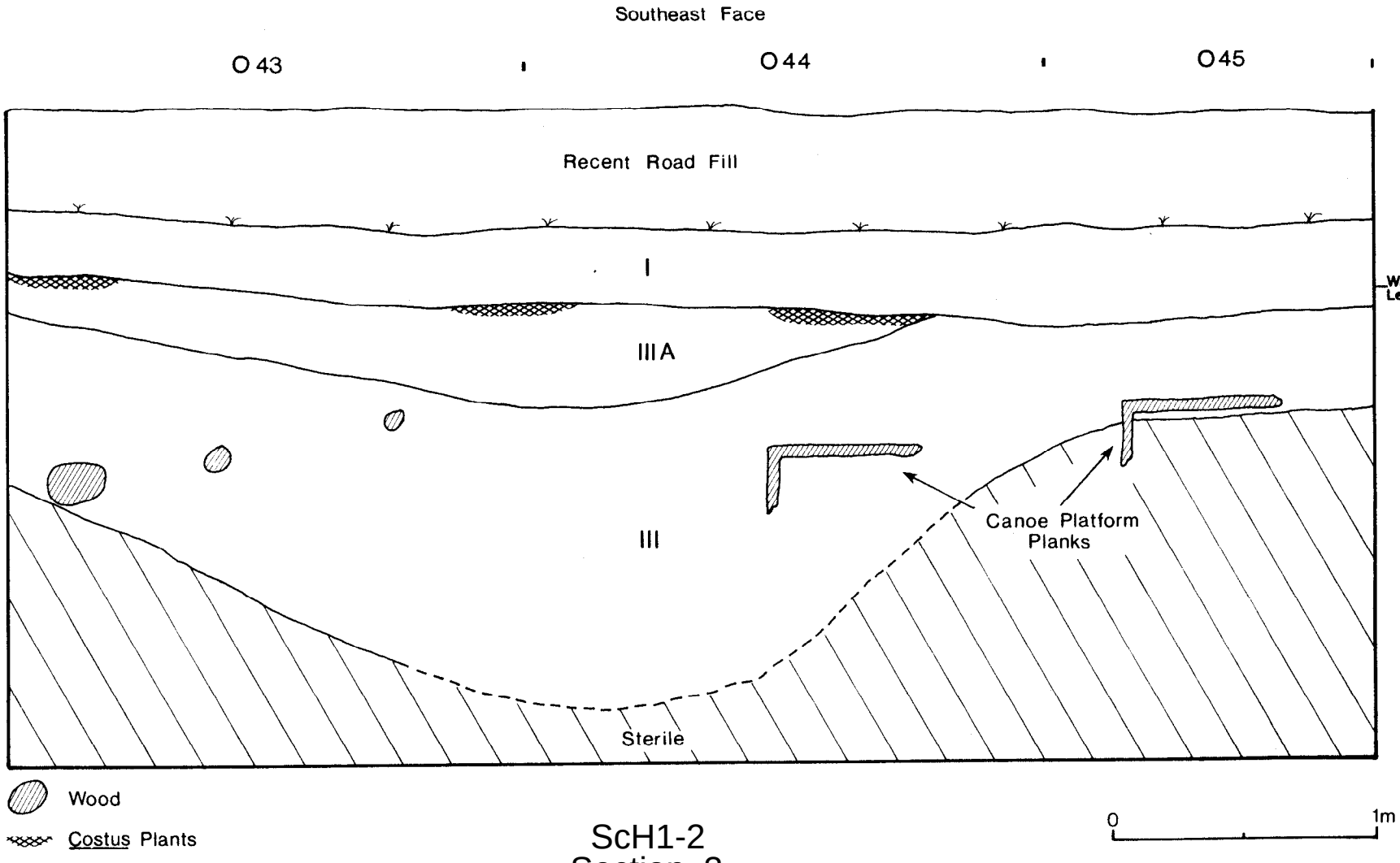


Fig. 4. PROFILE OF EXCAVATION IN SECTION 3.

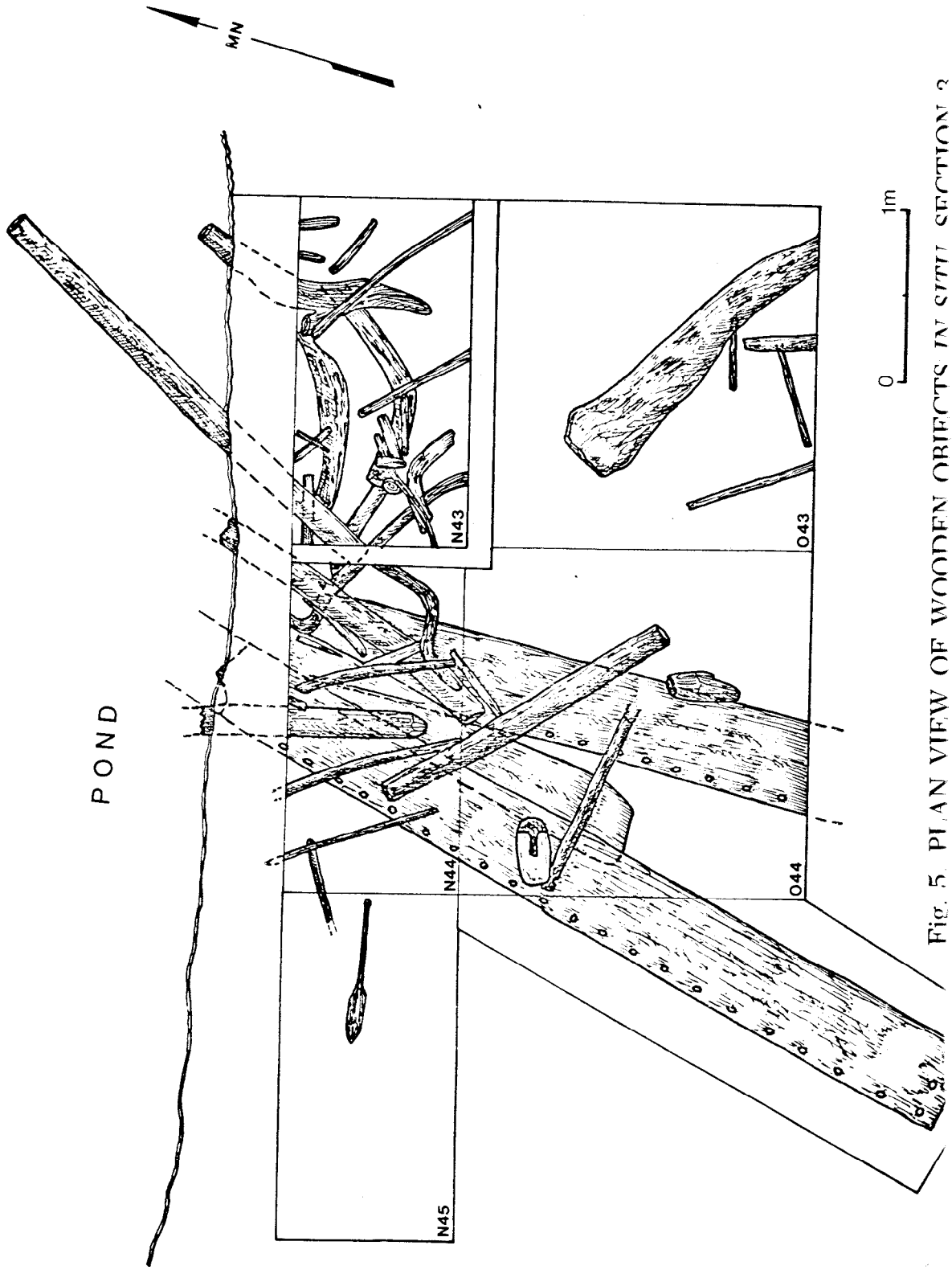
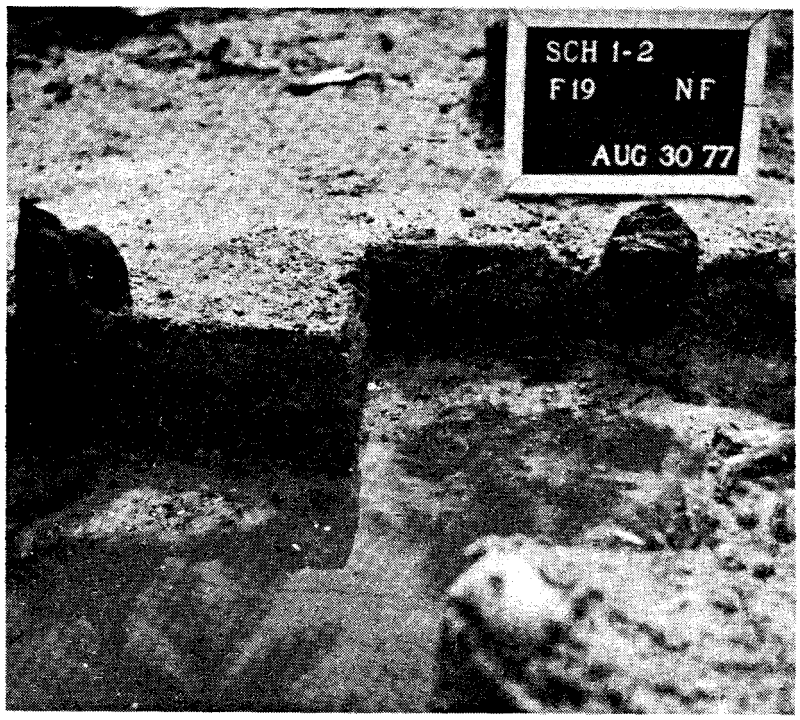
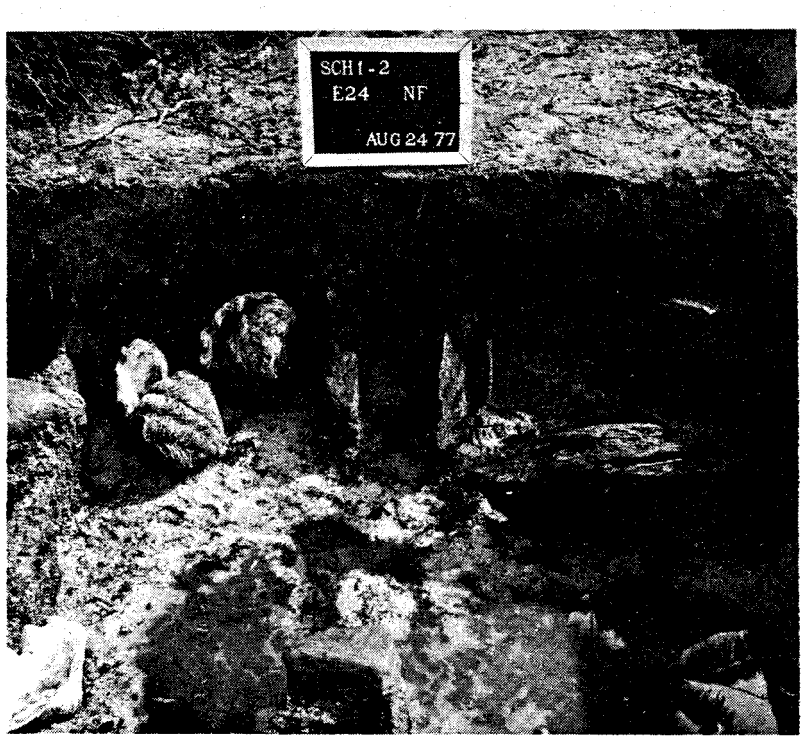


Fig. 5 PLAN VIEW OF WOODEN OBJECTS IN SITU SECTION 2



a. Standing post bases in F19.



b. Fallen logs and *Tridacna* shells in E24.

Fig. 6. EXCAVATIONS IN SECTION 4.

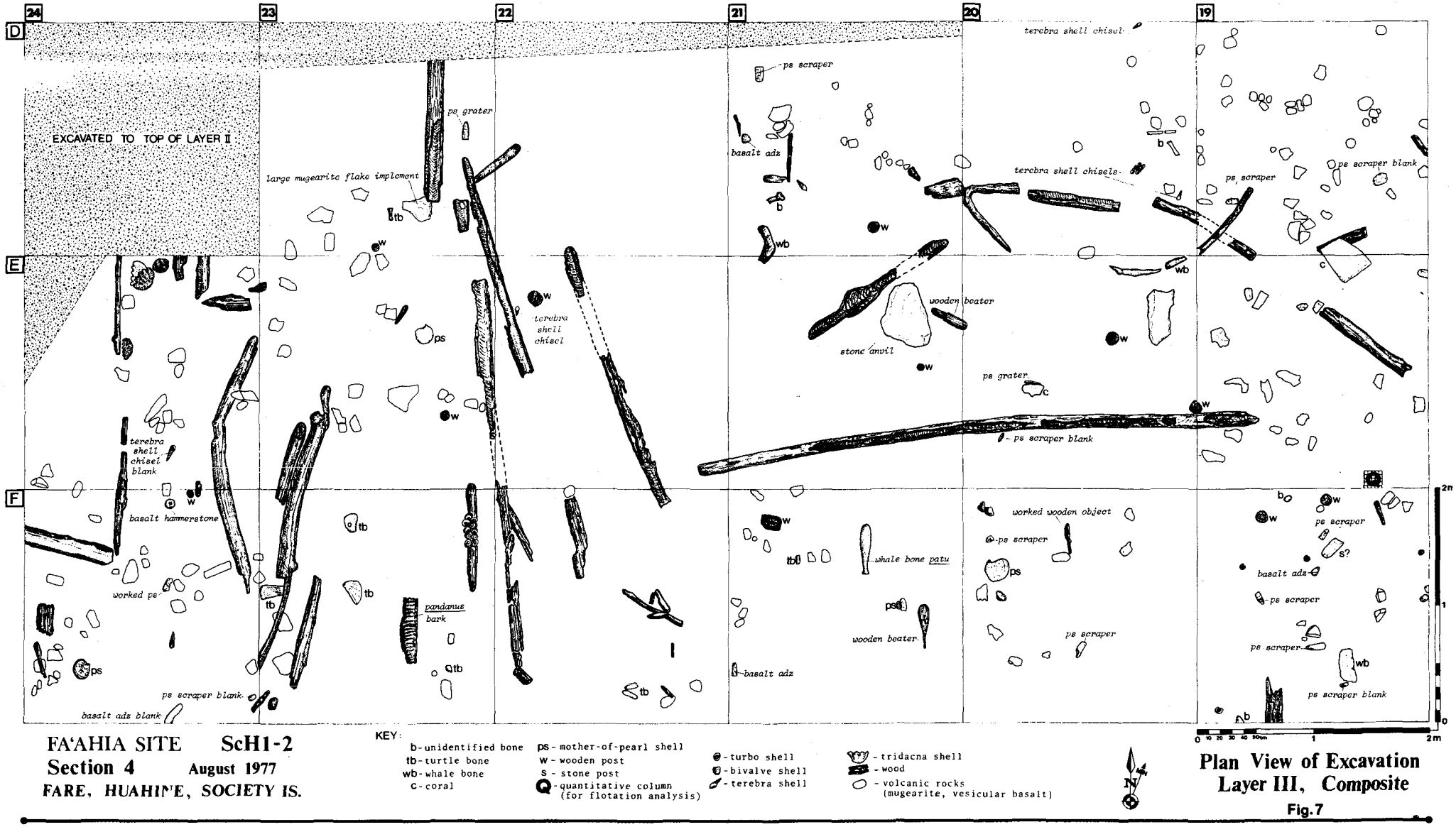


Fig. 7. PLAN VIEW OF EXCAVATION, LAYER III.

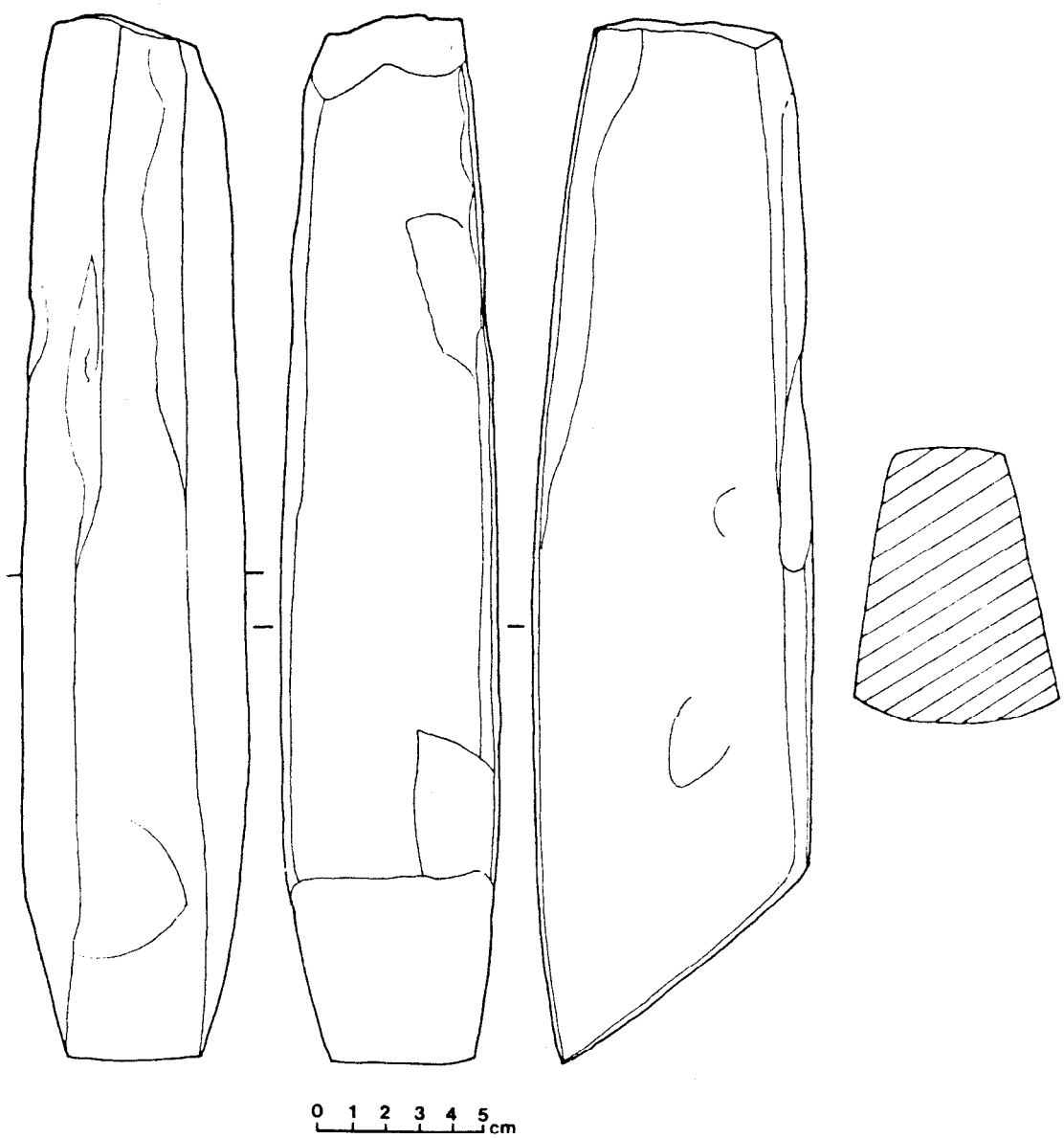


Fig. 8. BASALT ADZ, FORM 2B, FROM DREDGING.

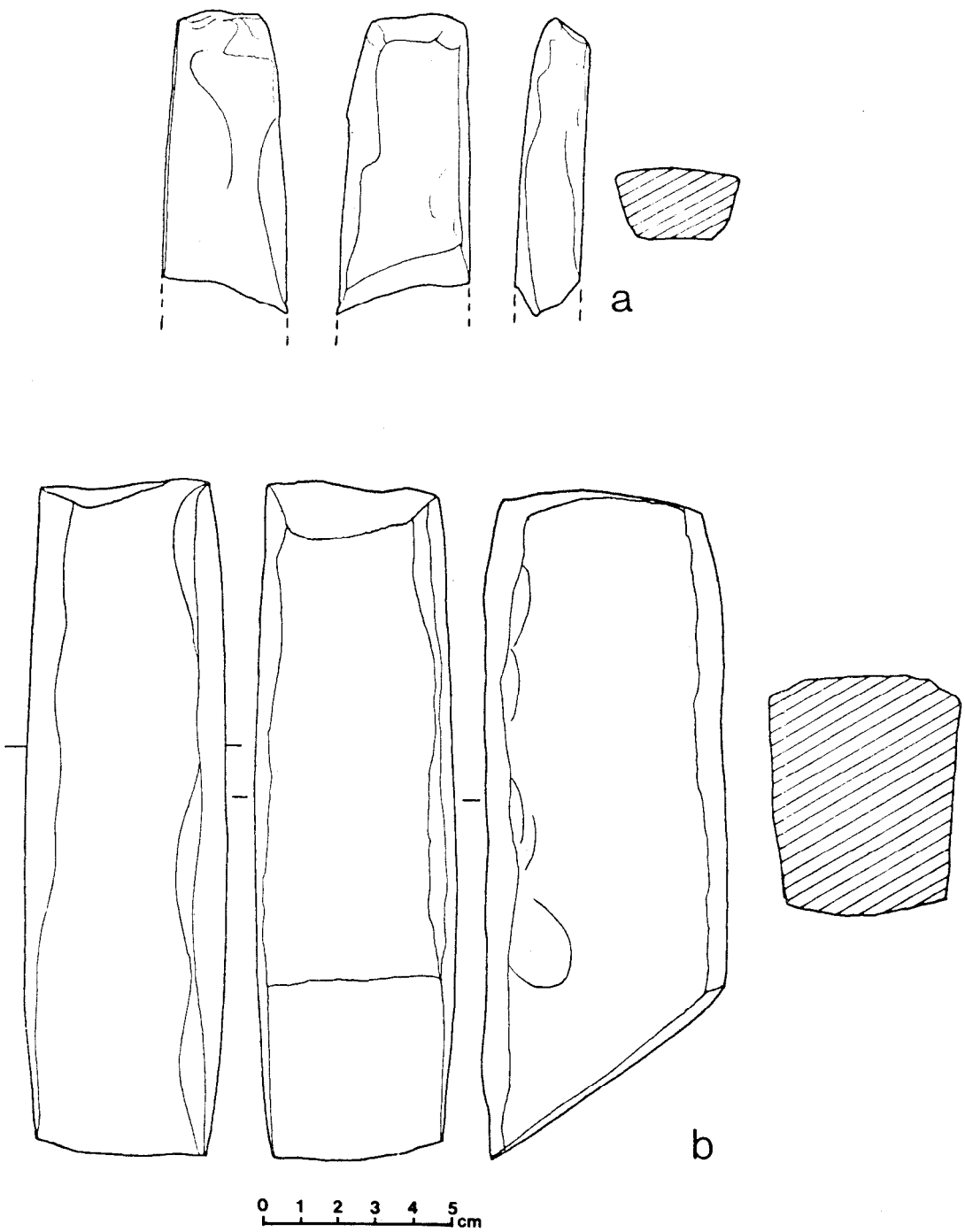


Fig. 9. BASALT ADZES. a. Form 3A; b. Form 3B, from dredging.

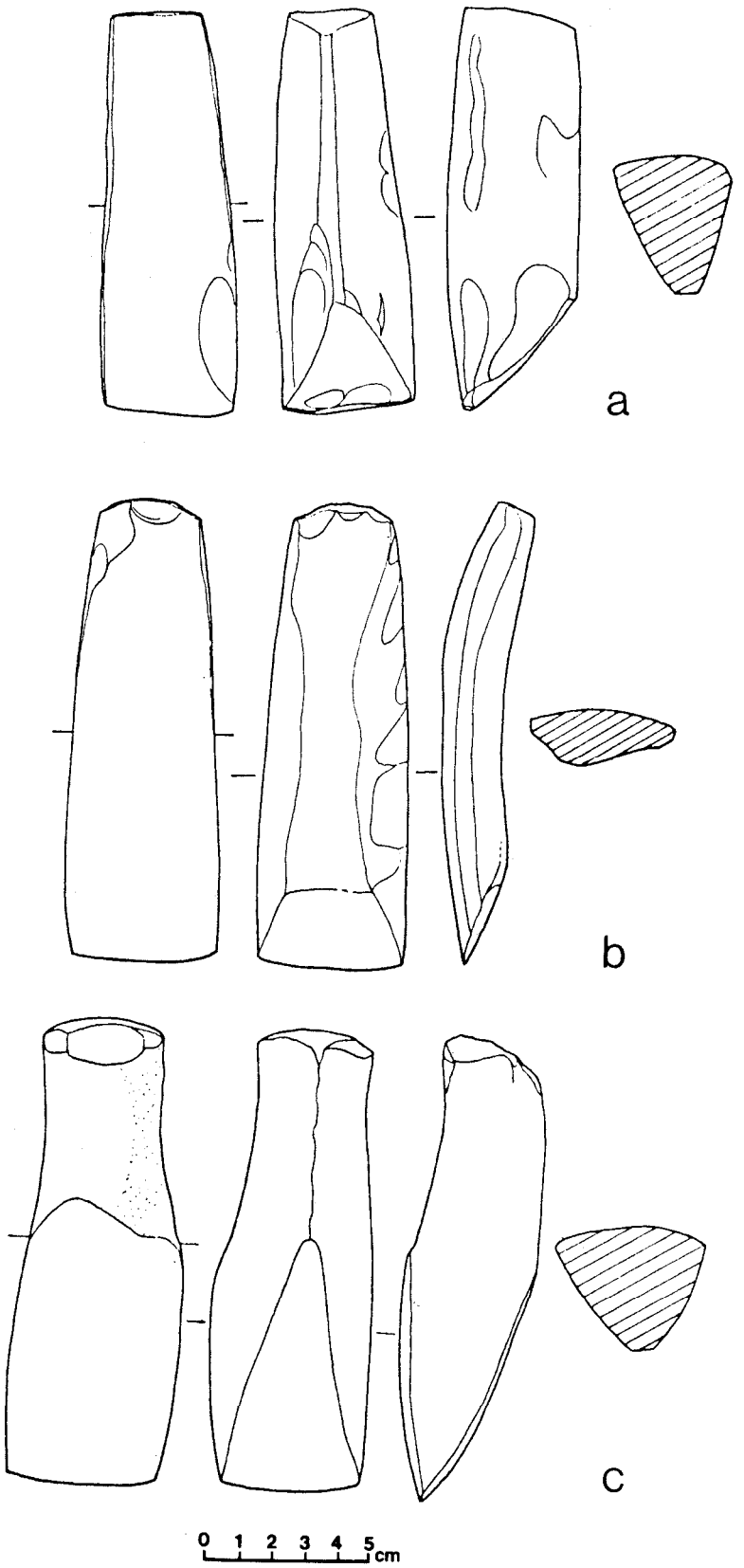


Fig. 10. BASALT ADZES. a. Form 4, and b. Form 5 (both from dredging). c. Reversed triangular adz from the beach near Test Pit HH97.

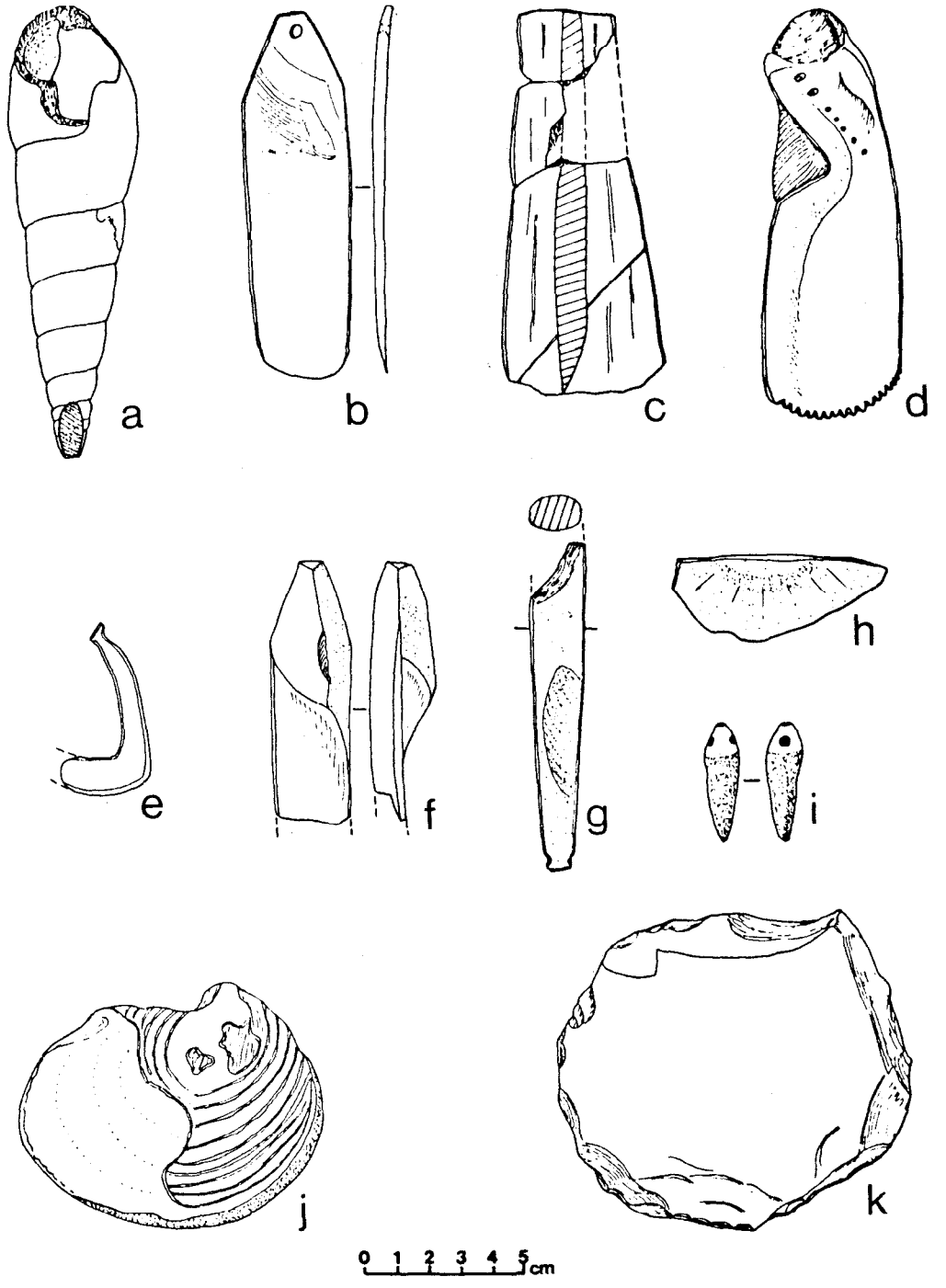
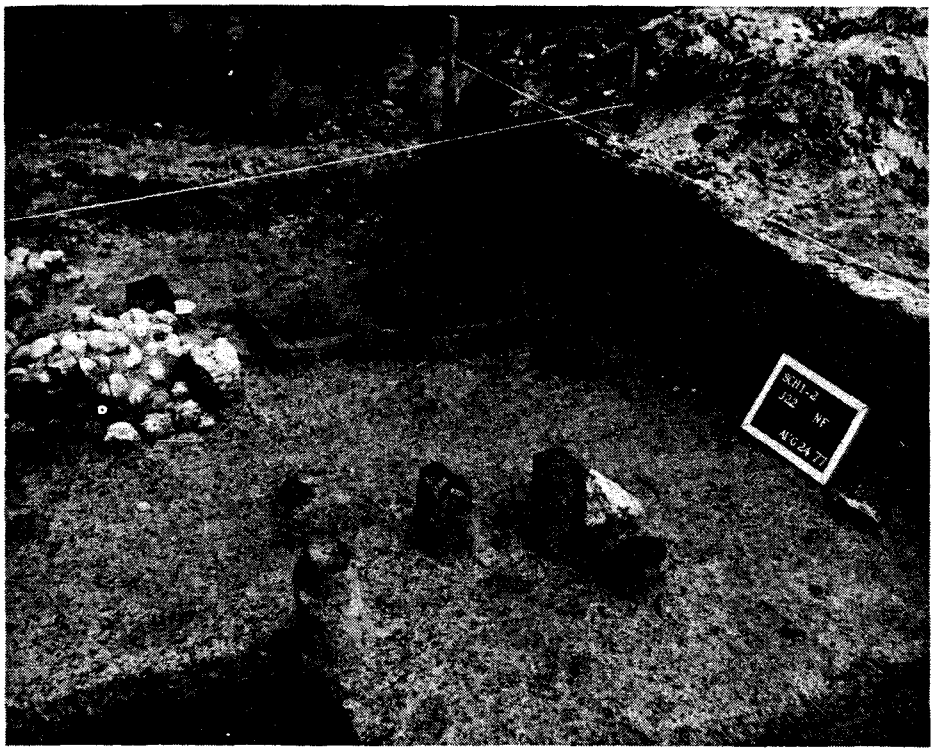


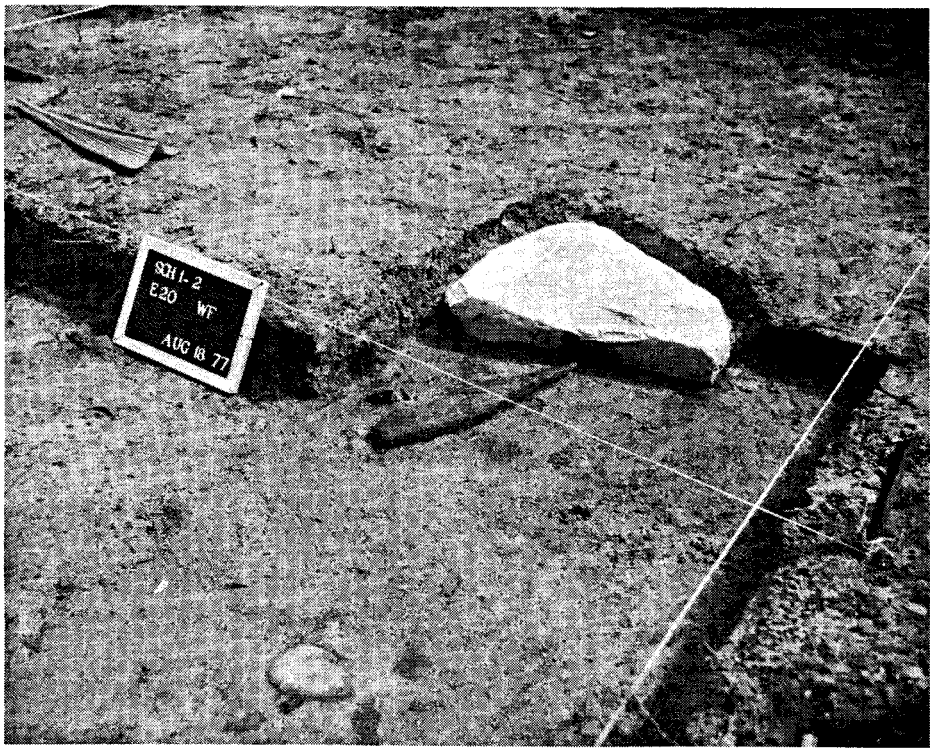
Fig. 11. ARTIFACTS FROM FA'AHIA SITE. a. *Terebra* shell chisel; b. pearl-shell scraper; c. turtle bone scraper; d. pearl-shell grater; e. pearl-shell hook; f. and g. pearl-shell trolling hook shanks; h. basalt scraper; i. porpoise-tooth pendant; j. pearl-shell scraper; k. basalt knife.



a. Grinding stone and piles of *Turbo* shells in Section 2.

b. A whalebone hand club from F21, Section 4. Also see Fig. 14a, right.

Fig. 12. EXCAVATIONS IN SECTIONS 2 AND 4.

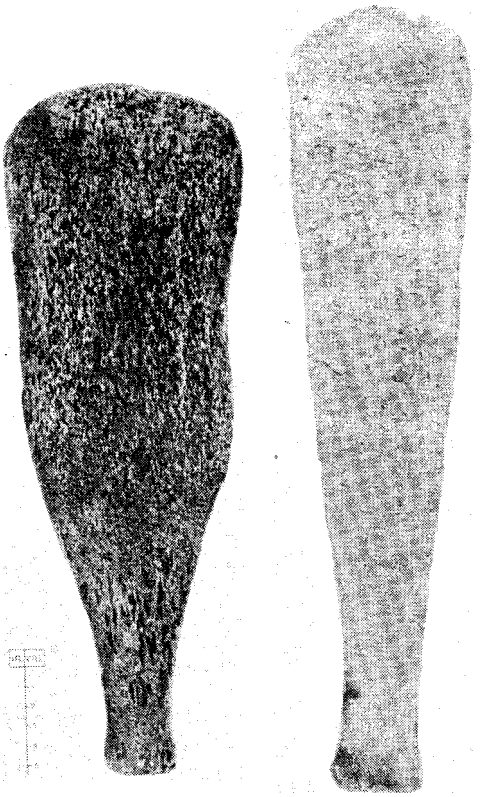


a. Stone tapa anvil and grooved tapa beater found from E21.

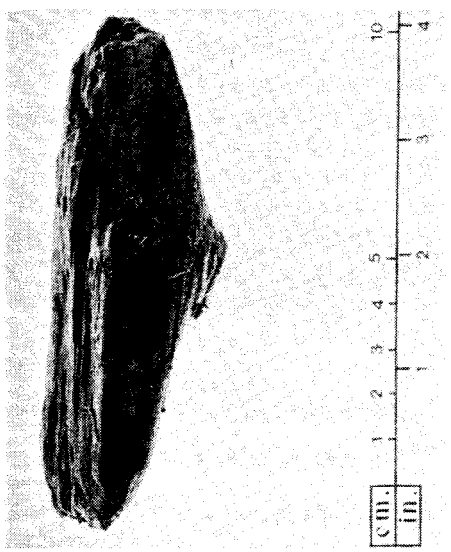
b. wooden tapa beater from D22. Note vertical grooves.

c. Wooden beater from F21

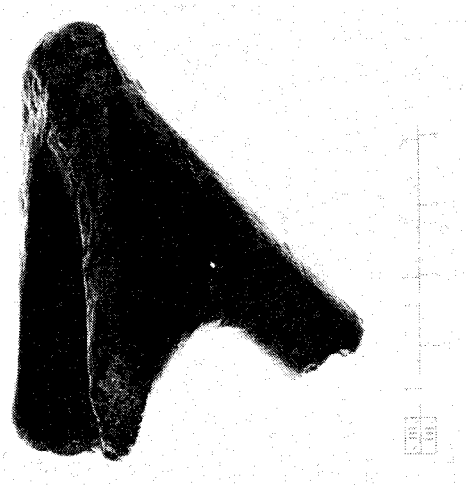
Fig. 13. ARTIFACTS FROM SECTION 4.



a. Whalebone hand clubs, *patu*. Left, from dredging near TP4 & TP5; right, from F21, Section 4.

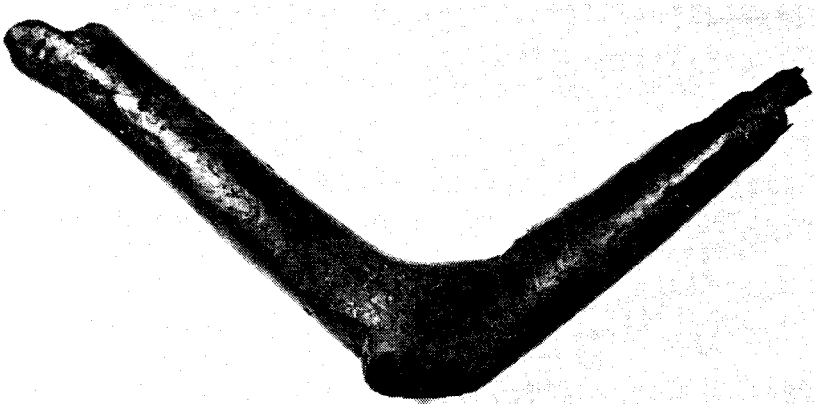


b. Head of adz handle from dredging near Section 3. Note flat face for lashing adz.

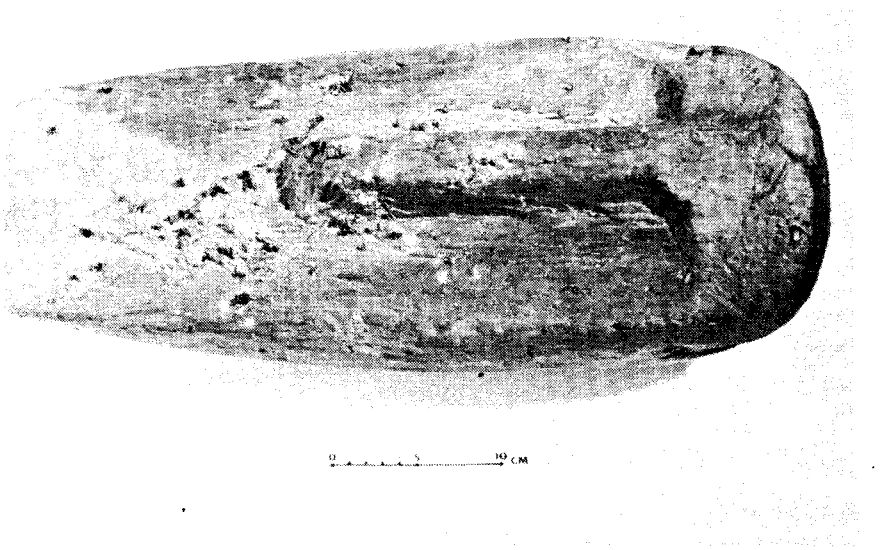


c. Head of adz handle from dredging near Section 3. The head has a concaved receptacle for an adz with lenticular or plano-convex cross section.

Fig. 14. ARTIFACTS FROM SECTIONS 3 AND 4.

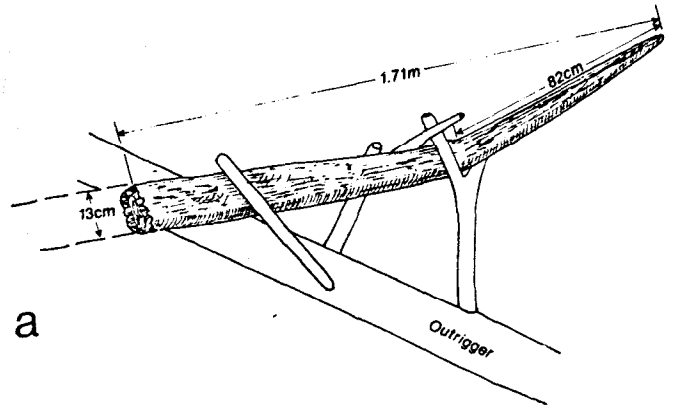


a. Canoe brace (spreader) from dredging.

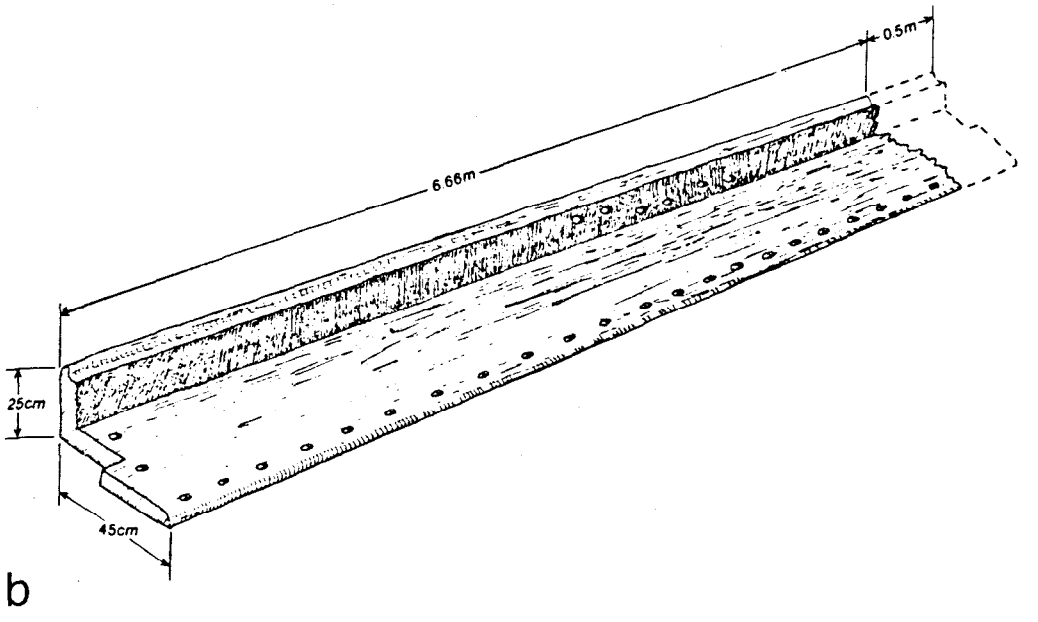


b. Canoe bailer, found on the upper plank in 044 (see Fig, 5). Unfinished; note carved handle portion.

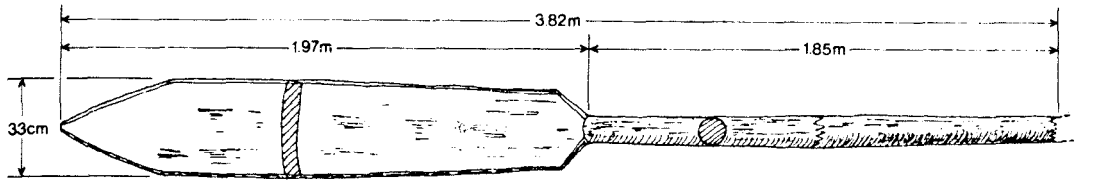
Fig. 15. WOODEN ARTIFACTS FROM SECTION 3.



a. A part of outrigger boom from dredging, near Section 3.

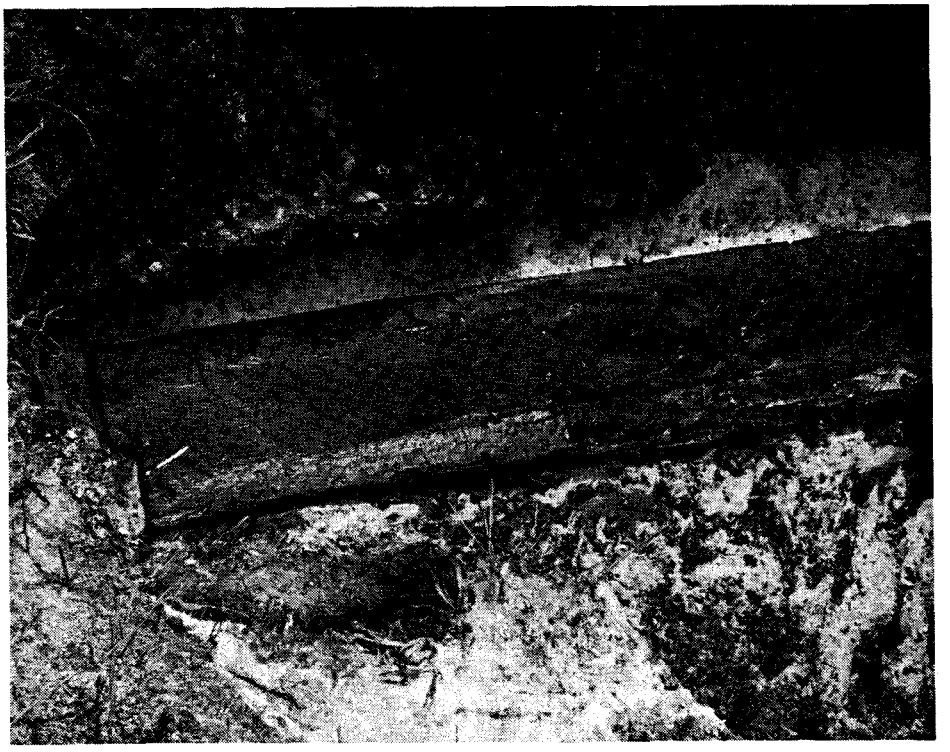


b. Perspective drawing of excavated canoe platform plank.



c. Steering paddle fom dredging near Section 3.

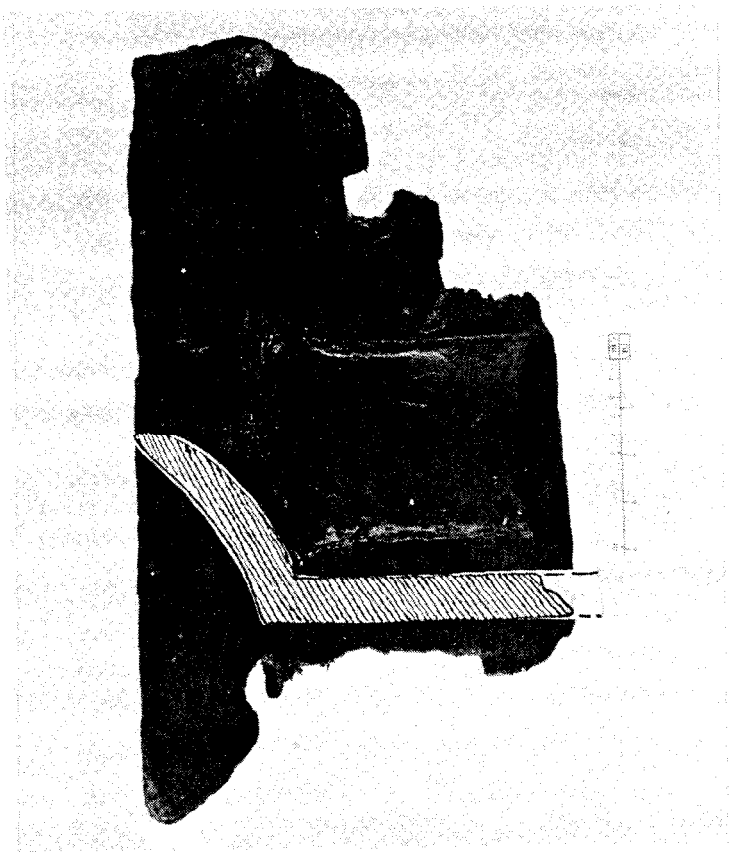
Fig. 16. WOODEN ARTIFACTS FROM SECTION 3.



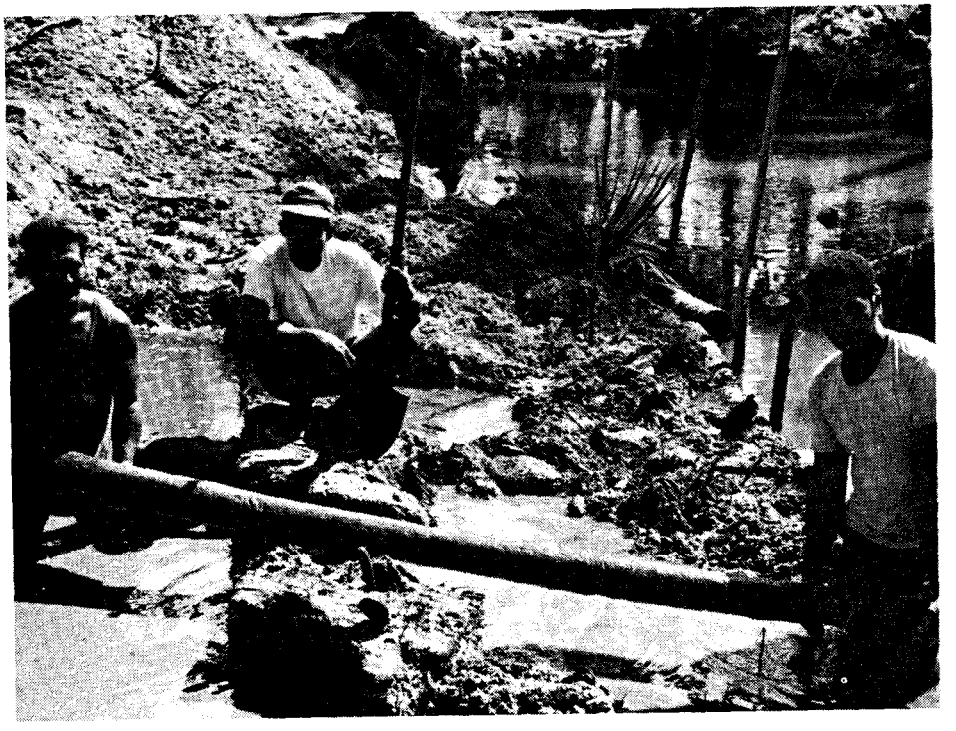
a. Intact end.

b. End broken by dredging.

Fig. 17. DOUBLE CANOE PLATFORM PLANK EXCAVATED IN SECTION 3.



a. A part of cover-like object.



b. Well-worked round log, about 2.8 meters long.

Fig. 18. WOODEN OBJECTS OF UNKNOWN FUNCTION, FROM SECTION 3.

LITERATURE CITED

Kitagawa, Yoshio
MS. Geological Investigation of the Vaito'otia Site Area, Huahine, Society Islands. Report submitted to the National Geographic Society, 1975.

Ralph, E. K., H. N. Michael, and M. C. Hay
1973 "Radiocarbon Dates and Reality," MASCA Newsletter 9 (1).

Semah, François, Hiro Ouwen, and Michel Charleux
1978 *Fouilles Archéologiques sur Raiatea: Vaihi* (March 1978). Centre ORSTOM et Musée de Tahiti et des Iles, Pape'ete.

Sinoto, Yosihiko H.
1974 "A *Patu* from Huahine, Society Islands," *Journal of the Polynesian Society* 83 (3):366-367.

Ms. a Preliminary Report: Final Phase of the Excavation of an Archaic Habitation Site on Huahine, Society Islands. Report submitted to the National Geographic Society, 1976. (1975 excavations).

Ms. b Archaeological Excavations of the Vaito'otia Site on Huahine Island, French Polynesia. Submitted to the National Geographic Society Scientific Papers, 1977. (1976 excavations).

Sinoto, Yosihiko H. and Patrick McCoy
1975 Report on the Preliminary Excavation of an Early Habitation Site on Huahine, Society Islands, *Journal de la Société des Océanistes. 31:143-186.*

Ms. Excavations of an Archaic Habitation Site on Huahine, Society Islands. Preliminary report submitted to the National Geographic Society, 1975. (1974 excavations).

Chairman, Department of Anthropology
Bernice P. Bishop Museum