Hale-o-Keawe Archeological Report

Archeology at Pu'uhonua o Honaunau National Historical Park

By Edmund J. Ladd

National Park Service
U.S. Department of the Interior

Hale-o-Keawe Archeological Report

Archeology at Pu'uhonua o Honaunau National Historical Park

By Edmund J. Ladd

(Edited by Gary F. Somers)

Western Archeological and Conservation Center
Publications in Anthropology No. 33

1985

TABLE OF CONTENTS

Page No.

FIGURES

Page No.

Page No.

Page No.

TABLES

EDITOR'S INTRODUCTION

In 1966 Edmund J. Ladd directed archeological excavations of the Hale-o-Keawe temple platform in Pu'uhonua o Honaunau National Historical Park. In 1966 and 1967 Mr. Ladd directed the stabilization and restoration of the platform. The report describing the results of this work was originally written in 1967 but has existed since then only in manuscript form. In reading the published report, the reader should keep in mind the time frame in which the original manuscript was written.

Mr. Ladd retired as Pacific Archeologist, National Park Service, in December 1984. As a tribute to him and the work he did over a 23-year period, and in an effort to more widely disseminate the results of his archeological investigations, the National Park Service is publishing three of his manuscripts. In addition to the Hale-o-Keawe Archeological Report, Mr. Ladd's "Kiilae Village Test Excavations" and "Test Excavations: Sites B-105, B-107, and B-108, City of Refuge National Park, Honaunau, Kona, Hawaii" manuscripts will be published in the near future. Under contract with the National Park Service, the Bernice P. Bishop Museum will be publishing two more of Mr. Ladd's manuscripts. These are "A Preliminary Archaeological Survey of the Northern Shore of Honaunau Bay, South Kona, Hawaii" and "Archeological Salvage of the City of Refuge By-Pass and Entrance Roads, Honaunau, Kona, Hawaii."

To the extent possible, the original text of the Hale-o-Keawe manuscript has not been changed. Since the manuscript was written, the name of the park has been changed from City of Refuge to Pu'uhonua o Honaunau. To help reflect the period in which the manuscript was written, the name

was not changed in the body of the report. Some other changes were made, however.

All of the plates, maps, figures, and tables were incoporated into the body of the report. The plates, maps, and figures were renumbered as figures and their captions were rewritten. In the manuscript the captions contained a lot of information that has been incoporated into the text and into Tables 2, 4, 5, and 6. An additional table, Table 1, which lists the features identified during excavation, has also been added.

Another addition is Appendix 3, which is a copy of a portion of Stokes' map of the pu'uhonua. The reader should also note that Figures 4 and 5 are maps of the Hale-o-Keawe platform before and after the 1966-1967 restoration. They appear on the same page for easier comparison, even though Figure 5 is not referenced until much later in the report.

A number of the reports Mr. Ladd cited were manuscripts in 1967 and have since been published. The citations and reference have been changed to reflect the published reports. A number of other manuscripts, Barrere 1957, Emory 1957, Soehren 1962, Stokes 1957, and Tuohy 1965, were left as manuscript citations. It should be noted, however, that under contract with the National Park Service the Bernice P. Bishop Museum will be publishing those manuscripts within the next year or two.

In addition, the references to William Ellis' journal have been changed to the 1979 publication by Charles E. Tuttle Company because that was the edition available to the editor for checking specific citations.

Throughout the report, citations and references have been changed to reflect American Antiquity format.

Finally, a Glossary of Hawaiian Terms and a location map were added and the maps shown in Figures 4, 5, and 6 were redrawn to conform to a publishable format.

The reader should also note it is mentioned several times in the report that charcoal samples were taken. To date, none of those samples have been submitted for analysis and dating. Therefore, no radiocarbon dates were available for inclusion in the report.

Two people were instrumental in preparing the edited manuscript to a camera-ready condition. M. Melia Lane was responsible for all the figures, paste-up, and layout. She redrafted all the maps and, working with the negatives, arranged for camera-ready halftones. She also designed and produced the cover and title page. Jaynee Nakamura typed all of the drafts of the edited manuscript, including the final camera ready copy. To these two people go my sincerest thanks.

October 1985 Gary F. Somers

ABSTRACT

This is a combined salvage, stabilization, and historical review of the Hale-o-Keawe temple, City of Refuge National Historical Park, Honaunau, Kona, Hawaii.

The historical data collected and submitted by Superintendent Russell A. Apple (1966) in a thesis for the complete restoration of the masonry platform, and the temple of the Hale-o-Keawe, are re-evaluated and analyzed for their archeological significance. (Editor's note: Russell Apple retired as Pacific Historian in 1981.) On the basis of the analysis and evaluations, and on-site observations and measurements, a seven-point guideline for the archeological research is developed.

A brief description of the existing structure and an outline of the functions of the pu'uhonua and the heiau in ancient Hawaii are presented. Based on the archeological evidence, the architectural history of the site is presented as the background for the stabilization and restoration of the platform. Also, in this section, the artifacts are given special attention. Over 500 classifiable artifacts were recovered.

The last portion deals with the synthesis and analysis of the archeological data, supported by both the historical and field evidence, for the stabilization and restoration. The seven points of the original conclusions are restated, supported by the on-site data.

Supporting material appended are: Tables 1 and 2, illustration Plates I to XXXXIII, Figures 1 to 4, Accession List of Artifacts, A Full Quote

from the Journal of William Ellis concerning the City of Refuge, Location Maps, and a corrected Archeological Base Map. 1/

1/ Editor's note: Illustration Plates I to XXXXIII, Figures 1 to 4, and the maps have been incorporated into the body of the text as Figures 1 to 61. Tables 1 and 2 have also been incoporated into the body of the text as Tables 5 and 8. The Accession List of Artifacts and the Full Quote from the Journal of William Ellis are included as appendices.

Chapter 1

INTRODUCTION

The City of Refuge National Historical Park, Kona, Hawaii, was established, by Act of Congress, as a unit of the National Park System on July 1, 1961. The park contains nearly 180 acres of land. It runs parallel to the beautiful Pacific Ocean forming the Kona coast, 22 miles south of Kailua village, on the Big Island -- Hawaii (Figure 1). Along the coast and inland in the park are numerous archeological structures and features, some of which have been excavated and some of which are under study.

Since its establishment, several major archeological projects have been completed. Among the work accomplished to date is the complete stabilization of the Great Wall (Ladd 1969b), of which the structure under present investigation, the Hale-o-Keawe temple platform (Figures 2 and 3), is a part. For obvious reasons, however, that portion of the Great Wall contained in the temple platform was not molested during the 1963-64 stabilization activities; archeological investigations on this portion of the Great Wall were carried out from March to September 1966.

The following report on the archeological excavations of the Hale-o-Keawe temple platform is to be considered a combined salvage, stabilization, and restoration report.

The first portion of the report is based on my previous research (Ladd 1969c) and my attempts to re-evaluate, coordinate, and relate to on-site observations and measurements the data collected and submitted by

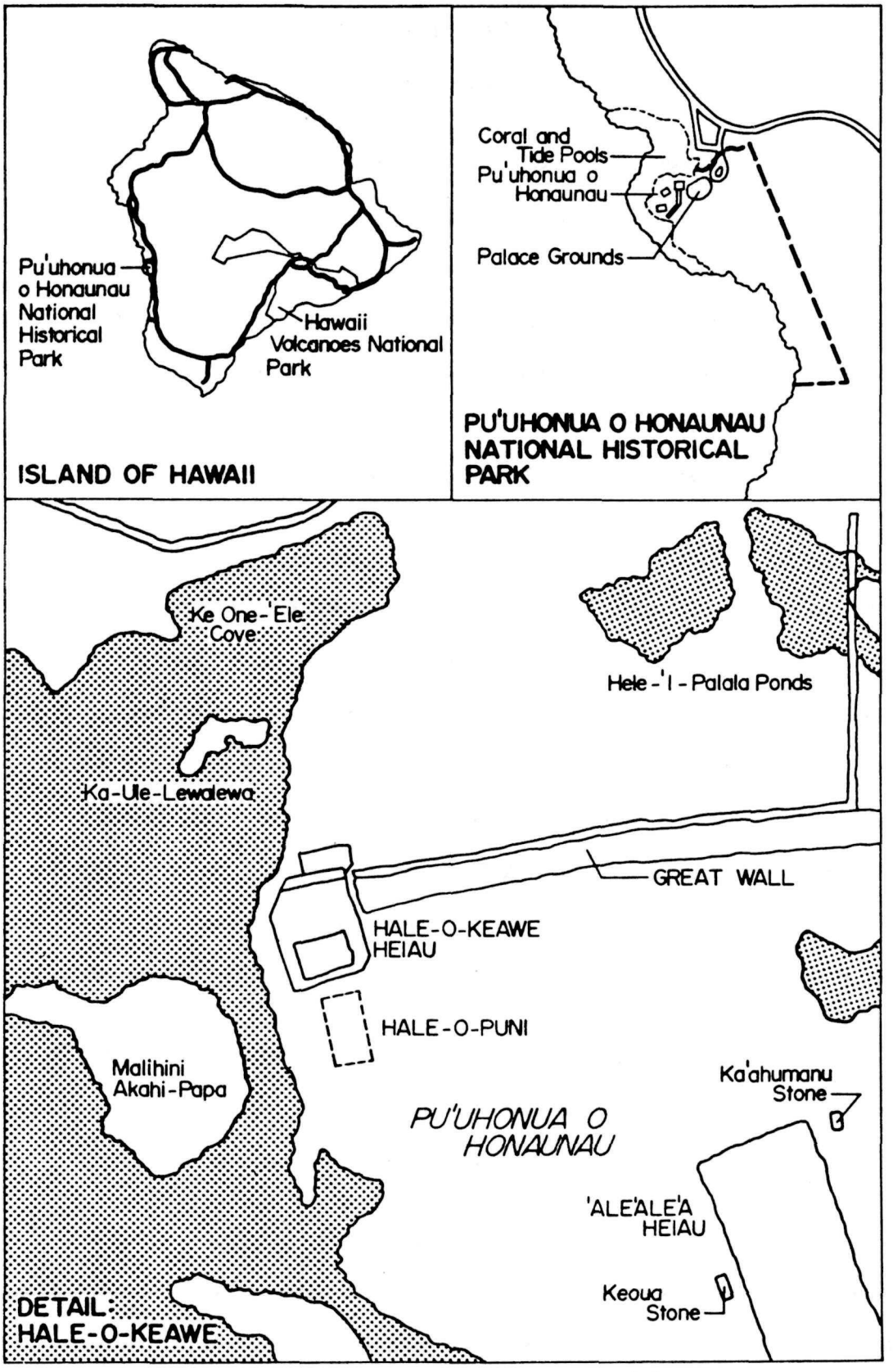


Figure 1. Location Map, Hale-o-Keawe Heiau, Pu'uhonua o Honaunau National Historical Park, Island of Hawaii.

Figure 2. Hale-o-Keawe Temple Platform before 1966-1967 restoration. View looking north-northeast. (Photo taken in 1964.)

Figure 3. Hale-o-Keawe Temple Platform before 1966-1967 restoration. View looking south-southwest. (Photo taken in 1962.)

Superintendent Russell A. Apple (Apple 1966) in a historical thesis for the restoration of the Hale-o-Keawe temple platform. The last part of this report is based entirely on the archeological field studies.

No attempt is made in this paper to trace out the complex details of the traditional, sociological, and political functions of the pu'uhonua and its heiau in ancient Hawaii. I do, however, attempt to trace the achitectural history of the Hale-o-Keawe through available historical records from the present to about 1823, when the structure was first seen and described by a non-Hawaiian, Reverend William Ellis, who was at that time making a survey for missionary sites in Hawaii. Reverend Ellis describes in detail the enclosure of the pu'uhonua and the Hale-o-Keawe temple and temple platform four years after the ancient Hawaiian religious system was abandoned. Since he was the first, all subsequent reports have relied heavily on his journal as the primary source. The present report is no exception.

Chapter 2

ARCHEOLOGICAL INTERPRETATION OF HISTORICAL DATA

In the "Pre-Restoration Study of the Hale-O-Keawe" (Apple 1966), Superintendent Russell Apple outlines in detail, with maps and charts, the total restoration of the platform and temple, based entirely on his analysis of certain historical accounts. I utilize some of these same accounts from an archeological point of view to provide and set forth guidelines for the archeological investigations. The dangers of using third hand information are noted. However, due to certain limitations, the sources quoted by Apple in the above-mentioned report are used, except as indicated where other sources on hand were consulted.

1902 Restorations by W. A. Wall

In 1902 the Great Wall and other related structures, including the Hale-o-Keawe temple site, were repaired and reconstructed by order of Mr. S. M. Damon, a resident of Hawaii and a member of the Bishop Estate Trustees. The actual work of restoration was carried out under the supervision of Mr. W. A. Wall, Surveyor, "...and was based on historic facts and upon traditional knowledge gleaned from local informants" (Emory 1957:35).

Unfortunately, Mr. Wall kept no records. The only available notes are those collected by J. F. G. Stokes, a member of the Bishop Museum staff, from a conversation with Mr. Wall several years after the work was completed and from interviews with some of Mr. Wall's Hawaiian workmen in 1919, nearly 17 years later. Even these notes were not fully

available until Mr. Apple undertook the research of historical documents in 1965-66.

Because of the importance of the 1902 work and since it was the first and last time the total Hale-o-Keawe platform was modified from the original Hawaiian construction, Mr. Stokes' full report of his interview with Mr. W. A. Wall and others, as presented by Mr. Apple (Apple 1966: Appendix AA 1-4), follows. The underscoring is by this author to call the reader's attention to the most significant sections pertaining to the acheological interpretation:

> Hale o Keawe and certain portions of the puuhonua were restored in 1902 at the expense of the then lessee of the land. The details, as obtained in 1919 from the engineer in charge, the foreman and some of the workmen engaged, are summarized below. The engineer was interviewed in Honolulu, and mentioned the difficulty of recalling details after such a lapse of time. The other men were interviewed on the ground.
>
> <u>As found in 1902, Hale o Keawe platforms and vicinity were a heap of stones, without definite lines, merging with the ruins of the northern end of the great east wall.</u> The latter was broken through in two places where the ground was soft through [sic] (?) the base stones were still in place. The south east corner was broken down. The facings of the great south wall at the beach was [sic] gone, and the western end of the same wall destroyed. The upper surfaces of the great walls were damaged in places. The old puuhonua was a complete ruin. The north west portion of Alealea was completely

destroyed, most of its upper surface gone, and there was a pile of stones at its eastern end as through [sic] (?) there had been a superstructure at that place. The upper surface of the heiau no na wahine was disturbed. There were small walls in the triangle between Hale o Keawe, Alealea and the middle of the great east wall.

There was disagreement between the accounts of the engineer and foreman on the subject of "holes four rods apart for idols" on the upper surface of the great walls as mentioned by Ellis. The engineer stated that there were none, while the foreman said there were several holes, he could not recollect the size, location nor distance apart. No assistance on the subject was received from the workmen.

The work of restoration was as follows: The Hale o Keawe site was built up in four terraces, and a passage made between them and the present northern end of the east wall. The latter was also benched and steps built for visitors' convenience, and the bench continued as a small wall along the rest of the passage. The old puuhonua site, the priests' platform, Hale o Lono, and small walls were not touched. The other structures were rebuilt, according to the lines indicated by the base stones, and were resurfaced. The mound on the eastern end of Alealea was levelled to the surface of the platform. An inclined entrance was built for visitors at Alealea. The western end of the southern great wall was wisely not extended to its full length.

The foreman stated that it was under his grandmother's instructions that the Hale o Keawe site was rebuilt in four platforms, but she had stated that the northern retaining wall originally extended further out. The levels for the upper and main platforms were obtained from two stones believed to have been still in their original positions. They were pointed out and it was stated that they were the only two stones found in position. One of them was on edge, and now forms part of the facing of the bay in the top platform. The level for which was derived from the upper edge of the stone. The other stone was found in a horizontal position three feet to the east of the first, and served as the datum level for the main platform. The levels of the other two platforms were derived from description. The southern boundary of the lowest platform was established from a line of stones which appeared to have fallen down and since lain undisturbed.

During the restoration, information for the work was gathered entirely from three natives, one of whom survives. Of the three, the main informant was the grandmother of the foreman, and was present during all the work. This lady was not born at Honaunau, but had spent a great part of her life there. She was regarded by visitors as the unofficial guide to the puuhonua.

Regarding the passage adjoining Hale o Keawe, there was lack of agreement in the accounts of the engineer and foreman. The former stated that two of the natives claimed that it was ancient and one that it was modern. The engineer also stated that after the removal

of the loose overlaying stones, an original pavement was found with base stones of walls showing on each side.

The foreman stated that the passage was built along the line of what appeared to have been a paved path almost level with the ground. The original pavement was composed of large, flat stones, with smaller stones wedged between. His grandmother had stated that this path formerly continued more to the west. The present pavement was built up higher for the convenience of visitors. The small wall composing the southern border of the passage was built on the base of what seemed like a former wall. The height of the rebuilt wall was surmised.

Additional notes by the foreman: This man had been informed that a large flat stone, then lying at the water's edge was the cover of "the bone pit" and was originally set level with the pavement of the main platform near its eastern edge. During the reconstruction, the bone pit was found and consisted of an arched place; i.e., horizontal on vertical stones. Human bones were found in the cavity, the number of persons being represented being uncertain, but more than one. The arch in this section was the only one found in the Hale o Keawe site, but there may have been others. Human bones were also found in the northern side of the site. In Alealea platform a stone arch was also found and contained human bones. The workmen made similar statements.

Additional notes by the engineer: On reading Ellis' account of the puuhonua for the first time in 1919, the engineer stated that he did

not agree with that writer's statement that there had been "wide entrances on the side facing the mountain" /the east/. There were wide gaps in this wall, but the base stones still in place showed that there had been a continuous wall. In repairing these gaps, many tunnels had been a continuous wall. [sic] In repairing these gaps, many tunnels had been noticed running in all directions and at different elevations, the lowest being about level with the ground. They were large enough for a man to crawl through. The explanation given by a male Hawaiian was that there was one main tunnel leading from many openings on the outside of the great walls to the bench inside the southern wall. This tunnel was said to have been the means of ingress. Other tunnels, branching from the main one, ended as blind alleys or led again to the outside. The arrangement was as in a labyrinth, for if the fugitive entered one of the blind alleys, or emerged on the outside, he would have to "back up" and try again until he found the main lead. His pursuer was supposed to be waiting on the outside in the hopes that the fugitive might come out by mistake. The engineer did not search for these openings as the banking up of the sand was supposed to have concealed them (Stokes 1920).

Note: 10/22/56. Stokes says this story is not true! (sgd) M. Kelly.

As can be seen there was some disagreement among the various people from whom Mr. Stokes secured his information. However, there are a few telling statements bearing specifically on what was actually observed

and not what the Hale-o-Keawe was supposed to have been like. The first statement of importance to the archeological interpretation is the first sentence of the second paragraph which states: "As found in 1902, Hale o Keawe platforms and vicinity were a heap of stones, without definite lines, merging with the ruins of the northern end of the great east wall" (Apple 1966:Appendix AA1).

This sentence, as I interpret it, shows that in 1902 there were some visible distinctions noted between the "northern end of the great east wall" and the Hale-o-Keawe platform proper even though they "were a heap of stones, without definite lines." By this statement Mr. Wall, through Mr. Stokes, has definitely established the location of the temple platform to its present location before it was modified in any way. Therefore, although Mr. Apple states, "...Because of the changed coast line, a new platform was built in 1902 only partially on the site of the original," (Apple 1966:50), I believe that based on the foregoing statement by Wall, the present structure is on its original site. I must hasten to add, however, that liberties have been taken with the over-all restoration of the structure, which are discussed in more detail elsewhere in this report.

The actual restoration of the platform, as stated above, was under the direct supervision of Mr. W. A. Wall and "...was based on historic facts..." (Emory 1957:35). Just exactly how or where Mr. Wall got his "historic facts" is not known, especially since Mr. Stokes states that Mr. Wall had no knowledge of Reverend Ellis' report until it was shown to him in 1919, at which time he disagreed with certain points. The

"traditional knowledge learned from local informants," which was the basis for the restorations, seems to have been derived mostly from one local informant, the foreman's grandmother, with little or no archeological information to support the restoration. According to the fifth paragraph, quoted again in full below from the preceding notes by Stokes, the total restoration was based on one informant's story and two stones that were suspected to be in the original position:

> The foreman stated that it was under his grandmother's instructions that the Hale o Keawe site was rebuilt in four platforms, but she had stated that the northern retaining wall originally extended further out. The levels for the upper and main platforms were obtained from two stones believed to have been still in their original positions. They were pointed out and it was stated that they were the only two stones found in position. One of them was on edge, and now forms part of the facing of the bay in the top platform. The level for which was derived from the upper edge of the stone. The other stone was found in a horizontal position three feet to the east of the first, and served as the datum level for the main platform. The levels of the other two platforms were derived from description. The southern boundary of the lowest platform was established from a line of stones which appeared to have fallen down and since lain undisturbed (Apple 1966:Appendix AA2).

Next to locating the north end of the Great Wall and the Hale-o-Keawe proper the most significant statement, on what little exploration into the platform that was conducted by Mr. Wall, is found in the seventh and

eighth paragraphs, even though the informants disagreed on what they thought the feature was. The two paragraphs are quoted in full below:

> Regarding the passage adjoining Hale o Keawe, there was lack of agreement in the accounts of the engineer and foreman. The former stated that two of the natives claimed that it was ancient and one that it was modern. The engineer also stated that after the removal of the loose overlaying stones, an original pavement was found with base stones of walls showing on each side.
>
> The foreman stated that the passage was built along the line of what appeared to have been a paved path almost level with the ground. The original pavement was composed of large, flat stones, with smaller stones wedged between. His grandmother had stated that this path formerly continued more to the west. The present pavement was built up higher for the convenience of visitors. The small wall composing the southern border of the passage was built on the base of what seemed like a former wall. The height of the rebuilt wall was surmised (Apple 1966:Appendix AA3).

Whether or not this was a passage is of no importance at the moment. What is important is the fact that the engineer "...stated that after the removal of the loose overlaying stones, an original pavement was found with the base stones of walls showing on each side" (Apple 1966: Appendix AA3). I believe this to be a portion of the original paving of the platform in front of the temple which was described by Reverend Ellis in 1823 as follows: "...The pavement is of smooth fragments of lava, laid down with considerable skill" (Ellis 1979:110).

The foreman in 1902 described it this way "...The original pavement was composed of large, flat stones, with smaller stones wedged between..." (Apple 1966:Appendix AA3). These two statements and the general scale provided by the Ellis drawing (Figure 17) would tend to put the level of the total platform on the inland side 12 to 18 inches above the present ground level (ground level at the present entrance is between six and seven feet above sea level -- see Figure 4).

The other statement of importance to the interpretation of the 1902 reconstruction, and to the location of the Great Wall, is found in the following statement: "...The small wall composing the southern border of the passage was built on the base of what seemed like a former wall" (Apple 1966:Appendix AA3). The small wall is here interpreted as wall Z, as shown on the Figure 4. The foregoing quote can be interpreted to include wall Y; however, I prefer it to mean only that area which would be equal to the actual end of the north facing wall. Wall Y appears to be a new face -- besides, it is facing the wrong direction.

1823 - Visit by Reverend William Ellis

In 1823, only four years after the overthrow of the ancient Hawaiian kapu system of religion, Reverend William Ellis and party visited Honaunau while making a survey for missionary sites. Unfortunately for Reverend Ellis, but fortunately for posterity, he drank some of the brackish water used by the local inhabitants and became ill. As a result, he stayed in and around Honaunau several days providing ample

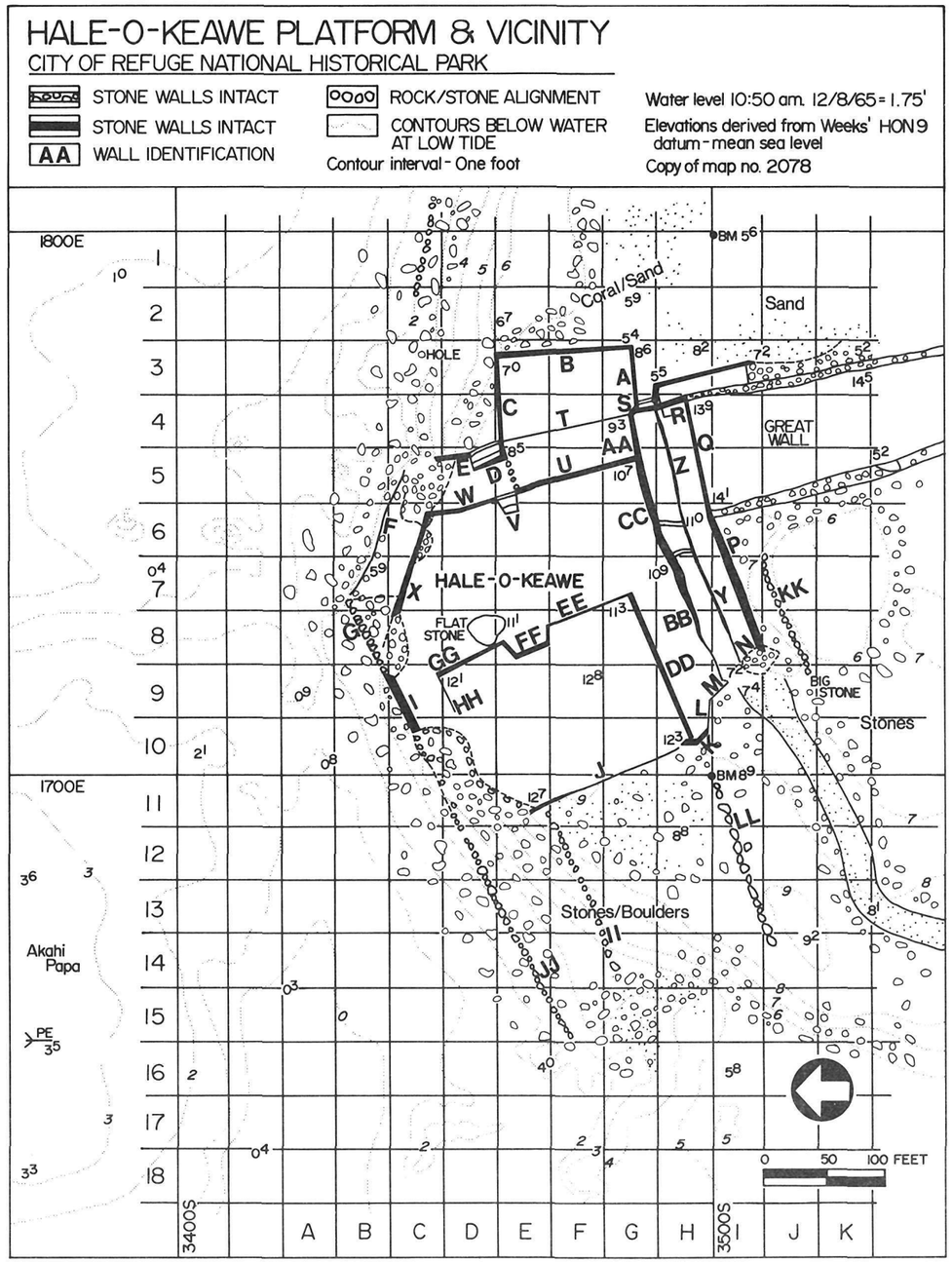


Figure 4. Map of Hale-o-Keawe Temple Platform before 1966-1967 Restoration.

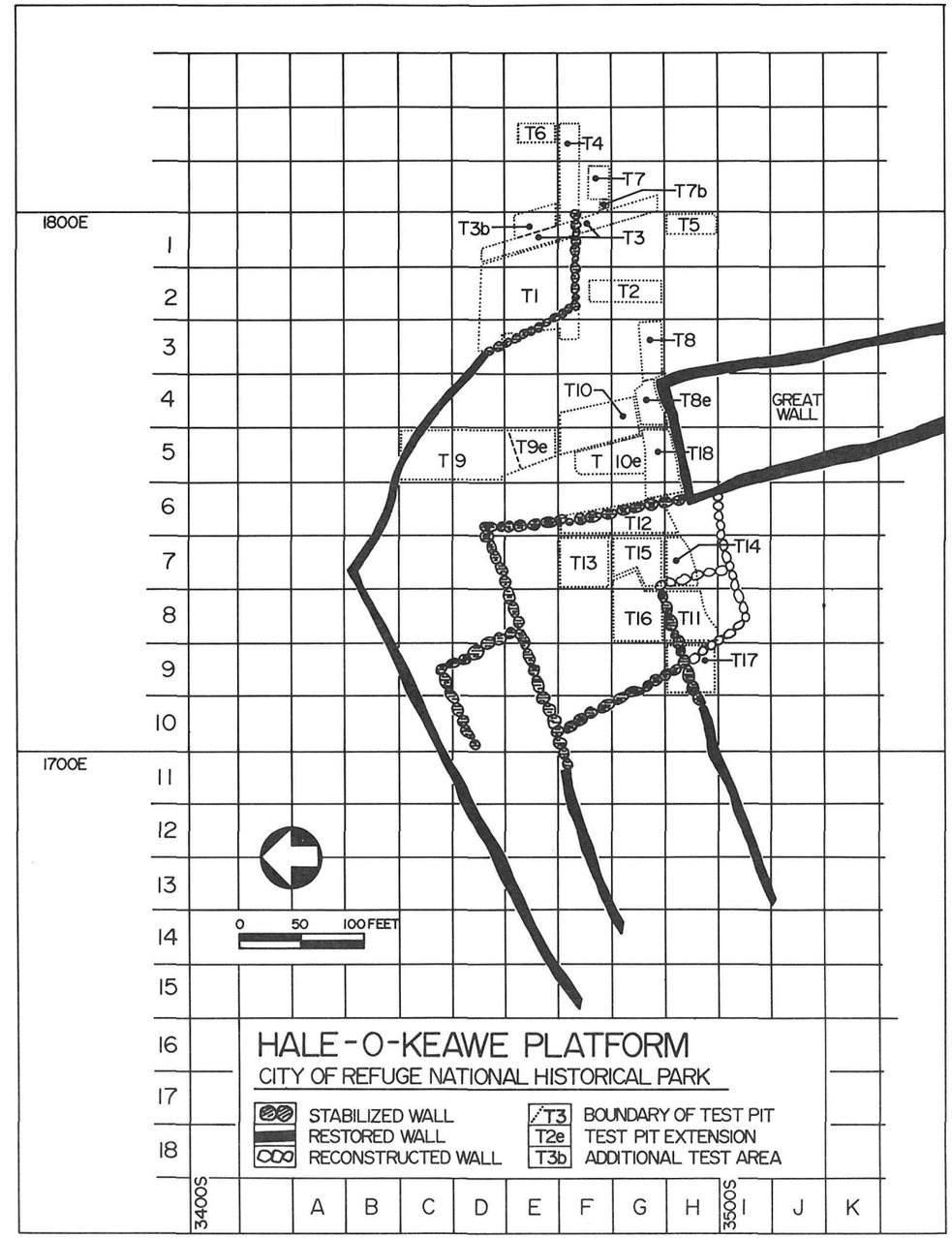


Figure 5. Map of Hale-o-Keawe Temple Platform after 1966-1967 Restoration.

time for making a survey of the pu'uhonua and making sketches of the now famous Hale-o-Keawe temple. Since Ellis was the first to see and describe the site in writing without the influence of any other earlier documents, his observations are unbiased and are considered to be the most accurate.

The following quotation is from the Journal of William Ellis, 1979 edition, brackets and underscoring supplied. The full section specifically relating to Honaunau is appended (see Appendix 2).

> The form of it [the pu'uhonua enclosure] was an irregular parallelogram, walled up on one side and at both ends, the other [side] being formed by the sea-beach, except on the northwest end, where there was a low fence. On measuring it, [the enclosure of the pu'uhonua] we found it to be 715 feet in length, and 404 feet wide. The walls were twelve feet high and fifteen thick (Ellis 1979:114).

The interpretation of the foregoing paragraph from Ellis, in light of the 1902 restoration of the Great Wall and the Hale-o-Keawe temple, must be based on one assumption -- that Mr. Wall made little or no modification of the general location of the Great Wall and that the basic outline and form of the present Great Wall enclosure is nearly the same as when seen by Ellis in 1823. If the foregoing assumption is acceptable, then we must interpret Ellis on the basis of the present conditions and location of the Great Wall, the place of refuge, and most importantly the location of the Hale-o-Keawe temple site.

According to Webster's New World Dictionary (Guralnik 1972:1030), a parallelogram is a plane figure with four sides whose opposite sides are parallel and equal. Ellis states that the place of refuge was in the form of an irregular parallelogram. I believe that it can be plainly seen on Figure 6 that the one side of the parallelogram, which is walled, cannot be mistaken for any other than the great east wall. The other side, according to Ellis, was formed by the sea-beach, part of which can still be seen, although I admit that the beach line may have been washed back as much as 30 feet since Ellis saw it in 1823.

One end of the irregular parallelogram is formed by the present south wall (A-2 on Figure 6) which, at the moment of this writing, is 357 feet long (about 50 feet of the original foundations are still visible, extending toward the west). The opposite end, in relation to the south wall, would have to have been near the Honaunau Bay side of the enclosure. There are no traces of the other walled end, but since Ellis states this to be "an irregular parallelogram" this end of the parallelogram need not have been a single continuous wall.

Also, in another place, Ellis states, "This [the enclosure] had several wide entrances, some on the side next to the sea, the others facing the mountains" (1979:113). The side next to the sea is here interpreted to mean facing Honaunau Bay. Therefore, one side and one end of the original parallelogram (Walls A-1 and A-2, Figure 6) form the present refuge enclosure; the sea-beach, a portion of the other side, is also noted but no trace of the low fence could be found. The fence, we assume from the context, was wooden. If so, this may have been the

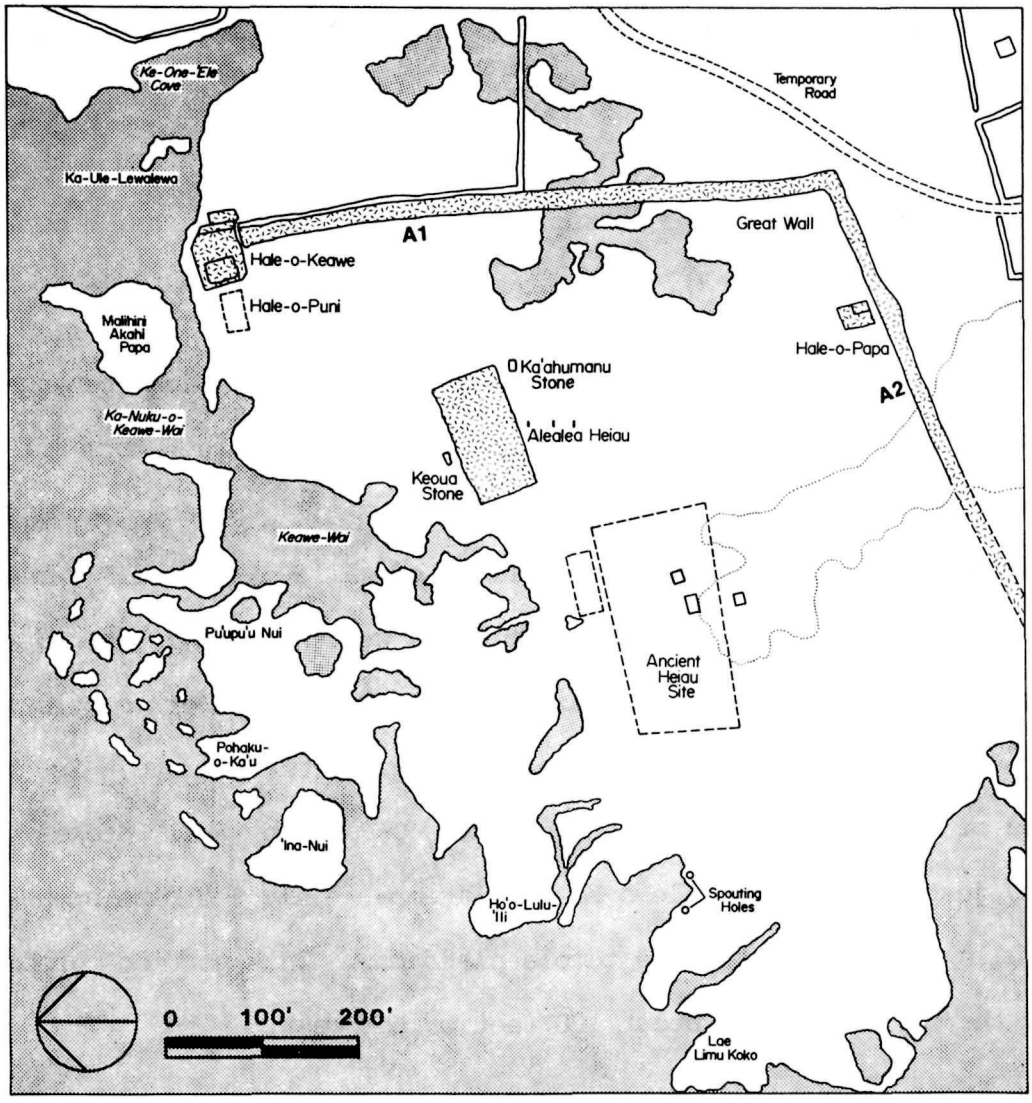


Figure 6. Map of Pu'uhonua o Honaunau.

"image holes" located about 100 feet west of the Hale-o-Keawe. The other end needed to complete the irregular parallelogram, opposite the present south wall (A-2) has been destroyed by high seas, and later the walls were robbed for the construction of the animal pens as shown on the map by Lyman (Figure 7).

Furthermore, since Ellis states that there were several wide openings on the side next to the sea and since he said it was in the form of an irregular parallelogram, I suggest the following: the end opposite to the south wall was formed by two sections of walls -- one wall extended from the 'Ale'ale'a temple site toward the west wherein it joined and cornered with another wall extending southward. The other section of wall, to complete the irregular parallelogram, I believe, is that portion of the site designated as the "Hale-O-Puni" by Wall, Stokes, and others, just west of the Hale-o-Keawe platform. Only the base stones of the walls remain and abut the temple platform. This portion probably joined the "...low fence" about 100 feet to the west.

Also note that in the description of the place of refuge Ellis says, "Adjoining the Hare o Keave [Hale o Keawe] to the southward, we found a Pahu tabu (scared enclosure)..." (1979:112). One of the conclusions I have reached, after reviewing the original documents and the historical interpretation by Mr. Apple -- which is supported by an on-site "find" --is that Ellis or the typesetters made an error of 100 feet; i.e., "On measuring it [the enclosure], we found it to be 715 feet in length, and 404 feet wide..." (Ellis 1979:114). Based on the foregoing interpretations of what Mr. Wall did and saw in 1902 and as it was seen

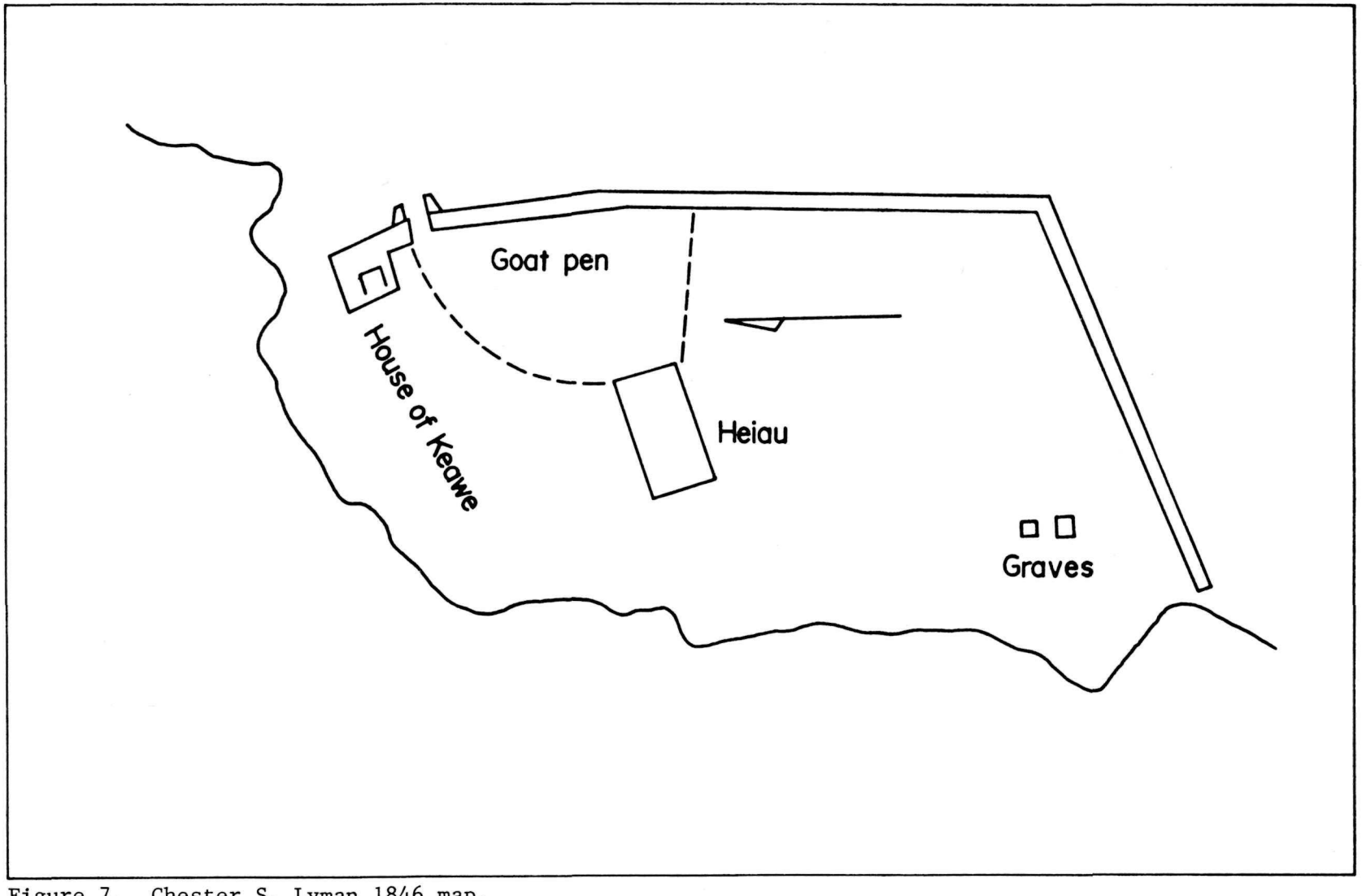


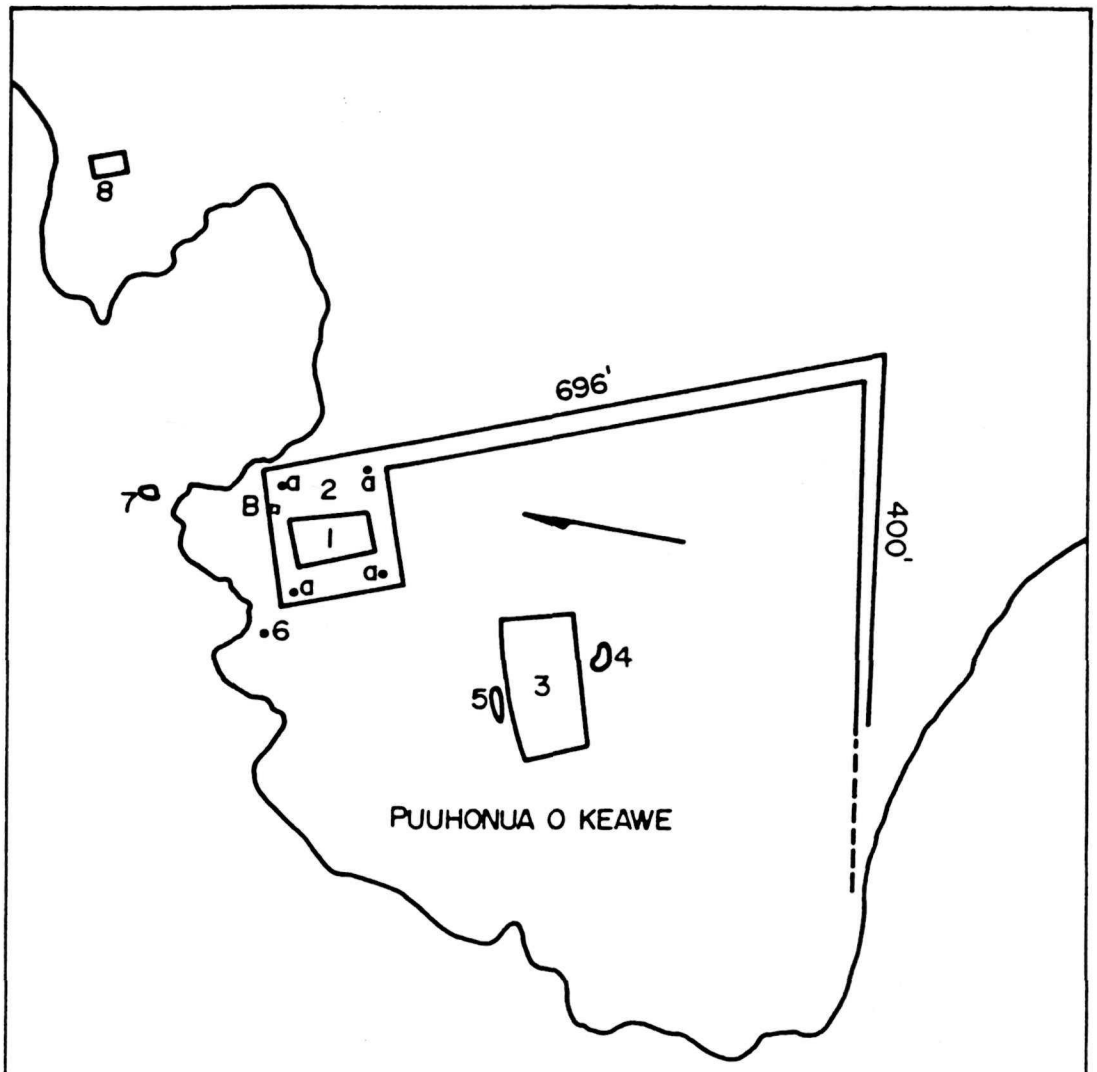
Figure 7. Chester S. Lyman 1846 map.

by Reverend Ellis in 1823, I believe this should read "...we found it to be 615 feet in length, and 404 feet wide..." because Ellis was measuring the inside of the enclosure and not the outside face as all others seem to have done, including Lyman and Hitchcock (see Figures 7 and 8). If he was measuring the enclosure, then 615 will be noted as ending near the southern edge of the present platform identified as face BB on Figure 4, which is also near the south side of the so-called Hale-o-Puni. In addition, all of Reverend Ellis' other measurements check out.

Since there is an apparent error, various authorities following Ellis have attempted to reconcile their measurements by suggesting that Ellis included in his measurement of the Great Wall the total platform of the Hale-o-Keawe. Others have even suggested that due to natural catastrophes, such as tidal waves, earthquakes, land subsidence, or rise of the ocean level, the site of the temple was washed back and that the original platform was nearly out on Akahipapa Island.

I agree that there has been some change in the coast lines, but I believe it had little or no effect on the Hale-o-Keawe site. As a matter of fact, the last-named feature, Akahipapa Island, is probably what has kept the temple site from being completely obliterated; even in some of the roughest high seas seen in many years, it has acted as a barrier for the site.

For example, Mr. Henry Hua, the park maintenanceman, reported to me that in 1960, when Hilo was devastated by a tidal wave, he and his brother-in-law were at Kealakekua Bay, four miles north of the park, where they saw the wave rise over the top of the wharf (see Figure 9). Since they



(1) Hale-o-Keawe
(2) Heiau about 100 foot square partly washed away about 6 feet above sea level.
(3) Heiau 125 x 60 x 8
(4) Stone 6 x 10 x 2 ft. front end is propped up, Kaahumanu.
(5) Keoua's rock 13 ft. 3.3 at shoulder, 2.5 at head 2 ft. at foot.
(6) Where Kamehameha is said to have landed.
(7) A long pole was fixed in a sunken rock, a point of safety.
(8) Site of old royal residence.
(a,a,a,a) idols were always kept in these positions.
(B) A deep hole under cover stone 1 ft. thick and 6 ft. in diameter, bones were found in it after sea washed away the facing wall.

Figure 8. D. H. Hitchcock 1889 map.

Figure 9. Wharf at Napo'opo'o completely covered by tidal wave in 1960. (Photo taken in 1963.)

Figure 10. High seas damage at Hale-o-Keawe. (Photo taken in 1964.)

left a friend sleeping in his car on the beach at Honaunau, they rushed back to find him standing on the beach. I feel that if there was ever a tidal wave big enough to completely destroy the Hale-o-Keawe, nothing else would be left standing -- not even the Great Wall or the Alealea temple. There have been suggestions by others (Emory 1957) that a tidal wave did destroy the western end of the Alealea but there are no eye-witness accounts. High seas, as experienced in 1964 (see Figures 10 to 16), could have done just as much damage. During this period of high seas in 1964, the Hale-o-Keawe was little affected (see Figures 10 and 16).

If the foregoing arguments are acceptable as to the location of the Hale-o-Keawe, and there was an error made in the basic document (615 feet instead of 715 feet), as supported by on-site observations and measurements, we can now examine in more detail the information at hand on the actual features of the temple platform itself. Again, we must rely on the description by Ellis and the sketches by Ellis (Figures 17 and 18) and Dampier (Figure 19). (For reference purposes, the following differences between the two Ellis drawings are tabulated: the 1825 Boston edition <u>dces</u> <u>not</u> <u>show</u> images on the fence; a canoe in the background; a "human" figure in front of the temple; the two C-mouthed images in back of the temple; the stick standing at the corner of the fence; the image on the shore, right side, at an angle; or an image under the tree at the north face of the Great Wall.)

Regarding the drawings, there is general agreement by all concerned that the representation is the Hale-o-Keawe, although the renditions of each

Figure 11. High seas and 'Ale'ale'a Heiau. (Photo taken in 1964.)

Figure 12. Same view as Figure 11 during normal seas. (Photo taken in 1964.)

Figure 13. High seas and 'Ale'ale'a Heiau. (Photo taken in 1964.)

Figure 14. Same view as Figure 13 during normal seas. (Photo taken in 1964.)

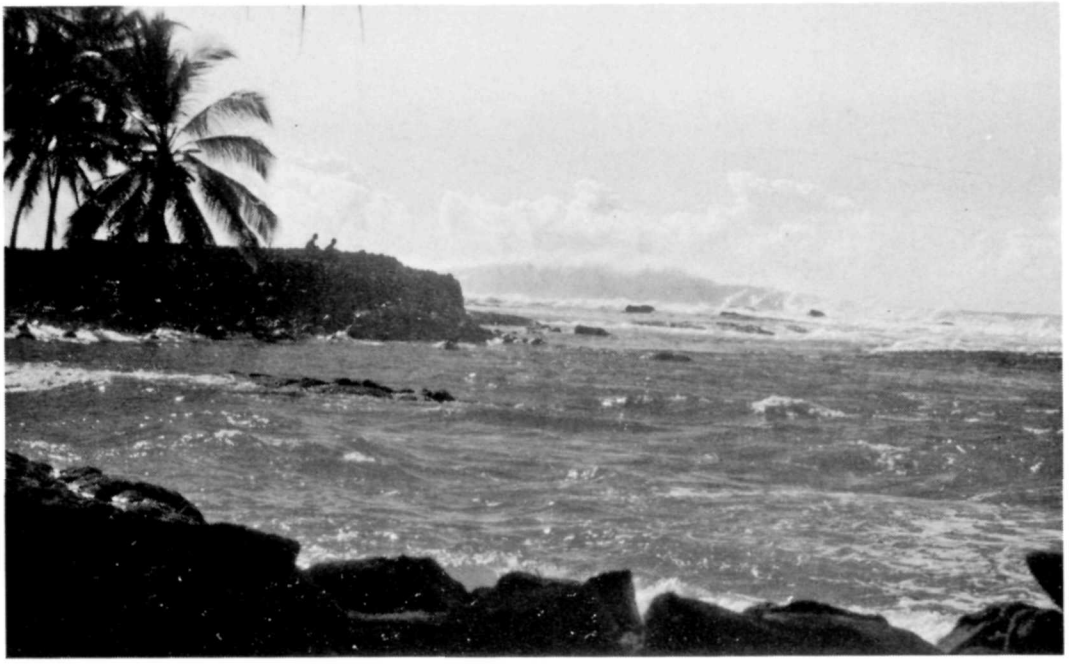


Figure 15. High seas and Hale-o-Keawe. Note the incoming waves are less than 1,000 feet away and are well over thirty feet high. Also note Akahipapa Island in right center. (Photo taken in 1964.)

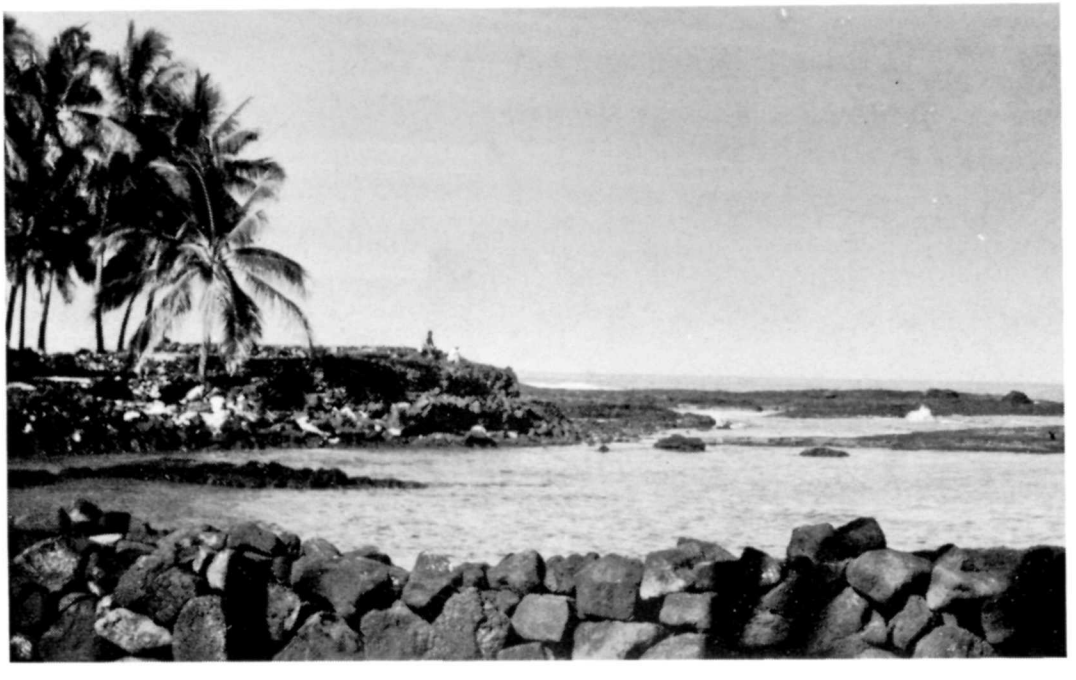


Figure 16. Same view as Figure 15 during normal seas. (Photo taken in 1966.)

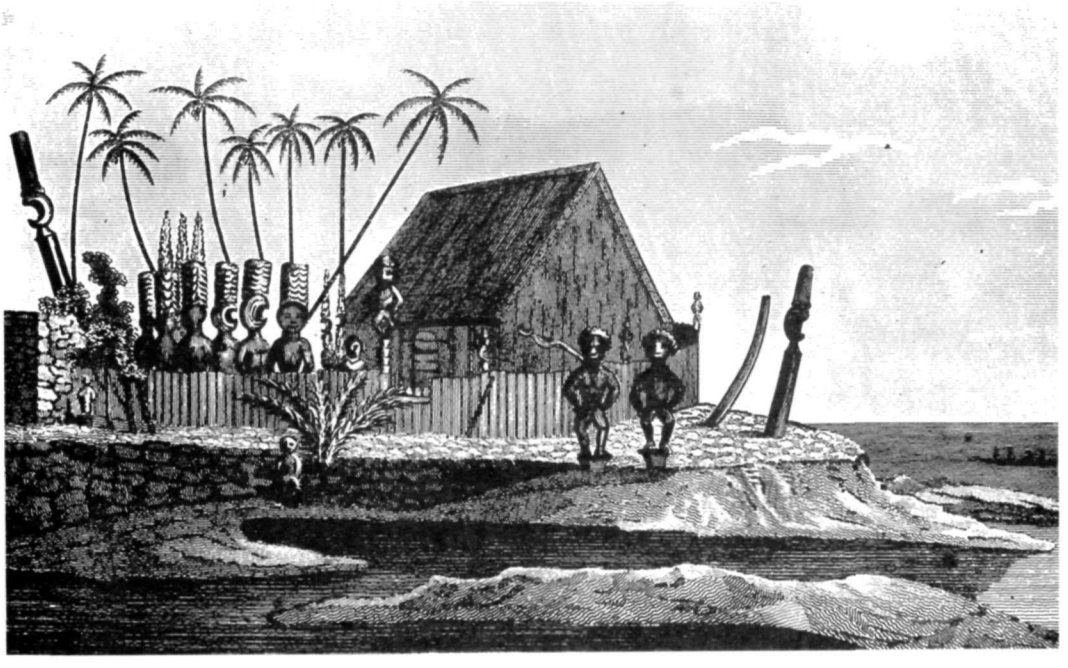


Figure 17. Engraving (after Ellis 1823 sketch) of Hale-o-Keawe in a London edition of 1826.

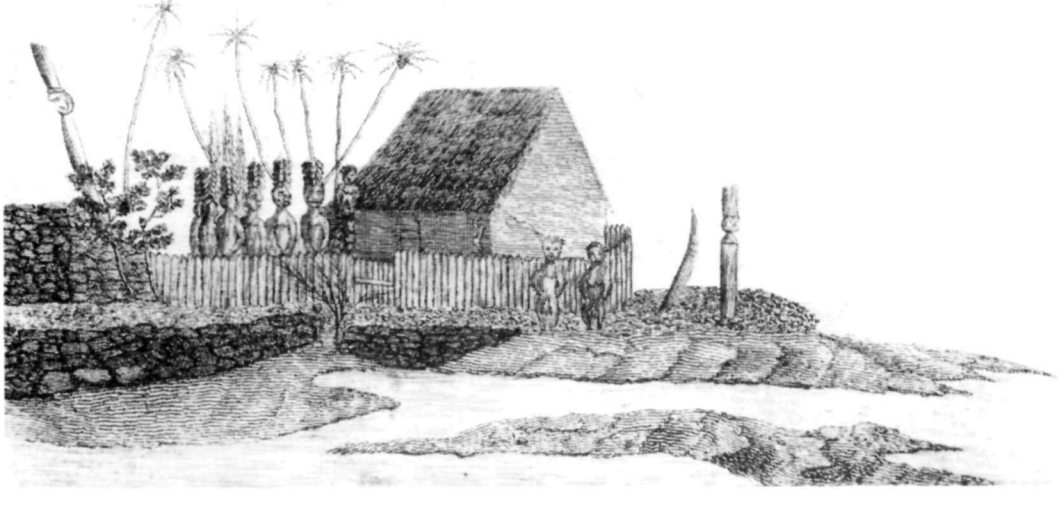


Figure 18. Engraving (after Ellis 1823 sketch) of Hale-o-Keawe in a Boston edition of 1825.

Figure 19. Engraving (after Dampier 1825 sketch) of Hale-o-Keawe in a London edition of 1826.

are not only from different views but are of different artistic styles. Apple (1966) accepts both of these drawings and shows the general area from which the artists viewed the site. I agree and accept both drawings. The Dampier drawing further supports my thesis as to the location of the site — see Figure 19 and note that the Akahipapa Island is shown in the background.

I am familiar with other source material dealing with the measurements of the Hale-o-Keawe itself. However, I prefer to rely on the original document as the base and support Ellis with on-site observations and measurements.

In the following quote from Ellis, only the sections dealing specifically with Hale-o-Keawe are cited with underscoring provided:

> It is a compact building, <u>twenty-four feet by sixteen</u>, constructed with the most durable timber, and thatched with ti leaves, standing on a bed of lava that runs out a considerable distance into the sea.
>
> It [the house] is surrounded by a strong fence of paling, <u>leaving an area in the front, and at each end about twenty-four feet wide. The pavement [in the palisade] is of smooth fragments of lava, laid down with considerable skill</u>.
>
> Several rudely carved male and female images of wood were placed on the outside of the enclosure; some on low pedestals under the shade of an adjacent tree, others on high posts on the jutting rocks that hung over the edge of the water (Ellis 1979:110).

To my knowledge there is no disagreement as to the size of the house. It is about four fathoms long and three fathoms wide, which was the general measurement for house construction according to Dr. Kenneth Emory (personal communication). The interpretation of the next point is troublesome because various people who have read the Ellis report and other early descriptions agree, just as they disagree on the measurement of the wall. I, hopefully, am interpreting this as the original author intended.

The Hale-o-Keawe house proper (kahua hale) was probably only slightly larger than 16 by 24 feet and was probably slightly elevated above the paved courtyard; i.e., the floor level was probably higher. The fence of paling completely enclosed the courtyard of undetermined dimension, but probably about 24 feet in front of the house and much less at either end. The fence of paling was probably low in the front with very high poles in the back. The courtyard was paved with smooth stones. Outside the fence of paling to the edge of the total platform (to the water's edge to the north, and to about wall B to the east and wall BB or vicinity on the south) there was a space of about 24 feet (see Figures 4, 17, 18, and 19).

In 1846, 23 years after Ellis and 56 years before Wall, Chester S. Lyman visited the site and made the following notations, underscoring and brackets provided:

> We reached Honaunau a little after 12, and first made a survey of the remains of the old Pahonua or City of Refuge. The walls [of the pu'uhonua] are yet quite entire, and the stone foundation of the

> 'House of Keave' with most of the wooden palisade which encompassed it on the west and north sides. The whole platform on which the house stood we found to be 50 feet by 50 -- The house, 24 feet wide, occupying the west side (Lyman 1846:21).

See Figure 7 for a copy of Professor Lyman's map as prepared by R. A. Apple.

I have no doubts as to the fact that Lyman saw the remains of a wooden palisade. However, the location of the palisade on his map does not fit his own description as quoted above, nor does it correspond to the drawings by Ellis and Dampier. Lyman shows the fence to be outside "...the whole platform on which the house stood..." which he said was 50 by 50 feet; if I am interpreting the underlined portion correctly, the wooden palisade was on the north and west side of the stone foundation of the "House of Keave" and not the whole platform. He gives only one dimension for the house. Lyman's drawing showing a gate to the south in the Great Wall fits no other description. It is the opinion of this author that he was trying to reconcile the Ellis measurement of 715 feet, especially since he states:

> We measured the wall from the entrance at the south end of the platform of the house, and found the east side to be 600 ft. and the southern 400. Mr. Ellis gives the length at 715, which must have been measured from the extreme northern limit of the foundation of the house at the water's edge...(Lyman 1846:21)

Lyman says nothing about the gate being so many feet south of the house platform. He simply states "from the entrance at the south end of the platform," which further leads me to believe that his map was drawn from notes upon his return to Yale or wherever and, therefore, is inaccurate.

On the other hand, D. Harvey Hitchcock, who in 1889 made a map of the pu'uhonua (Figure 8) and which Apple (1966) rejects, is probably more nearly accurate. Hitchcock does not attempt to interpolate the lines of the walls, and his measurement on the outside face is only a matter of a few inches in error from the present measurement -- he measured the east wall at 696 feet and the south wall at 400. It is true he may have been interpreting historical information for other features and details, but the location and dimensions of the total platform more nearly conform to what has been formerly described.

In view of the foregoing, it is generally agreed that with the information on hand a reasonably accurate restoration and reconstruction can be achieved. It is also generally agreed that both the Ellis and the Dampier drawings are acceptable, even though Dampier may have taken a few artistic liberties and Ellis' engraver stylized the drawing somewhat. Also, Apple (1966) and others have accepted the Ellis drawing for general scale. Therefore, since there is general agreement on the data, the first bit of concrete evidence on the location of not only the site but one of the images is here presented as further support for the location of the Hale-o-Keawe site as described by Ellis in 1823.

The reader is asked to note the image in the foreground in both the Ellis and Dampier drawings (Figures 17, 18, and 19); there seems to be

no disagreement that this image is the same in both drawings. Both Dr. Emory and Superintendent Apple agree that this image is about 2 or 2-1/2 feet tall (personal communication), which provides the general vertical scale for the other figures and features. Noted on Figure 4 in grid square C3 labeled H, is an image hole in a large boulder (see Figures 20, 21, and 22). This hole was located in the course of investigation in preparation for the excavation and stabilization project. I believe this is the hole in which Ellis and Dampier show the small image in front of the seawall. Admittedly, the boulder weighing five or six hundred pounds could have been moved by natural forces or by the county workmen in the 1920's when the seawall was constructed, but the chances for its landing in this position are unlikely.

Based on the foregoing information, though in some cases perhaps inadequately presented, the following important conclusions were reached prior to the archeological investigations and served as guidelines for further investigations:

1. Even though the Hale-o-Keawe site and the north end of the Great Wall was a heap of stones, Mr. Wall recognized the location of the platform and the <u>end</u> of the wall. The present <u>location</u> of the site is determined to be accurate.

2. The reconstruction was based on one informant's story and two stones which were <u>suspected</u> to be in the original position. The upper restoration -- in four levels -- is inaccurate.

Figure 20. Gilbert M. Tanaka holding meter stick in image hole believed to be hole in which Ellis and Dampier show small image. (Photo taken in 1966.)

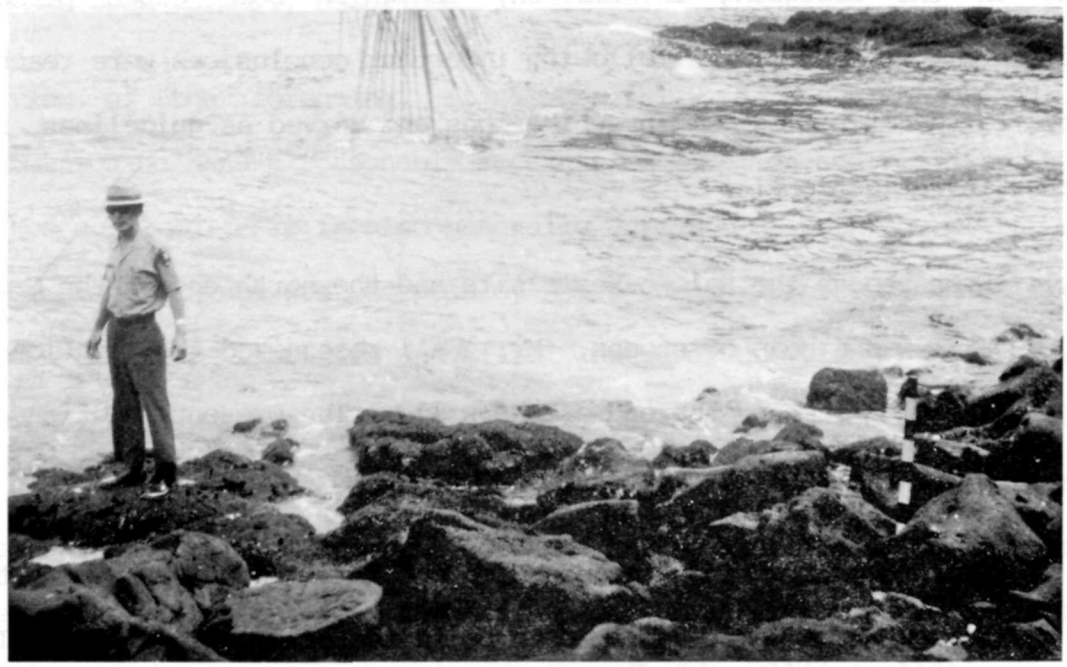


Figure 21. Gilbert M. Tanaka standing on shoreline at low tide and meter stick in image hole. (Photo taken in 1966.)

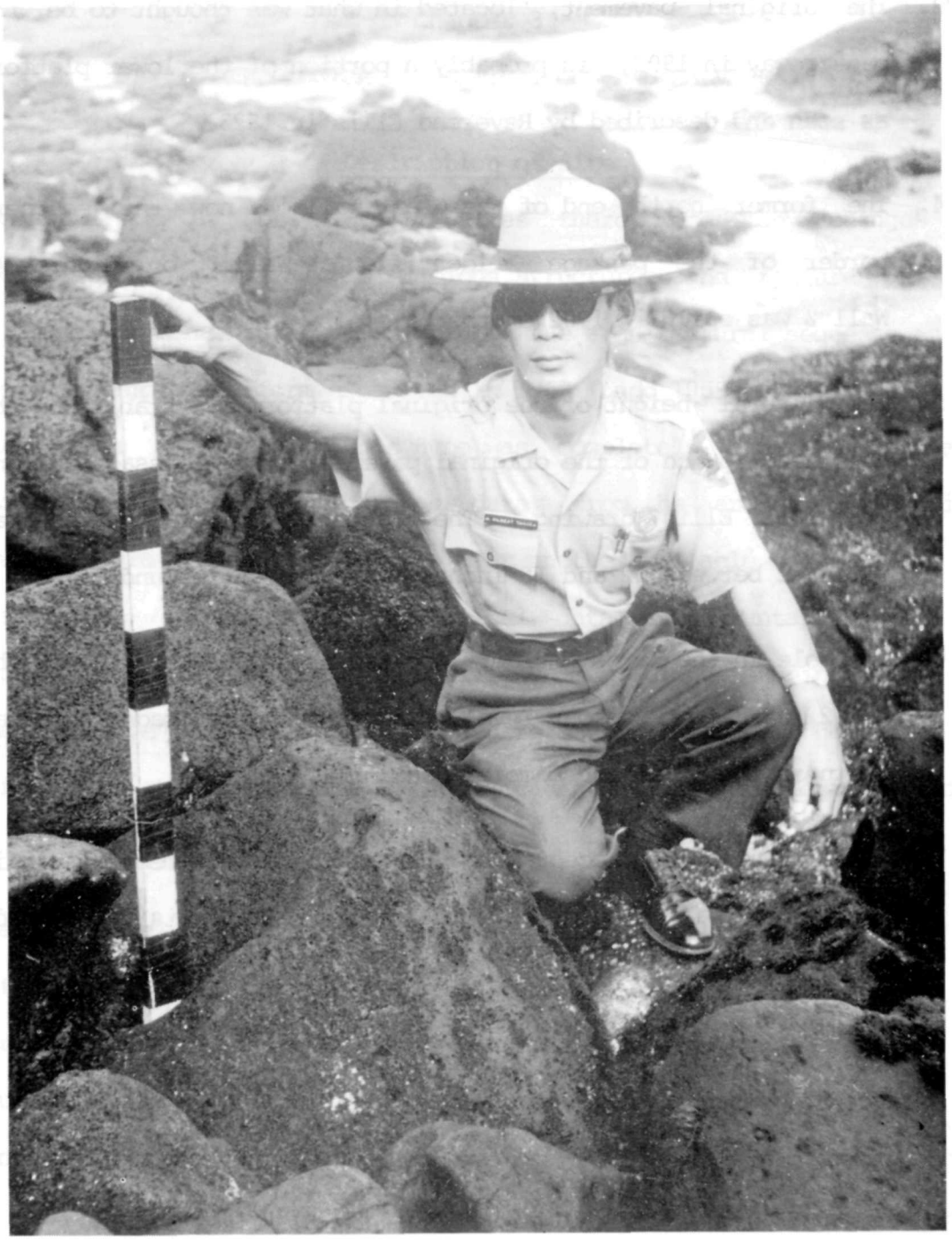


Figure 22. Closeup of image hole. (Photo taken in 1966.)

3. The original pavement, located in what was thought to be the passageway in 1902, is probably a portion of the lower platform as seen and described by Reverend Ellis in 1823.

4. The former north end of the Great Wall is now the southern border of the passage -- identified as Wall Z on Figure 4. Wall Z was built in 1902 on the base of a former wall.

5. The general height of the original platform is established by the description of the original pavement in the passageway and the 1823 Ellis drawing. The latter provides the general scale at between 12 and 18 inches above present ground level.

6. The hole in the large boulder, located in grid square C3, on the 2-1/2 or 3 feet contour level, is probably the image hole as shown in the Ellis and Dampier drawings.

7. If conclusion 6 is acceptable, then Ellis' measurement of 715 is an error; it should be 615 feet. (This is an inside measurement.)

Chapter 3

ARCHEOLOGICAL INVESTIGATIONS AND SALVAGE

Description of Site

Undoubtedly, in pre-historic times there were many changes and modifications made in the various structures and features in the pu'uhonua at Honaunau as discovered in the architectural sequence in the Alealea temple platform excavated in 1963 (Ladd 1969a). This was the first time a temple of this type was completely and systematically excavated in Hawaii. These new data, from the archeological field studies, are being brought to bear on the available historical and traditional data. The historical data are tantalizingly and frustratingly incomplete. In addition, much light is being thrown on the relative chronology of structures and features in the Place of Refuge, on the background of native traditions and genealogical records as collected and compiled by the Bishop Museum research staff.

The pu'uhonua, of which the Hale-o-Keawe temple platform is a part, is situated on a very ancient tongue of lava extending into the ocean. It forms the south shore of the very beautiful bay of Honaunau. Along the southern shore of the bay are two small sandy beaches suitable for landing canoes. There are also some brackish water springs at the head of the bay -- the cove is referred to as Kapuwai (forbidden water). This sheltered bay with its canoe landings and a ready source of potable water made this a highly coveted section of the Kona coast, especially for the fishing people of the coastal areas.

Here is where the high chiefs established their place of residence, and as was the custom, one of these early chiefs set aside a small section of land as a santuary and a refuge. In addition, he established his temple to provide religious protection to one and all, who by accident or on purpose (which is not likely) broke a kapu punishable by death. The war refugees, older men, women, and children, as well as the vanquished warriors from the frequent wars, also found santuary and safety there.

As each chief gained power through warfare he would establish his own refuge and temple on a different site. In the case of the pu'uhonua at Honaunau, apparently from very early times, the chiefs simply reaffirmed an existing refuge and added their own personal power by constructing a new heiau or adding onto (modifying) an established temple. So, by 1819, when the kapu system of religion was abandoned, no less than three temples (the "old heiau", Alealea, and Hale-o-Keawe), each showing several phases of construction and architectural modifications, had been constructed. The construction phases of the Alealea temple, excavated in 1963, have been loosely correlated with the genealogical time scale and oral traditions relating to the pu'uhonua and its temples (Ladd 1969a; see also Barrere 1957).

The Hale-o-Keawe temple platform is known to have been "reconstructed" and modified twice before the present project. The first was in 1902 by Mr. W. A. Wall, a resident of Kona, and again in the 1920's by the County Parks and Recreation Department who had jurisdiction over the nearby picnic grounds. There are no written records of the latter work,

but two photographs do exist (see Figures 23 and 24). Figure 25 shows the remains of the sea wall as they appeared in 1966.

This restored heiau in 1966 was composed of four irregularly formed elevated platforms (see Figure 4), with a passageway into the pu'uhonua at the north end of the Great Wall. The south side of the passageway was formed by a low bench at the north end of the Great Wall. This bench extended westward at the same level as the paved section of the temple platform. The kahua hale was the highest elevation being nearly 12 feet above sea level; the lowest platform toward the east was 8 feet above sea level. Each succeeding level, from the kahua hale downward, was slightly less than one foot lower than the succeeding level.

The whole platform was constructed in the normal Hawaiian style; the outside face was veneered with medium to large size unmodified basalt blocks (15 to 100 pounds) constructed entirely without mortar; the surface fill on levels one, two, and four was composed of cobble size (2 to 15 pounds) stones. The third level was paved with smooth basalt boulders chinked with small stones.

The area in front of the temple (east side), extending to Keone-ele cove, is mostly sand and stones -- the last remains of the seawall constructed by the county some 40 years ago. In this same area, back from the shoreline, according to Stokes (Emory 1957) was the Hale-o-Lono (the house of the agricultural god, Lono). In back of the temple to the west, within the place of refuge, was a pile of stone which is all that remains of several ancient house platforms (not temples) that had been robbed to make a fence in modern times. There, too, Stokes was informed

Figure 23. County constructed sea wall at Hale-o-Keawe, ca. 1926.

Figure 24. County constructed sea wall at Hale-o-Keawe, ca. 1926.

Figure 25. Remains of county sea wall in 1966.

that this was the site of the Hale-o-Puni (Puni, it is assumed, was one of the Kahunas). Traces of two walls were noted. Both walls extend westward from the back of the temple; face LL, Mr. Stokes' Hale-o-Puni, faces south and the other face, face II, faces north. The remains of a third wall, face JJ, forms the seawall.

Since the platform was restored in recent times, it was in a good state of preservation. Only the north side, faces F, G, I, and X, had suffered some damage from high seas. The seawall, constructed by the county, was all but demolished; only portions of the foundations were visible. Several photographs taken in the 1920's show that not only was a seawall constructed but the level between faces W and E, F, and X, as well as the triangular space between faces C and E, was elevated nearly even with the top of face C, level one (see Figure 4 for location and identification of walls).

The walls exposed to the ocean (faces F, G, I, and X) were constructed of very large stones. Exposure of the two broken areas in faces G and I, showed that the inner fill was composed of loosely packed angular chunks of lava.

Excavation and Salvage [2/]

Armed with the foregoing historical data and on-site observations, the field investigations and salvage operations began on March 7, 1966.

2/ Editor's note: The reader should refer to Figures 4 and 5 and Table 1 when reading this and subsequent sections to help identify lettered walls and numbered grids.

The purpose of this excavation was to search out, locate, and re-establish any of the remaining prehistoric architectural features of the Hale-o-Keawe temple platform that had not been destroyed by man or nature. The existing structure was completely mapped and a ten-foot grid system was established. Each side or face of the existing platform was identified and labeled. Since Stokes made some preliminary test excavations in 1919, the maps provided by the Bishop Museum were consulted for guidance.

In general, the plan of the excavation was to establish test pits in strategic locations around the platform based on the above-mentioned Stokes' map and earlier descriptions by Ellis (1979) and Wall (1902), test trench through the higher platforms, and lastly, trace out and follow the footings of the walls to determine the nature of the foundations and construction. For purposes of complete control, although it was determined that there would be little or no stratified material, both horizontal and vertical controls were established (Datum zero at BM,I10). All measurements were in feet and tenths to conform to the earlier research. Artifacts, however, were measured in the metric system.

Stokes, on his map (see Appendix 3), showed a platform adjoining the Hale-o-Keawe to the east. This he labeled the "Haleolono." He showed the north side of this platform extending from my corner BC eastward to the nearby Keone-ele cove. He also showed the "location of former fence" along the east side of wall B, level one, as well as an area he

noted as "pavements level with ground." Therefore, the area just east and north of the lowest platform (walls B and C) was designated as test I.

Test I was first cleared of all loose stones which were washed ashore by the ocean from the now broken county seawall. Under the rubble there was a relatively level coral sand surface extending to the water's edge. Extending above the coral surface in grid D1 and E2 were two lines of stone that appeared to be intentionally laid. These were labeled features 1 and 2 (see Table 1 for a list of features).

Since features 1 and 2 appeared to be in a direct line to form the north wall of Stokes' "Haleolono," the area was completely and thoroughly examined. Upon excavation it was determined that these two lines of stone were in no way connected with a longer wall, but were probably random lines made during the county construction period.

Test I was extended westward, and at the same time a trench, test III, was extended toward the southeast in line with feature 2. Approximately 12 feet south of where Stokes locates the north face of his "Haleolono" in grid F1, the base of a north facing wall was located, feature 3. Test III was extended another 15 feet on the other side of feature 3 in an effort to locate the opposite face with negative results. The fill immediately behind the wall was composed of angular cobble size stones and about three feet beyond the wall, the fill was composed of coral sand.

Table 1

List of Features

Feature Number	Grid Location	Description
1,2	D1/E2	Extending above the coral surface...two lines of stone that appeared to be intentionally laid...Features 1 and 2 appeared to be in a direct line to form the north wall of Stokes' "Haleolono"...probably random lines made during the county construction period.
3	F1/F2	North-facing wall...constructed of large, well-fitted waterworn boulders. The wall is one and two stones high and is 21 feet long with the foundation resting on pahoehoe. The west end is three feet from Wall B of level on in grid F2, and the east end is in grid F1.
4	D3/E2/F2	Adjoining Feature 3 at about a 45-degree angle, a line of waterworn boulders...traced from the base of Feature 3 to the northwest for about 15 feet under corner BC.
5	G8/H8	Well-constructed, south-facing wall with its foundation resting well below and into the sandy layer (5.1 feet below datum zero) but not on the pahoehoe surface...extends under walls K and J...lining up with what Mr. Stokes called the Hale-o-Puni.
6	E5	Below the rubble fill...a small section of wall, one stone high facing north...probably a portion of a construction wall.
7	G8/H8	Poorly constructed of small stones and... probably a prehistoric construction division wall...foundation rested on top of the sandy horizon.
8	G8/H8	Poorly constructed of small stones and... probably a prehistoric construction division wall...foundation rested on top of the sandy horizon.
9	B5/B6	Great Wall...foundations were traced to the edge of the water.
10	*	Located 6 feet inside platform from Wall J...Foundation extends below ground level. South end of this feature corners with Feature 5...Feature 10 is a 1902 wall...Abutting this feature, a short, north-facing wall...probably a construction wall.
11	H9/1	*
12	E8	A low but well-constructed east-facing wall... the foundation rested on top of the sandy layer.
13	C8	*
14	D8	Rectangular fireplace...well below the sand and rubble horizon.
15	G8/H8	Poorly constructed of small stones and... probably a prehistoric construction division wall...foundation rested on top of the sandy horizon.
16	*	*
17	G9	Short, well-constructed north-facing wall, two feet high...at 5.21-foot level...well below the sand and rubble horizon.
18	G9	South-facing wall at the 3.1 to 3.6-foot level...begins in Grid G9 and extends westward for 12 feet and corners directly under Wall J of the existing platform. It then extends northward, toward Wall II, for about 14 feet. It has an average height of 2.8 feet and is constructed of small stones...probably nothing more than an ordinary house platform.

Editor's Note: * = No data available at time of publication.

The north face of feature 3 was traced east and west from test III. Feature 3 was constructed of large, well-fitted, waterworn boulders. The wall was one and two stones high and was 21 feet long with the foundation resting on pahoehoe. The west end was three feet from wall B of level one in grid F2, and the east end was in grid F1.

At the west end of tests I and IV, in grids D3, E2, and F2, adjoining feature 3 at about a 45-degree angle, a line of large waterworn boulders, similar to those in feature 3, was located. It was labeled feature 4 (Figures 26 and 27). Feature 4 was traced from the base of feature 3 to the northwest for about 15 feet under corner BC. Three large stones in grid D4, which had been washed out of position in prehistoric times, were located in place at the northwest end. The total area of D4 and D3 was excavated down to pahoehoe surface for any other features that could be located. There were no other features, and there was no evidence to indicate that there was ever a fence along the base of wall B.

With the establishment of features 3 and 4, and since tests II, V, VI, and VII eliminated all possibilities of any structures or features in grids H1, F2, G2, and G3, the platform was trenched along the existing passageway in an attempt to relocate the pavement described by Wall in 1902 with negative results. However, two important conclusions were reached: First, the foundation of the north end of the great east wall, as seen and sketched by Reverend Ellis in 1823, was found <u>in-situ</u> under wall Z. The foundation, in contrast to the upper portion of wall Z, reconstructed by Mr. Wall, was composed of well-fitted, waterworn,

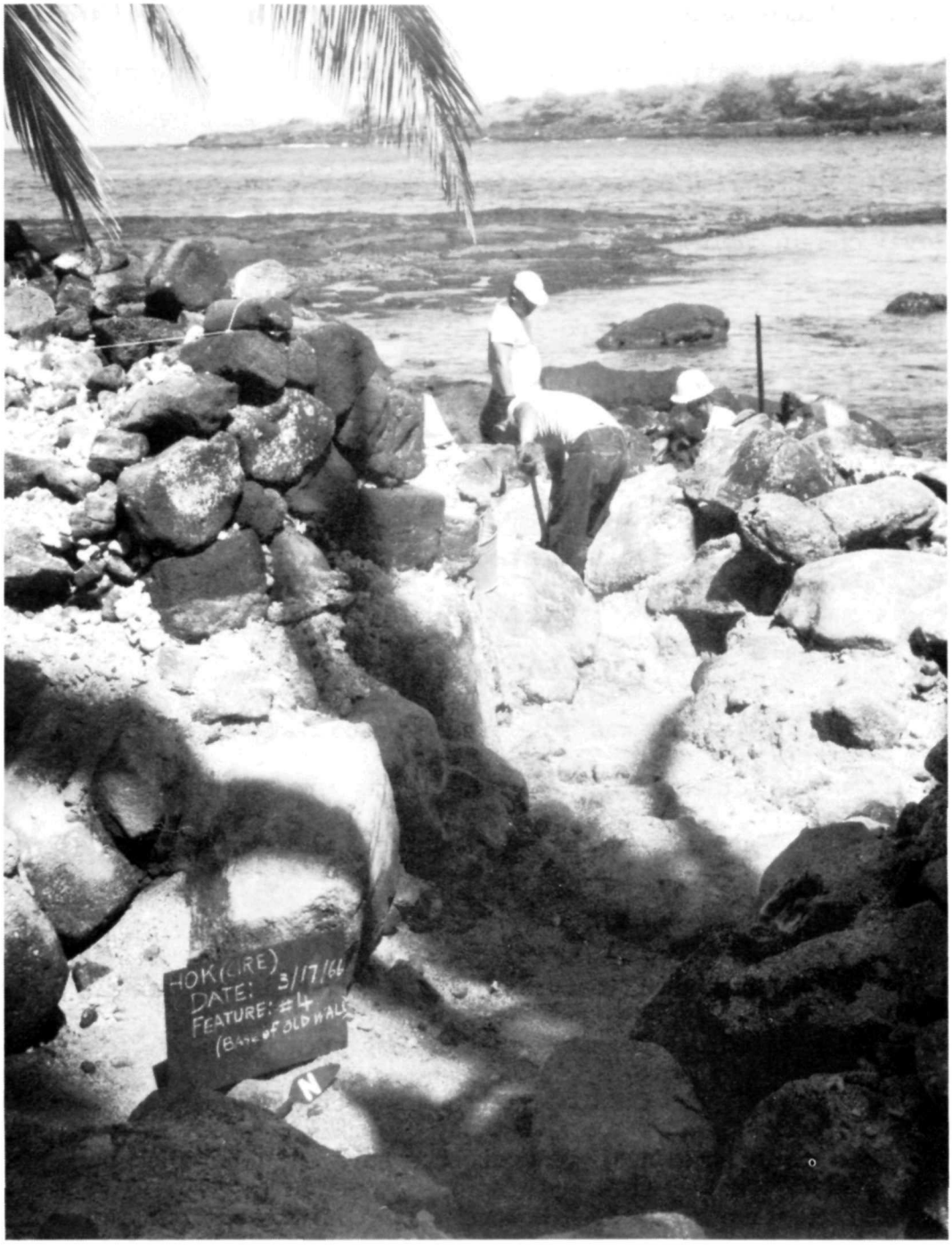


Figure 26. Feature 4, line of large waterworn boulders, during excavation. (Photo taken March 17, 1966.)

Figure 27. Feature 4 after stabilization and reconstruction of the wall. (Photo taken in 1967.)

unmodified, basalt boulders. It extended the full width of the Great Wall. Second, the Great Wall was found to extend northward toward the water's edge before it was incoporated into the platform of the Hale-o-Keawe temple. The foundation stones were in place and in line with the east and west face of the Great Wall.

At the same time that wall Z was being trenched, walls U, V, and W, forming the edge of the present paved level 4, were also trenched in an attempt to determine if this was in truth the fence and front of the house enclosure as shown in the Ellis drawing. It was found that the total length of the foundation rested on top of the loose rubble and fill stones of the Great Wall. There was no evidence that this wall abutted the north end of the Great Wall, wall Z, and, therefore, was probably not the front of the house enclosure. In grid E5 below the rubble fill, a small section of a wall, one stone high facing north, was located. This was probably a portion of a construction wall (feature 6).

In all tests in the platform, the top of the existing structure and the top of the underlying sandy layer (original ground level), were established in relation to datum zero. Due to the nature of the loose rubble fill, no levels could be maintained within this layer. However, the underlying "natural" sand and rubble layer was in most areas well defined.

With the exception of a few artifacts, nothing of architectural significance was located along the base of faces U, V, and W. This test, test X, in grids F5 and G5, was, therefore, extended toward the

inside face of the Great Wall (feature 9), which also turned out negative. The area just inside the west face of feature 9 and along the passageway in grids H6, G6, and F6 was excavated down to pahoehoe surface, again with negative results. In grids G8 and H8, however, features 5, 7, 8, and 15 were located.

Feature 5 is a well-constructed, south-facing wall with its foundation resting well below and into the sandy layer (5.1 feet below datum zero) but not on the pahoehoe surface. The east end, in line with this feature into grid G7, was excavated to see if feature 5 abutted the Great Wall. It ended near the corner of grid H7. The face was then traced westward. It extended under faces K and J of the existing structure and lined up perfectly with the south face of Stokes' "Hale-o-Puni," my face LL (Figures 28 and 29).

Features 7, 8, and 15 were very poorly constructed of small stones and were probably prehistoric construction division walls. The foundations of all three rested on top of the sandy horizon. At the south end of feature 7, just below the foundation, a layer of 'ili'ili stones were located. At this same level in grid G9 another layer of the same type stones was located. The water-worn stone layer was probably the original "beach," or it could have been a part of an earlier house site.

Since feature 5 extended under walls K and J, it became imperative that the foundation of wall J be tested. The total length was trenched, and it was found that this wall rested directly on top of the present ground surface (8.25 feet from datum zero - 8.86 at BM, I10). All of the

Figure 28. Stokes' Hale-o-Puni before 1966 excavations. Only a few stones were visible, near the base of the coconut tree in center, to show where wall was as excavated by Stokes. (Photo taken in April, 1966.)

Figure 29. Hale-o-Puni after the 1966 excavations. Feature 5, a south-facing wall, was stabilized and forms the southern boundary of the house level and paved courtyard. (Photo taken in 1967.)

northwest end had been destroyed by high seas. In grid F11 wall J went over wall II. To determine the nature of the fill, a test was made in F11 and F10. Six feet inside the platform from wall J, feature 10 was located. The fill between feature 10 and wall J was composed of loosely packed, angular lava and some chunks of coral. Also, in these same two grids, a short north facing wall abutting feature 10 was located. This was probably a construction wall. The foundation of the construction wall also rested on top of the present ground level, the same level as wall J.

Because of the difference in foundation elevation between wall J and feature 10 (the latter foundation extended below ground level) and since the south end of feature 10 cornered with feature 5, it was strongly suspected that wall J was a county constructed wall and feature 10 was a 1902 wall. It could not be conclusively established that Mr. Wall had reconstructed the back edge of the kahua hale on its original foundation; however, because the foundations were at different levels, the 1966 reconstruction was made on feature 10.

Wall J crossed wall II in grid F11. Since the foundation of wall II was below that of wall J, this north-facing wall was traced at ground level to the west. The foundation stones were, in contrast to the upper wall, constructed of better selected stones and, in general, were of better construction. The bottom of the foundation was almost at the same level as that of feature 5. Also, since this wall was suspected to be the north edge of the temple platform, its entire length was traced by following only the top most stones in the wall from grids F11 to D6.

Once the total length was determined, the test was carried down to the pahoehoe surface in a ten-foot wide test trench.

It was found, in test XXII, that feature 10 cornered with wall II in grid E10 at the lower level. There were some traces, however, of a later wall extending northward into grid D11. This latter portion was probably from the 1902 restoration period. A very low but well-constructed, east-facing wall, labeled feature 12, was located in grid E8. The foundation of this latter wall rested on top of the sandy layer (see Figure 30). In grid D8-1 at the 5.19- foot level, a very well-preserved fireplace was located. Composed of four standing slabs of lava with a natural square slab for a cover, it was about one foot from the base of wall II (see Figure 30). A sample of carbon was collected for analysis.

Perhaps the most important discovery in test XXII was the fact that the foundation of wall II abutted and cornered with the west face of the Great Wall forming the northern limits of the platform. Thus, with the completion of this test, all the major outlines and ground plan for the temple platform were determined. With the determination of the architectural ground plan, the structural history of the Hale-o-Keawe temple platform could be briefly summarized in terms of the local traditions and the present archeological field studies.

Structural History of Hale-o-Keawe Platform

The original occupation of the Honaunau area is unknown, but since the area provided several important features such as a well-protected bay,

Figure 30. Feature 14, fireplace, (under left hand of man in trench), at the 5.19 foot level, grid D8-1, Test XXII. End of string, toward center of photo, is at the base of Feature 12, (low, east-facing stone wall), and the top of the sandy original ground level. The fireplace is about one foot from the base of Wall II. (Photo taken in 1966.)

canoe landing, and a ready supply of brackish but potable water, it was undoubtedly one of the few areas that was occupied early -- just how early is uncertain. Only in relation to the establishment of the pu'uhonua do we find a clue. According to the genealogical accounts (Barrere 1957), the earliest high chief who could have established and maintained a pu'uhonua with its associated heiau was 'Ehu-Kai-Malino, circa 1475. Therefore, we must assume that the area had been occupied for some time before it became a religious center.

During the period before the establishment of the pu'uhonua, the area was undoubtedly only one of several coastal villages. More specifically, the site of the Hale-o-Keawe was at this time a house site. All that remained of the original domicile was a short, well-constructed, north-facing wall two feet high, labeled feature 17, in grid G9 at the 5.21 foot level. In grid D8, at about the same level as feature 17, is a rectangular fireplace, feature 14. A carbon sample collected from the fireplace may give a clue to the actual age. Both of these features are well below the sand and a rubble horizon indicating their relative antiquity. The latter feature cannot be misconstrued as a religious feature. It was a normal fireplace like those made and used today by local fishermen.

Directly over the fill of the original site were the remains of another platform wall. This was a south-facing wall at the 3.1 to 3.6 level; it was labeled feature 18. It started in grid G9 and extended westward for 12 feet and cornered directly under wall J of the existing platform. It then extended northward, toward wall II, for about 14 feet. It had an

average height of 2.8 feet and was constructed of small stones. This, too, was probably nothing more than an ordinary house platform. As compared to other surface features in the area, it is too large for a fisherman's shrine and too small for a "public" temple.

Since the buried platforms were incomplete and appeared to have been systematically dismantled and not destroyed by natural forces, it was assumed that when the area was abandoned as a regular house site, the stones from the platforms were robbed and used in the construction of the Great Wall enclosing the pu'uhonua. According to tradition, the Great Wall was constructed during the reign of high chief "Umi, circa 1500 (Barrere 1957).

At the same time that the wall was being constructed, the nearby Alealea temple platform was enlarged to its present proportions (Ladd 1969a). Then, sometime between A.D. 1600 and 1650, the Alealea heiau was abandoned as the major temple and the Ka-iki-alealea was constructed. (The introduction of a new name for the Hale-o-Keawe at this point is not to confuse the reader but will serve as an introduction to the subject of various names that have been given to this site. This is discussed further in the Remarks and Conclusions section of this report.)

Dorothy B. Barrere, in her 1957 report, gives two possible versions regarding the original establishment of the Hale-o-Keawe site. "There is no mention of the puuhonua at Honaunau in traditional history until the time of Keawe-ku-i-ke-ka'ai, four generations after 'Umi" (Barrere 1957:40-41). About 100 years later, allowing 25 years to a generation

as established by the Bishop Museum, "Keawe-ku-i-ke-ka'ai reconstructed the old puuhonua...and possibly the Great Wall" (Barrere 1957:41). This Keawe is also attributed, according to one tradition, with the building of the Hale-o-Keawe. However, Barrere (1957:41) tells us "...that the Hale-o-Keawe was built for Keawe-i-kekahi-alii-o-ka-moku, two generations after Keawe-ku-i-ke-ka'ai..." circa 1650. Whichever is the correct version may never be discovered. However, we do know that the temple platform of the Hale-o-Keawe was constructed sometime after the pu'uhonua was enclosed by the Great Wall, and by relative age is younger.

As stated on pages 48-49, the foundations of the Great Wall were traced to the edge of the water in grids B5 and B6. Although Mr. Stokes, in 1919, did not completely trench the Great Wall, he reached the same conclusion when he traced a portion of the east face in the passageway and along wall T.

When the original Hale-o-Keawe was constructed in prehistoric times, about 50 feet of the north end of the Great Wall was taken down to make room for the platform. To the west face of the Great Wall a low, elongated platform 29 feet wide and about 100 feet long was abutted making a low right angle turn from the Great Wall. This platform extended westward and was formed by walls II, LL, and features 5 and 9. The stones from the Great Wall were once again robbed to level this new platform.

The west face of the Great Wall (Feature 9) (Figure 31) formed the front or east edge of the temple platform. Unfortunately, the west end of the

Feature 31. West face of Great Wall, Feature 9. (Photo taken in April, 1966.)

platform formed by walls II and LL (Stokes, Hale-o-Puni) was completely destroyed by the ocean. To complete the platform, a seawall was constructed along the edge of the water incorporating the north end of the Great Wall (Figure 32).

The east face of the Great Wall was taken down to ground level and the large base stones were rolled over and became an open area to the edge of the ocean toward feature 4 (see Figure 33). Wall T of the reconstructed 1902 structure was built over the fallen east face of the original wall. Thus, the temple platform of the Hale-o-Kewawe was a very simple, low, rectangular platform with a lower elevated section extending toward the ocean to the west. This portion indeed may have served as a house platform for the Kahuna.

The elevation of the kahua hale and the enclosed courtyard was another problem. Whereas the ground plans and limits or boundaries of the platform were easily checked, the determination of the height of the platform was not as easy. Again, however, there was sufficient evidence in the ground to support my theoretical reconstruction, presented in the introduction of this report (see conclusions No. 2 and 5).

The first clue was a visual one found in the sketches. Two by Ellis in an 1826 and an 1825 edition and one by Dampier in 1825 (see Figures 17, 18, and 19). There is total agreement that these sketches, though differing in artistic style, are of the Hale-o-Keawe. The 1826 Ellis rendition has been used to provide a general vertical scale. Dr. Emory of the Bishop Museum agrees that the small image in front of the seawall on the water's edge is about two or two and one-half feet tall. This

Figure 32. Reconstructed ancient sea wall. (Photo taken in 1967.)

Figure 33. East face of Great Wall (immediate foreground). (Photo taken in 1966.)

puts the seawall at about three or three and one-half feet above the shoreline, and the top of the kahua hale and enclosed courtyard at about 8 feet.

Now the reader is asked to look at Figure 20. Park Guide Gilbert Tanaka is shown holding a meter stick in the hole which I believe is the original image hole shown in the Ellis and Dampier drawings. Note that the platform is nearly one meter too high and that the foreground showing the island of the Ka-ule-lewalewa most nearly approximates the foreground of the Ellis drawing.

The second clue was provided by Messrs. Wall and Stokes from the 1902 restorations. According to Wall,

> "...The levels for the upper and main platforms were obtained from two stones believed to have been still in their original positions. They were pointed out, and it was stated that they were the only two stones found in position. One was on edge, and now forms part of the facing of the bay in the top platform. The level for which was derived from the upper edge of the stone. The other stone was found in a horizontal position three feet to the east of the first, and served as the datum level for the main platform... (Apple 1966:Appendix AA2) (See Figure 34).

First the upper level, level 4 of the 1902 restoration, was determined by one stone standing on edge, so that the fill portion of the highest level was not disturbed but was elevated about 18 inches above the original surface. Second, level 3, the paved courtyard was also laid on top of an original surface, i.e., Mr. Wall did not disturb any of the

Figure 34. Hale-o-Keawe Platform as restored by W.A. Wall in 1902. Mother and child are using Wall's stone "on edge" as a seat and his stone in a "horizontal position" is in the immediate foreground. (Photo reproduced courtesy of Bernice P. Bishop Museum.)

underlying fill or the original structure. Therefore, from the on-site evidence discussed below, one of these stones was probably in its original position, while the other had been tipped on its edge. The level of the courtyard, level 3, as reconstructed by Mr. Wall was accurate, but the addition of a fourth level using the standing stone, which was probably a paving stone, was an error of reconstruction as was the construction of levels 1 and 2 (see Figure 35). (Level 2 may have been the county addition from the 1920's.)

From the present research we found two clues of which the first was structural. As stated on page 62, the front or east edge of the platform was formed by the west face of the Great Wall. In contrast to the east face, which was leveled, the very large stones in the west face were undisturbed (Figure 31). The top, or second line of stones in this wall, was nearly level just below the paved courtyard as reconstructed by Mr. Wall. If the courtyard had been originally lower, only the foundation stones would have been left undisturbed.

The second clue was stratigraphic. In test XX, grid F10 and F11, between wall J and feature 10, the fill was composed of loosely packed, small, angular chunks of lava. However, inside (east) of feature 10, in grid F10/1-2, and in test XXII, along the north-facing wall II at the +1.49 foot level (10.35 feet above sea level), a hard-packed, dark-soil layer 10.24 inches thick was found. This soil layer extended southwestward only to the vicinity of feature 10, northwestward to wall II, and disappeared near wall FF, the stone on edge, and in the vicinity of wall EE, and southeastward near feature 15. In grid F9/2-2, a heavy

Figure 35. Restored courtyard level. Wall's stone in a "horizontal position" is near the hat and his stone "on edge" is tipped and fitted into the pavement level, left immediate foreground. (Photo taken in 1967.)

concentration of charcoal and ashes were located, indicating a possible fireplace. A carbon sample was collected. There was an abundance of artifacts recovered from this soil layer. Since this layer was, in general, confined to what would have been the kahua hale, it is strongly suspected that this was the original house floor of the Hale-o-Keawe. (The house floor was apparently not paved.)

Bringing to bear all the above clues, we find that the level of the paved enclosed courtyard, as reconstructed by Mr. Wall, was nearly accurate even if it was based on the position of one stone suspected to be in its original position. Mr. Wall's error in reconstruction was mainly that he enlarged the platform, added three new levels -- one of which was on top of the original kahu hale -- and lacked archeological field evidence.

Chapter 4

DESCRIPTION AND CLASSIFICATION OF ARTIFACTS

As might be surmised from the foregoing, the interior fill of the platform was composed of five members: a top sandy layer, which was confined to the limits of the house area; rubble; pao; sand and rubble; and, at the bottom, sand. In most areas, however, only three members were present — rubble, rubble and sand, and sand.

Artifacts from the Hale-o-Keawe were recovered from every layer. However, the top of the sand and rubble layer, the original ground level, and the house floor yielded the most in number and in types of artifacts. Charcoal samples were collected from the lowest levels, the fireplaces, and suspect fireplace areas for later analysis. Those samples that were collected by "floating" were so labeled, noted on the collection sheet, dried, and stored.

The artifacts individually and as a group are interesting. The assemblage is, in general, the same as those artifacts excavated and collected from other sites within the park, but there are a few important and interesting exceptions. Five hundred forty-six artifacts were recovered. These include objects of stone, wood, bone, and shell. Table 2 explains the field catalogue numbering system that was used to number the artifacts.

Table 2

Key to Field Catalogue Numbering System

Example:

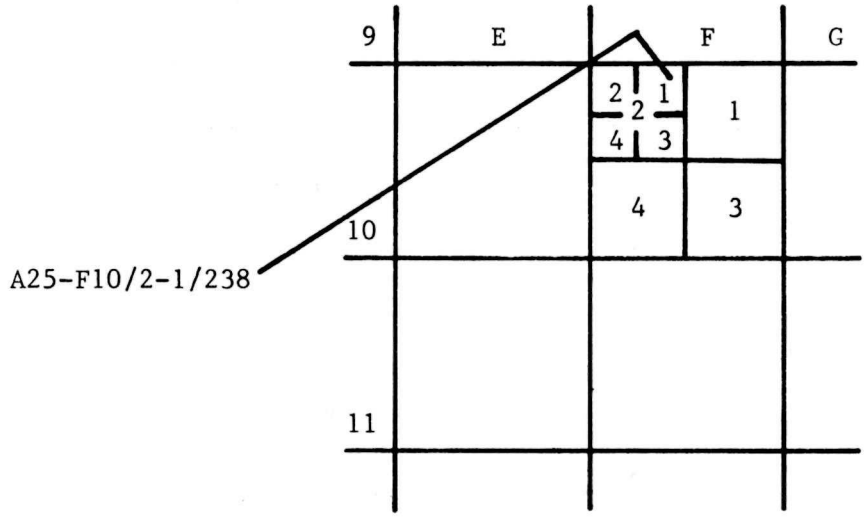
Field Catalogue Number A25-F10/2-1/238

A) A25 = Hale-o-Keawe Temple Site

B) F10 = Grid location (10x10 foot square)

C) 2-1 = Location within grid

D) 238 = Accession number



Mineral

Stone

Objects made from basalt include 8 complete adze specimens, 3 of which were broken, 8 fragments, and 14 chips; 11 whetstones; a grinding stone; 2 rubbing stones; 10 saws; a saw-file and file blank; 7 bowl fragments; a complete stone lamp (mended in the lab); 3 gaming stones (*'ulu maika*); 3 polished pebbles; 2 breadloaf sinkers; and a broken pestle.

Adzes. Eight specimens were recovered (see Figure 36). Of the eight, two are retouched from larger broken specimens; one is incomplete, partially polished and shaped; one is very crudely made from vesicular basalt; one is made from a large chip, polished on one side with a knife-like cutting edge on the blade; and three specimens are complete, highly polished classic Hawaiian types. Table 3 contains a complete description of each adze, including broken adzes.

Broken adzes. These specimens are classified simply by whether or not the broken piece is recognizable as a functional portion of the larger tool. The seven specimens collected from the Hale-o-Keawe (Figure 37) are all portions from the bit and blade of larger tools, and all are made from compact, fine-grained basalt. The broken pieces are measured the same as complete specimens (see Table 3).

Adze fragments. These are recognizable as being worked. Polished surfaces are usually present but not enough of the functional portion is present to be classified as a broken adze. Six adze fragments were

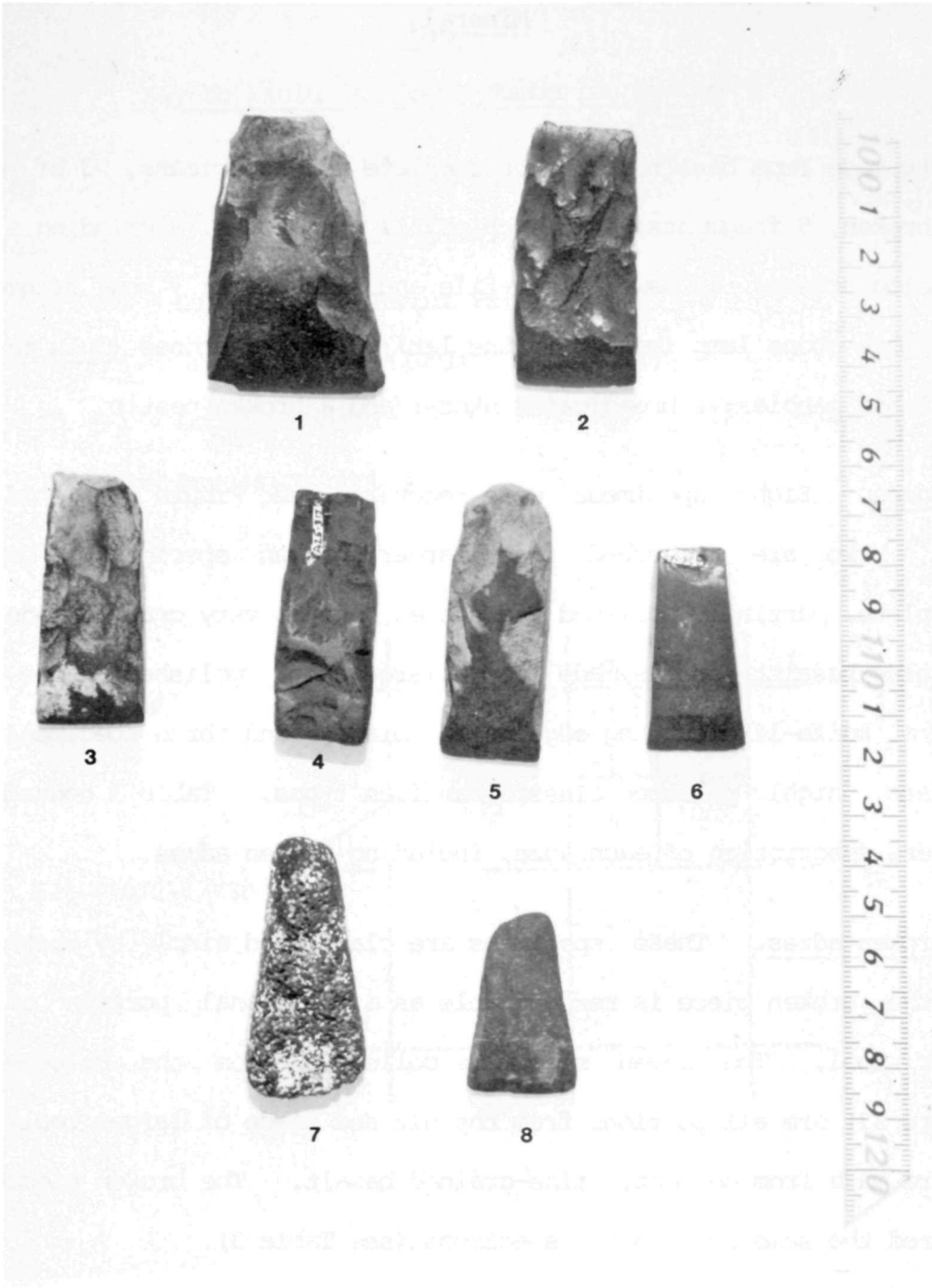


Figure 36. Complete or nearly complete adzes. 1. A25-G4/169; 2. A25-E10/4-3/213; 3. A/25-G9/3-3/386; 4. A25-D9/317; 5. A25-F10/1-1/280; 6. A/25-D6/1-1/269; 7. A25-H6/433; 8. A25-D7/3/476.

Table 3

Adzes and Broken Adzes

Field Catalogue #	Description	Where Recovered	Total Length	Blade Length	Blade Width	Shoulder Width	Poll Width	Maximum Thickness	Cross Section
A25-G4/169	Broken at original shoulder and retouched for use. Blade angled right and chipped over polished portions.	Rubble fill, 1.8 ft. level	5.4 cm		3.5 cm		1.6 cm	1.4 cm	Rectangular
A25-E10/4-3/213	Broken at shoulder, blade portion retouched for use.	Bottom of rubble fill, 2.09 ft. level	4.9 cm	4.2 cm	2.4 cm	2.1 cm		0.9 cm	Rectangular
A25-G9/3-3/386	Complete	Sand layer, 5.11 ft. level	5.1 cm	3.5 cm	2.1 cm	1.8 cm	1.4 cm	0.7 cm	Rectangular
A25-D9/317	Small and incomplete. Partly polished and roughed out to form.	Sand fill layer, sample bag	4.8 cm	2.2 cm	1.8 cm	1.8 cm	1.4 cm	0.9 cm	Rectangular
A25-F10/1-1/280	Small and complete.	Kahua hale, +1.21 ft. level	5.4 cm	3.0 cm	1.9 cm	1.8 cm	1.6 cm	0.9 cm	Rectangular
A25-D6/1-1/269	Small and complete. Highly polished.	2.52 to 4.22 ft. level	4.0 cm	2.5 cm	1.9 cm	1.6 cm	1.3 cm	0.7 cm	Rectangular
A25-H6/433	Complete and very crude. Made of vesicular basalt classic adze form.	Bottom of rubble fill layer, 2.1 ft. level	5.1 cm	2.4 cm			1.2 cm	1.1 cm	Rectangular
A25-D7/3/476	Complete. Made from chip, crude, has knife-like cutting blade, polished on one side.	Bottom of rubble fill, sample bag	3.5 cm	2.2 cm			1.3 cm	0.3 cm	Rectangular
A25-F9/1-4/250	Broken	Kalua hale, +1.49 ft. level	3.7 cm		3.8 cm			1.7 cm	Rectangular
A25-G7/2-2/33	Nearly complete, retouched at poll, large chips missing from blade.	Surface find	5.6 cm		2.9 cm			0.9 cm	Rectangular
A25-D9/347	Broken, very thin, highly polished.	4.0 ft. level	4.7 cm		2.8 cm			0.8 cm	Rectangular
A25-E5/223	Broken, very heavy, about half of blade portion present	Rubble fill layer, 2.8 ft. level	8.0 cm		4.2 cm			2.9 cm	Rectangular
A25-F7/3/167	Nearly complete. Poll appears to have been retouched. Very short tang. Blade broken.	Fill, 6.5 ft. level	5.2 cm		1.6 cm			0.8 cm	Rectangular
A25-F9/327	Broken. Large, nearly half of blade portion. Blade angled right, chips missing from blade.	Rubble fill	7.1 cm		2.9 cm			2.9 cm	Rectangular
A25-E8/117	Broken lengthwise. Large, flat, highly polished.	Rubble fill	6.1 cm		4.0 cm			1.6 cm	Rectangular

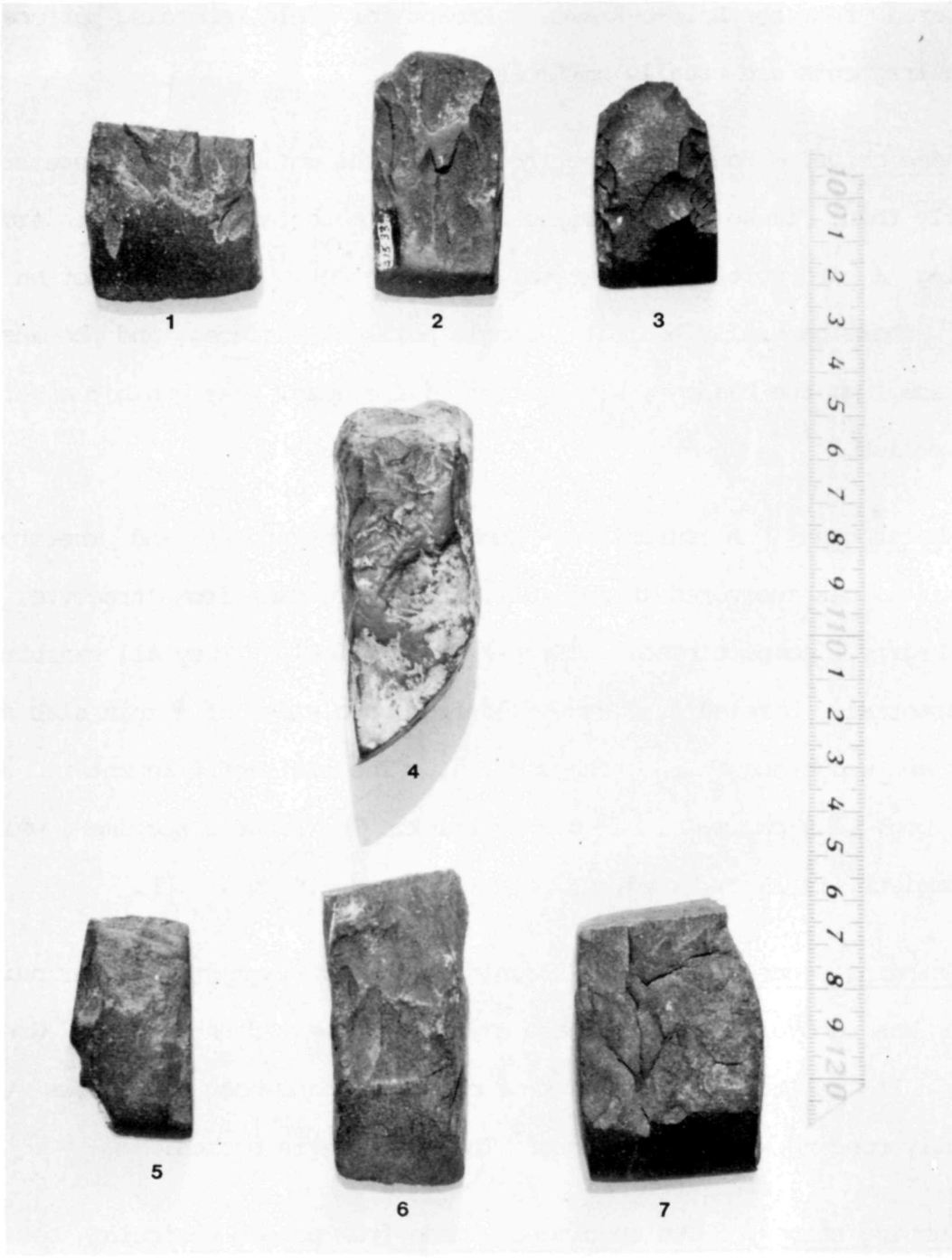


Figure 37. Broken Adzes. 1. A25-F9/1-4/250; 2. A25-G7/2-2/33; 3. A25-D9/347; 4. A25-E5/223; 5. A25-F7/3/167; 6. A25-F9/327; 7. A25-E8/117.

recovered from the Hale-o-Keawe. Except for field recording purposes, these fragments are usually not measured.

Adze chips. Fourteen are included in the collection. These are usually thin, flake-like chips resulting from too hard a blow or from hitting a hard portion of whatever was being cut, such as a knot on a log. These generally exhibit a single polished surface, and because most are from the blade or bit portion of the adze, they exhibit a very high polish.

Whetstones. A surprising number of whetstones and whetstone fragments was recovered (Figure 38). They are made from trachyte, a bluish-gray, compact basalt that has an oily feel. They all exhibit a characteristic beveled surface worked from both sides of a thin slab and they are wedge-shaped in cross section. The smallest fragment is 3.0 cm. long, 1.9 cm. wide, and 0.9 cm thick. The largest specimen, which is complete, is 15 cm. long, 6.8 cm. wide, and 2.9 cm. thick.

Grinding stone. A large irregularly shaped fragment of a grinding stone was recovered from the base of the northwest corner of the Great Wall. It is made from a chunk of compacted pahoehoe and shows two slightly concave working surfaces. The specimen is broken.

Rubbing stones. Two specimens, made from porous vesicular basalt with a complete lack of olivine, are included in the collection (Figure 38). These are irregular, flat fragments of lava which exhibit smooth working surfaces. The larger specimen (13 cm. long, 7.8 cm. wide, and 2.0 cm. thick) shows smooth areas on all surfaces, even the edges. The

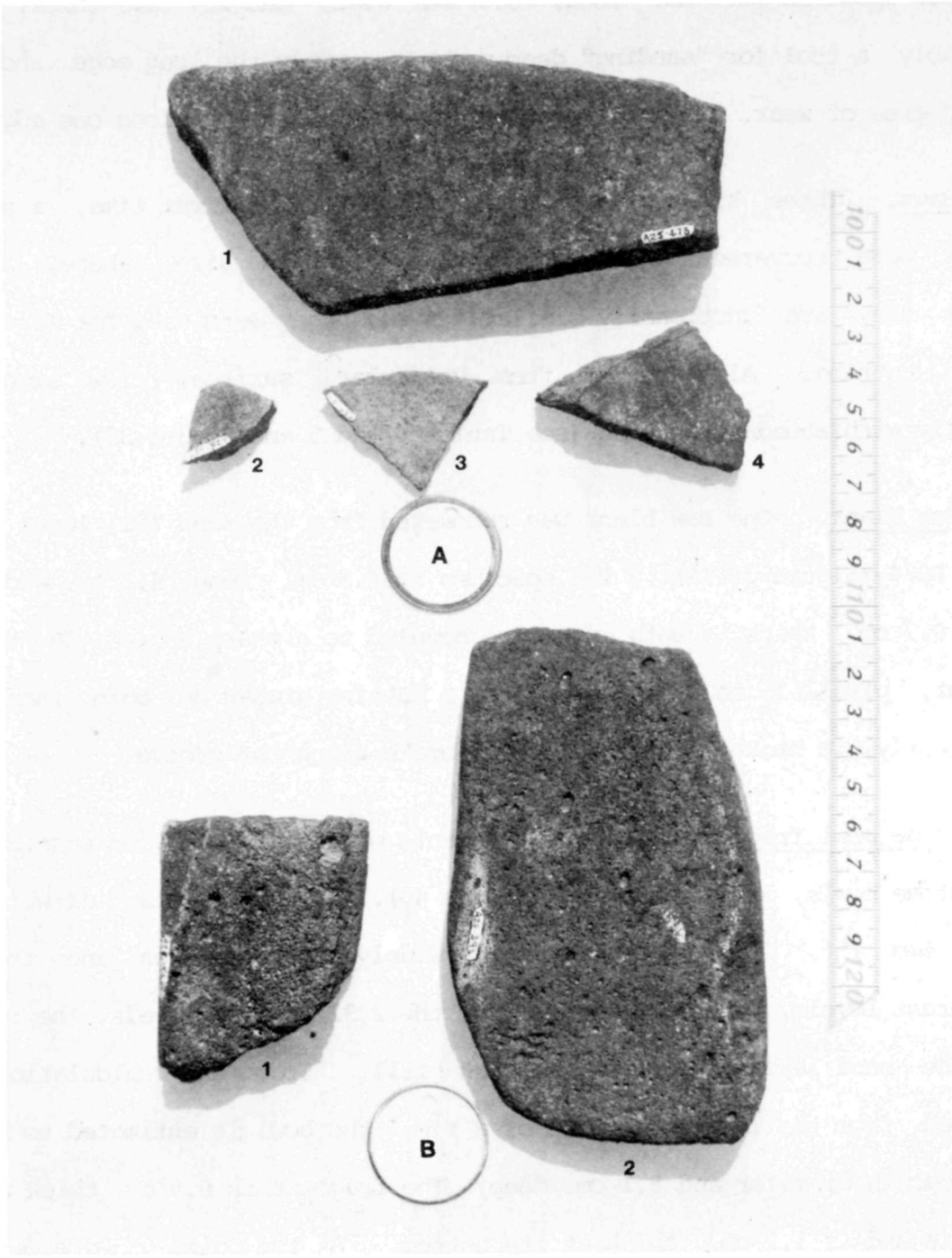


Figure 38. Whetstones and rubbing stones. A.1. Complete whetstone. A.2-4. Whetstone fragments. B.1 and 2. Rubbing stones.

smaller specimen (6.7 cm. long, 5.3 cm. wide, and 2.7 cm. thick) is probably a tool for "sanding" deep grooves. Only the long edge shows any degree of wear. In cross section it shows a V notch along one edge.

Saws. Three kinds of basalt saws and, for the first time, a saw blank were recovered. Although the saws differ in size, shape, and form, they are functionally similar; i.e., they were used for heavy, rough cutting. All are made from vesicular, surface, flow stone, usually with abundant olivine (see Tables 4 and 5 and Figure 39).

Saw blank. One saw blank was recovered from the sand fill level in grid D9/4-(Figure 39.12). The specimen is 4.5 cm. long, 4.3 cm. wide, and 0.7 cm. thick. Both edges are beveled to a sharp edge. In the center, parallel to the edges, is a cutting groove on both faces. Apparently, it broke in half before it broke along the groove.

Stone bowl fragments. Seven fragments of a stone bowl, or possibly two stone bowls, were recovered (Figure 40). The fragments, of which only two fit, were recovered from a widely scattered area and from different levels, with most coming from the 2.91 to 3.04 levels, the top of the sand layer, and from the back fill. From the calculations derived from the largest section of a rim, the bowl is estimated to be 23.3 cm. in diameter and 8.1 cm. deep. The fragment is 0.9 cm. thick at its lip and is 1.9 cm. thick at its bottom. At the point of greatest curve it is 1.6 cm. thick. All fragments vary in maximum thickness from 1.8 cm. to 2.0 cm. The three rim fragments are 0.9 cm. thick. Every fragment appears to be made from the same type of bluish-gray, compact, basaltic material and the general appearance and texture of all the

Table 4

Proposed - Key to Classification of Coral and Basalt Tools

SAW TYPE (ST):

A) One sharpened cutting edge. Rounded facets. Edge opposite cutting edge well rounded or flat. Elliptical cross section.

B) One sharpened cutting edge. Rounded facets but discernible. Edge opposite cutting edge well rounded or flat. Elliptical cross section.

C) One sharpened cutting edge. Two facets. Edge opposite cutting edge well rounded or flat. Triangular cross section.

D) One beveled cutting edge. Rounded facets. Edge opposite cutting edge well rounded or flat. Elliptical cross section.

E) One sharpened cutting edge. Faceted. Small triangular form. Some rounding of facets. Triangular cross section.

SAW FILE TYPE (SFT):

A) One beveled cutting edge. Facets well defined but rounded. Two filing surfaces. Triangular form and cross section.

B) Two sharpened cutting edges. Faceted. Four filing surfaces. Quadrangular cross section. Rectangular form.

C) One sharpened cutting edge. Faceted. Two filing surfaces. Rectangular form. Lanceolate to ovate cross section.

D) Two sharpened cutting edges. Rounded facets. Two filing surfaces. Ovate form. Lanceolate to elliptical cross section.

FILE TYPE (FT):

A) Two filing facets. One sharp edge. Faceted. Some rounding opposite sharp edge. Triangular form and cross section.

B) Four filing facets. Two rounded edges. Facets rounded but discernible. Triangular form with elliptical to oval cross section.

C) Rounded filing facets. Facets not visible. Triangular form with elliptical to oval cross section. Worked to a flat point.

REAMER TYPE (RT):

A) Acicular point. Unfaceted. Round cross section. Awl-like form.

B) Conical point. Unfaceted. Round cross section. Conical form.

C) Shouldered point. Unfaceted. Round in cross section at the shoulder and triangular at the base. Tends to be triangular in form.

D) Rounded point. Facets rounded but discernible. Oval cross section. Triangular - conic in form.

REAMER FILE TYPE (RFT):

A) Tapered point. Unfaceted. Round cross section. Awl-shaped. Knobbed base (handle).

B) Tapered point. Facets rounded but discernible. Round cross section. Awl-like, tapered form. Plain base (no handle).

Note: See Figures 46 and 47 for an example of each of these classified types.

Table 5

Basalt Saws

Field Catalogue No.	Description	Condition	Material	Length	Classification
A25-E5/4-3/201	Single beveled cutting edge; triangular cross section; one face smoothed, other natural	Complete	Scoriaceous basalt	10.0 cm	ST-D
A25-G7/4-4/44	Single knife-like cutting edge; triangular cross section; all faces smoothed	Complete	Scoriaceous basalt	7.3 cm	ST-E
A25-E6/2-3/307	Single knife-like cutting edge; triangular cross section; all faces smoothed	Complete	Scoriaceous basalt	3.7 cm	ST-E
A25-C8/3-4/124	Single knife-like cutting edge; triangular cross section; all faces smoothed; could have doubled for a file	Complete	Fine-grained pahoehoe	4.9 cm	ST-E
A25-D8/1-3/510	Single beveled cutting edge; thin and flat; both faces and two edges smoothed	Broken	Scoriaceous basalt	7.2 cm	Not classified
A25-G9/4-4/392	Single beveled cutting edge; other edge rounded; all faces smoothed	Broken	Fine-grained pahoehoe	6.4 cm	ST-D
A25-H8/1-2/49	Single beveled cutting edge; one face smoothed, other slightly worked; edges smoothed	Broken	Scoriaceous basalt	6.5 cm	ST-D
A25-D9/4/352	Specimen too small of a piece for description	Fragment			
A25-G7/4-1/98	Single beveled cutting edge; opposite edge rounded; all faces smoothed (similar to right side of blank A25-D9/4-4/338)	Tip Broken	Scoriaceous basalt	4.6 cm	SFT-A
A25-D7/4-4/140	Single knife-like cutting edge; triangular in cross section; all faces smoothed	Tip Broken	Scoriaceous	6.2 cm	SFT-C
A25-H8/1-2/48	Both edges rounded; flat; all faces smoothed	Complete	Heavy scoriaceous basalt	6.0 cm	SFT-D
A25-D9/4-4/338	Saw blank; two beveled edges; central (cutting) groove on both sides; (A25-67/4-1/98 shows same kind of facets as right side of blank)	Saw blank	Scoriaceous basalt	4.5 cm	

Figure 39. Basalt saws. 1. A25-E5/4-3/201; 2. A25-G7/4-4/44; 3. A25-E6/2-3/307; 4. A25-C8/3-4/124; 5. A25-D8/1-3/510; 6. A25-G9/4-4/392; 7. A25/H8/1-2/49; 8. A25-D9/4/352; 9. A25-G7/4-1/98; 10. A25-D7/4-4/140; 11. A25-H8/1-2/48; 12. A25-D9/4-4/338.

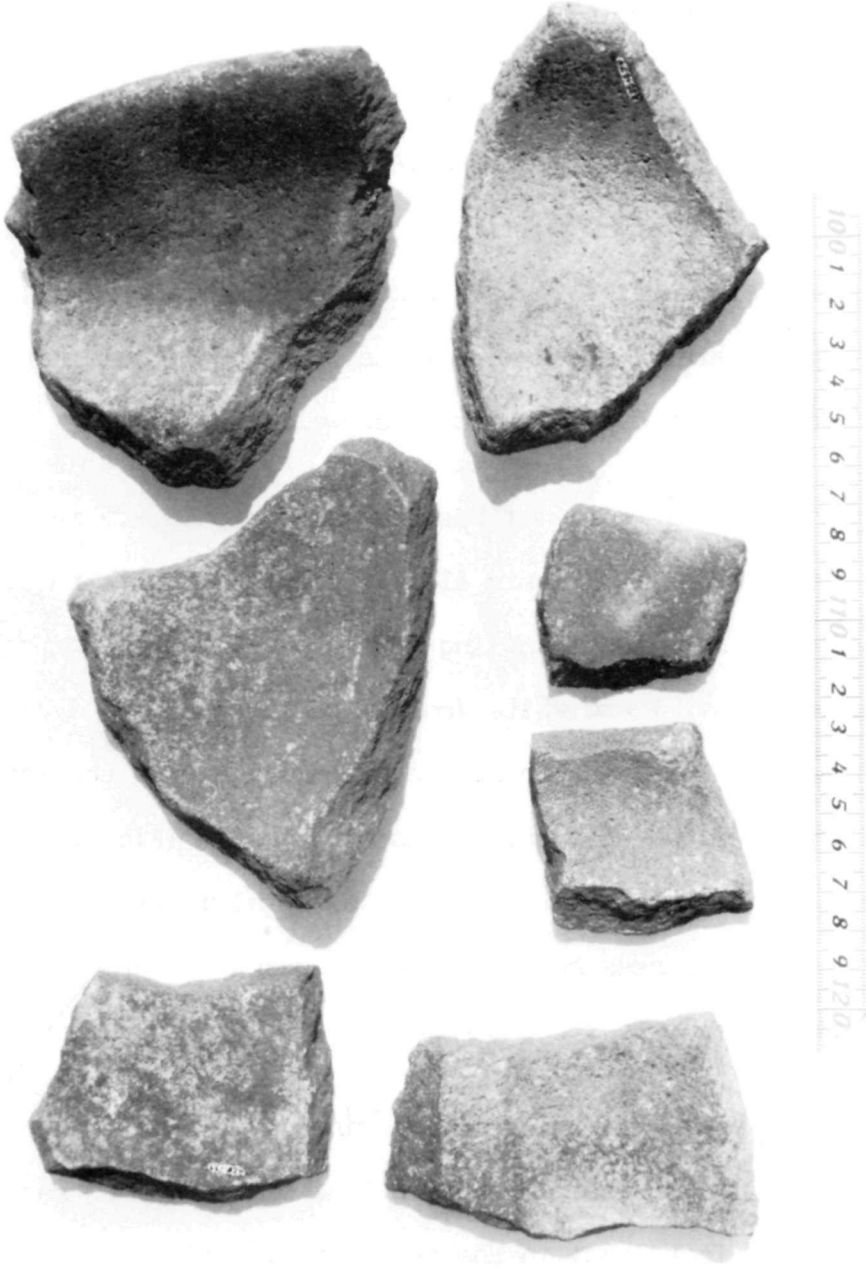


Figure 40. Stone bowl fragments.

fragments are about the same. The outside of the bowl is highly smoothed with a slight sheen and the interior, especially the bottom portions, shows tool marks.

Stone bowl complete. From the +0.51 level in grid G8, a stone bowl 8.0 cm. in diameter and 3.8 cm. high was recovered in two fragments and mended in lab (Figure 41.1). It is made of a compact basalt from what appears to be a natural beach-worn stone. The bowl could have served as a small container for dye or medicine as well as a lamp.

Game stones. Two kinds of basalt gaming stones are included. The natural basalt pebbles (Figure 41.5-7) show a slight unnatural sheen which may be the result of handling in the Hawaiian game of konane, in which black (basalt) and white (coral) pebbles were used. The other specimens were used in another type of game in which the stones were rolled along a designated path. These 'ulu maika (Figures 41.2-4) were made from a variety of basaltic as well as coral materials. They varied in diameter and thickness but they are all circular, and the best worked specimens show a bi-convex surface making for better balance.

Breadloaf sinker. A classic specimen of a breadload sinker, so called because of its resemblance to a loaf of bread, was recovered from the 4.1 to 4.7-foot level in the sand layer, grid H6 (Figure 42.1). This specimen is made from a compact blue-gray basalt. In overall dimensions it is 6.2 cm. long, 3.7 cm. wide, and 3.2 cm. thick. The top is convex lengthwise and also curves from side to side. The base is formed by a complete groove 0.9 cm. up from the bottom. The base is

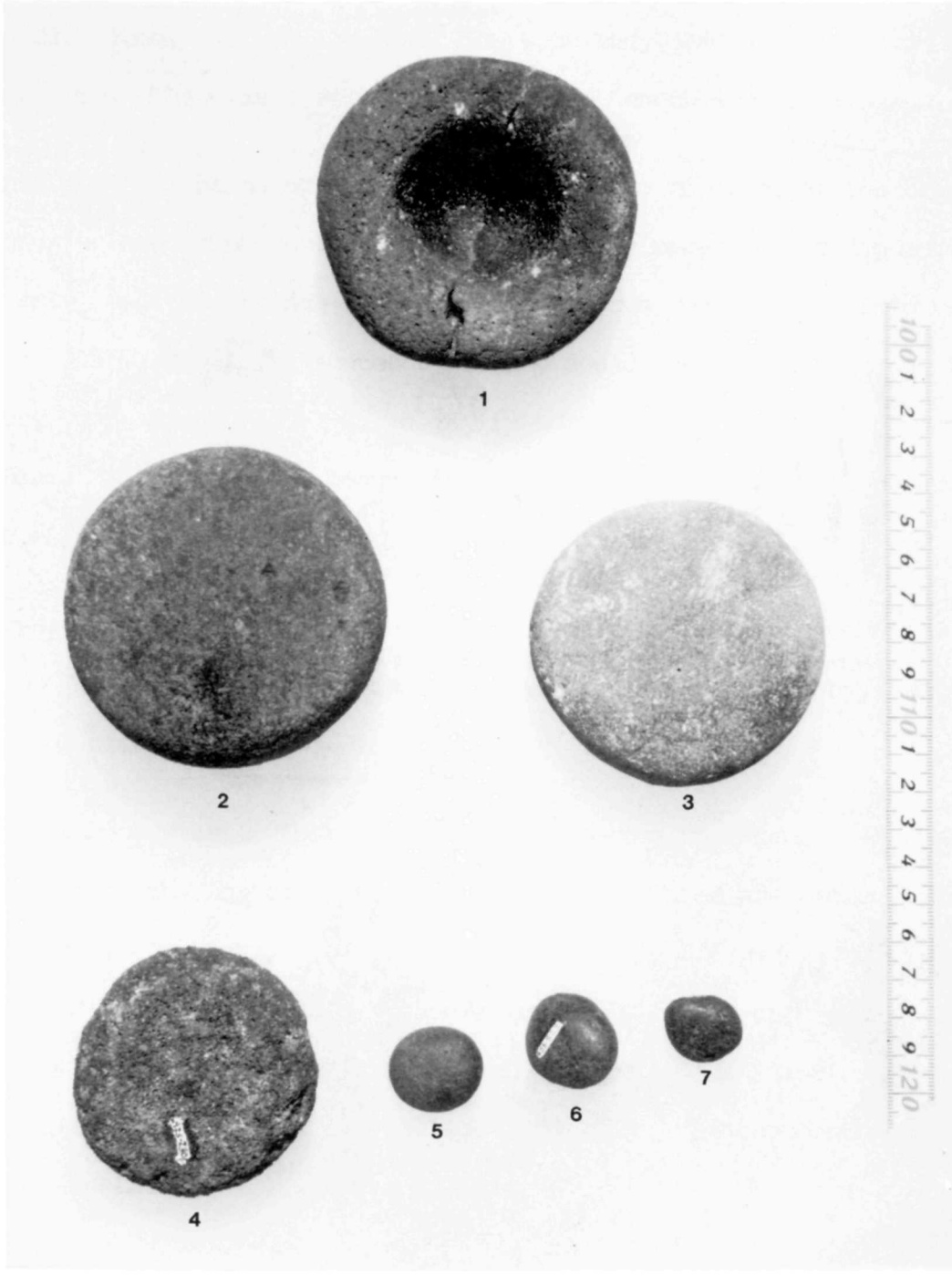


Figure 41. Stone bowl and gaming stones. 1. Stone bowl; 2, 3 and 4. 'ulu maika; 5, 6 and 7. konane stones.

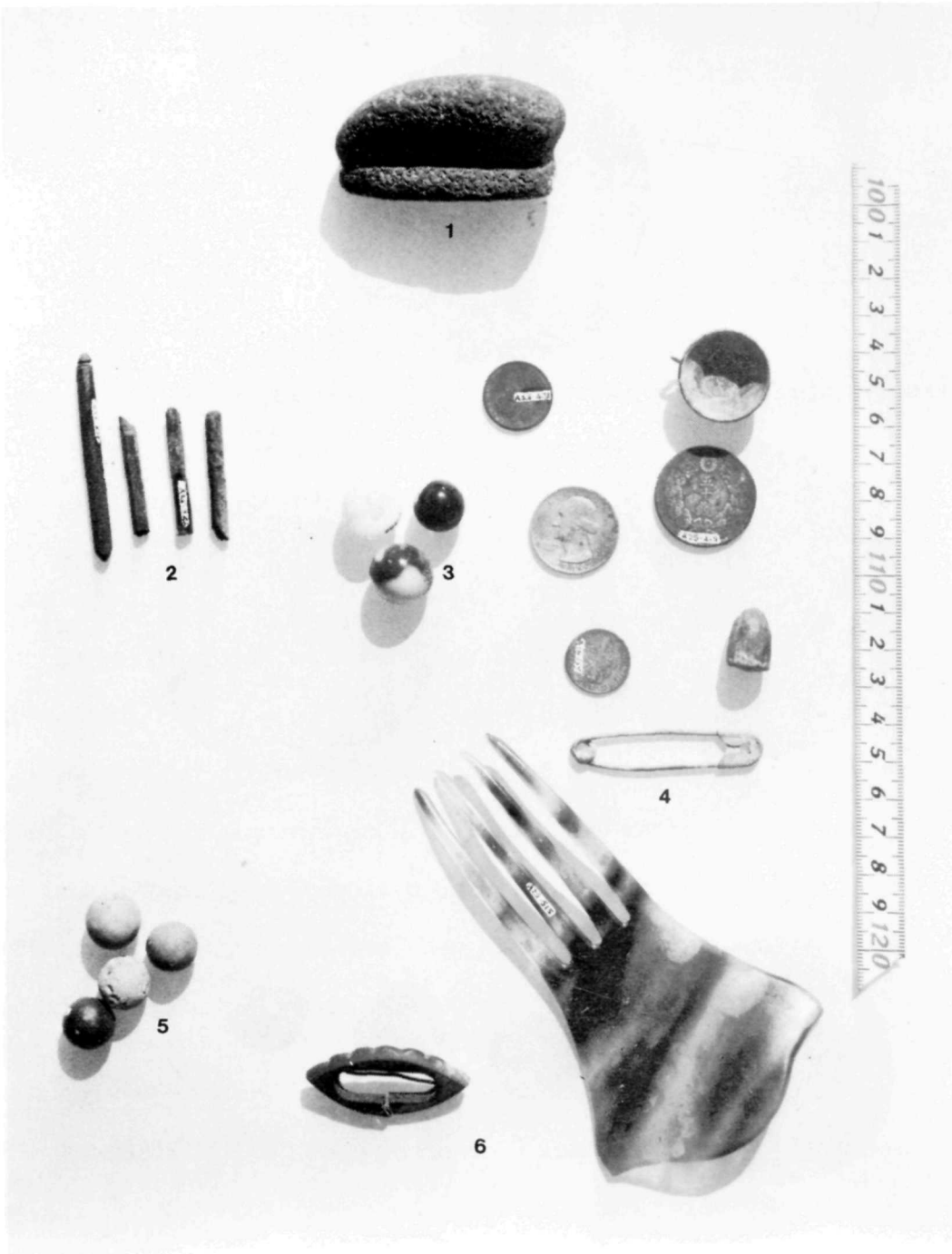


Figure 42. Bread-loaf sinker and miscellaneous objects of slate, glass, metal, clay, and plastic. 1. Bread-loaf sinker, A25-H6.2-2/24; 2. Slate pencils; 3. Glass bead and marbles; 4. Metal coins, .45 caliber slug, safety pin, toy cup; 5. Clay marbles; 6. Plastic comb and brooch.

5.7 cm. long, 2.2 cm. wide at the wide end, and 1.8 cm. wide at the small end. There is a very shallow groove lengthwise.

There seems to be no agreement on the specific function of the breadloaf sinker. According to Buck (1957:345), they were used on dip nets. A cursory search through the available sources revealed no information. Buck (1957:345) also states that they could be used on squid lures. Emory and Sinoto (1961:57) classify one from Oahu as an octopus-hook sinker. The slight, lengthwise groove on the bottom of this specimen would favor the octopus-hook, squid lure theory.

Hammer stone. A fragment of a hammer stone was recovered from grid B5. The tip shows heavy use scars and it is made of heavy, compact-grained basalt.

Slate pencils. Four specimens were recovered (Figure 42.2). All came from the top of the sand fill layer. Three are broken and one specimen is complete. The complete specimen is 5.6 cm. long and 0.4 cm. in diameter. One end has a groove, probably for a suspension cord, and the other end is worn to a blunt point. These are identical to those excavated from the historic village of Ki'ilae, at the north end of the park (see Ladd 1966:11, Plate I.G).

Glass

Four objects of glass were recovered from the top of the sand fill layer (the bottom of the rubble fill layer). One is an oblong, black bead. It is very heavy and fractures like volcanic glass or obsidian. The other three are colored glass marbles (Figure 42.3).

Metal

Eighteen objects of metal were recovered from the bottom of the rubble fill layer and from the rubble. They include nine Lincoln head pennies with dates from 1911 to 1952 (all are in very poor condition); one mercury head dime dated 1943; one quarter dated 1944; and one Japanese 50-cent piece dated 1902, according to Mr. Seiichi Hayama, a member of the lab crew.

Other metal objects include a .45 caliber slug, an expended .22 caliber cartridge, a large safety pin, a lapel button with the letters ELFARE HONOLULU partially visible, a novelty toy cup, and a badly corroded metal object that is possibly a fragment from a square nail (see Figure 42.4 for a sample of metal objects).

Clay

Five ceramic marbles were recovered (Figure 42.5). Four are nearly identical in size, 1.4 cm. in diameter, and the fifth specimen is 1.8 cm. in diameter. Three are buff color with white flecks of a different kind of material, probably temper. One is greenish and the other is brick-red. All show the same surface finish. Fifteen of these were worth one "aggie" in 1927 according to several members of the field crew.

Other

Three other items of non-Hawaiian origin were recovered from the bottom of the rubble fill layer. These include a plastic simulated turtleshell comb, a toy smoking pipe, and a brooch made of plastic (Figure 42.6).

Vegetal

As might be suspected, in an open site such as the Hale-o-Keawe, there was almost a complete absence of perishable material. Two items, not counting the carbon samples, were collected. They were a cork fishnet floater and a coconut shell garment button. Also in this group were wood fragments collected from various levels.

Animal

Over 75 percent of the artifacts recovered from the Hale-o-Keawe are classified under this category. The artifacts in this group are comprised of shell, coral, bone, and animal teeth.

Shell

Artifacts made from seashells include 14 *'opihi* (limpet) shell scrapers, 2 cowry (*Cypraeidae*) shell scrapers, 4 shell adze specimens, 4 gourd stoppers, 5 beads, 3 cut shell fragments, 1 hook blank, 3 hooks, a toggle, and 2 ornaments.

Scrapers. Food scrapers made from limpet shells (*'opihi*) were recovered from the top layer, in the *kahua hale* fill, from the top of the sand layer, and from the rubble fill (1.78 to 4.36 feet from base level) (Figure 43.1-9). Two of the 14 specimens collected came from the house floor level. All are made from the Talc limpet (*Patella talcosa* Gould) which has an almost naturally sharp edge and was readily available. Seven have a small hole at one end, undoubtedly for a suspension cord. Two have drilled holes, and five have punched holes. All specimens show at least one smooth cutting edge. They vary in size

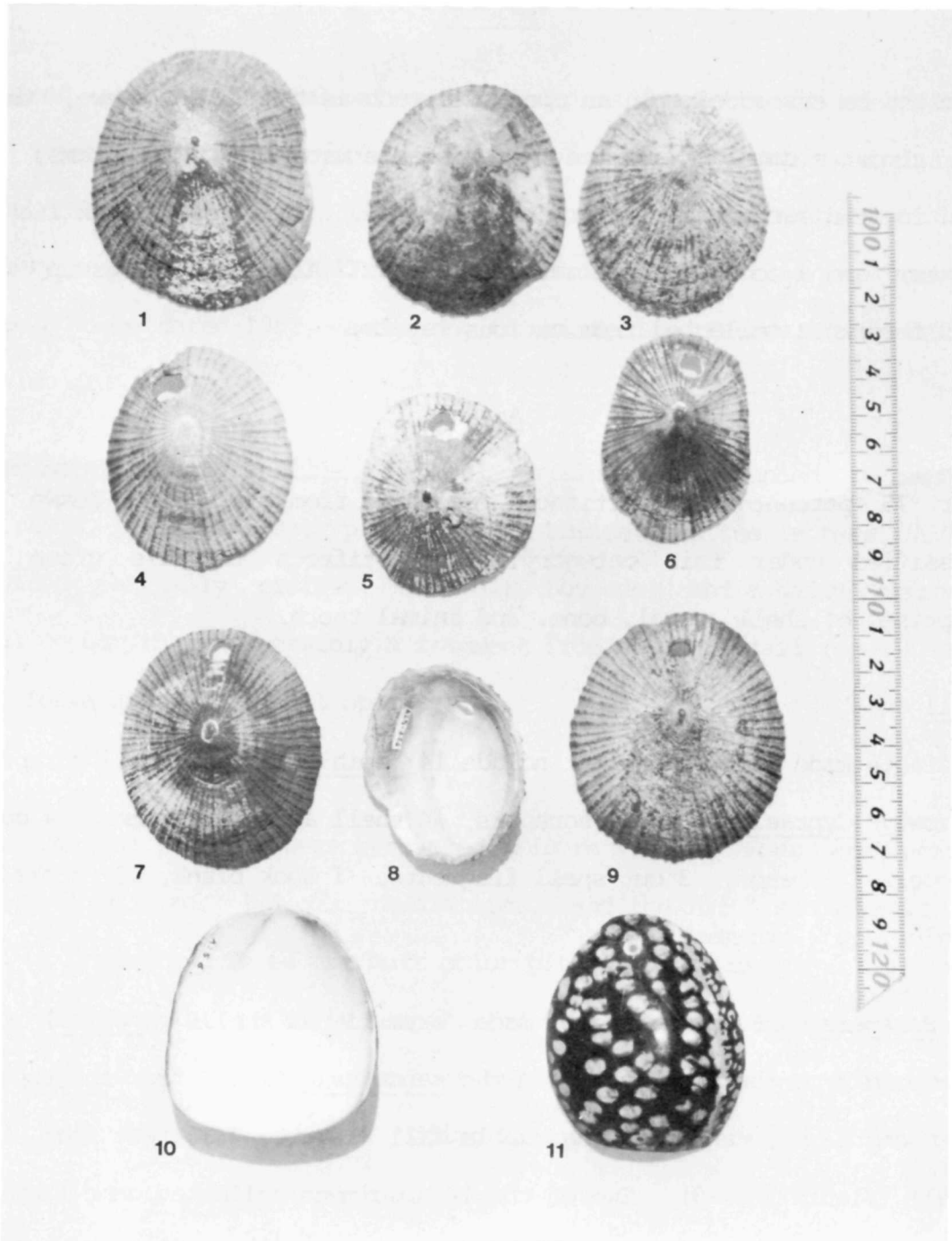


Figure 43. Shell scrapers. 1-9. 'Opihi (limpet) shell food scrapers; 10-11. Cowry shell (Cypraeidae) food scrapers.

from 7.2 to 5.3 cm. in length and 6.0 to 5.8 cm. in width. These were used for scraping the skin from cooked taro, breadfruit, and other foods.

Two cowry shell (Cypraeidae) food scrapers were recovered from the 2.09-foot level in grids E10 and G6 (Figure 43.10-11). These were cut from the back of a large cowry into an elliptical form determined by the shape of the shell. One edge was ground smooth, forming the scraping edge. One specimen has a drilled hole for suspension and the other does not. The latter specimen, however, has been retouched along one edge indicating that it probably broke when the holes were punched. These were used for the same purposes as the 'opihi shell scrapers.

Adze. Four specimens, made from cone shells, were recovered (Figure 44A and Table 6). Two are made from Conus striatus, one is made from C. textile, and the fourth specimen is made from C. leopardus. All shell species are found locally and grow up to five inches long (Tinker et al. 1962).

Two specimens were recovered from the top of the sand fill layer, one from the +1.51 layer of the kahua hale, and one from the 2.1 level. All have a beveled, sharp cutting edge. One has a straight cutting edge, while the other three, due to the form and size of the shell, show a curved cutting edge. These are here classified as adzes; however, there has been little or no data collected for a proper classification.

Stoppers. Four shell "bottle stoppers" were collected (Figure 44B and Table 7). These are made from different species of the "long" shells. Two are made from a species of Terebridae (auger shell family),

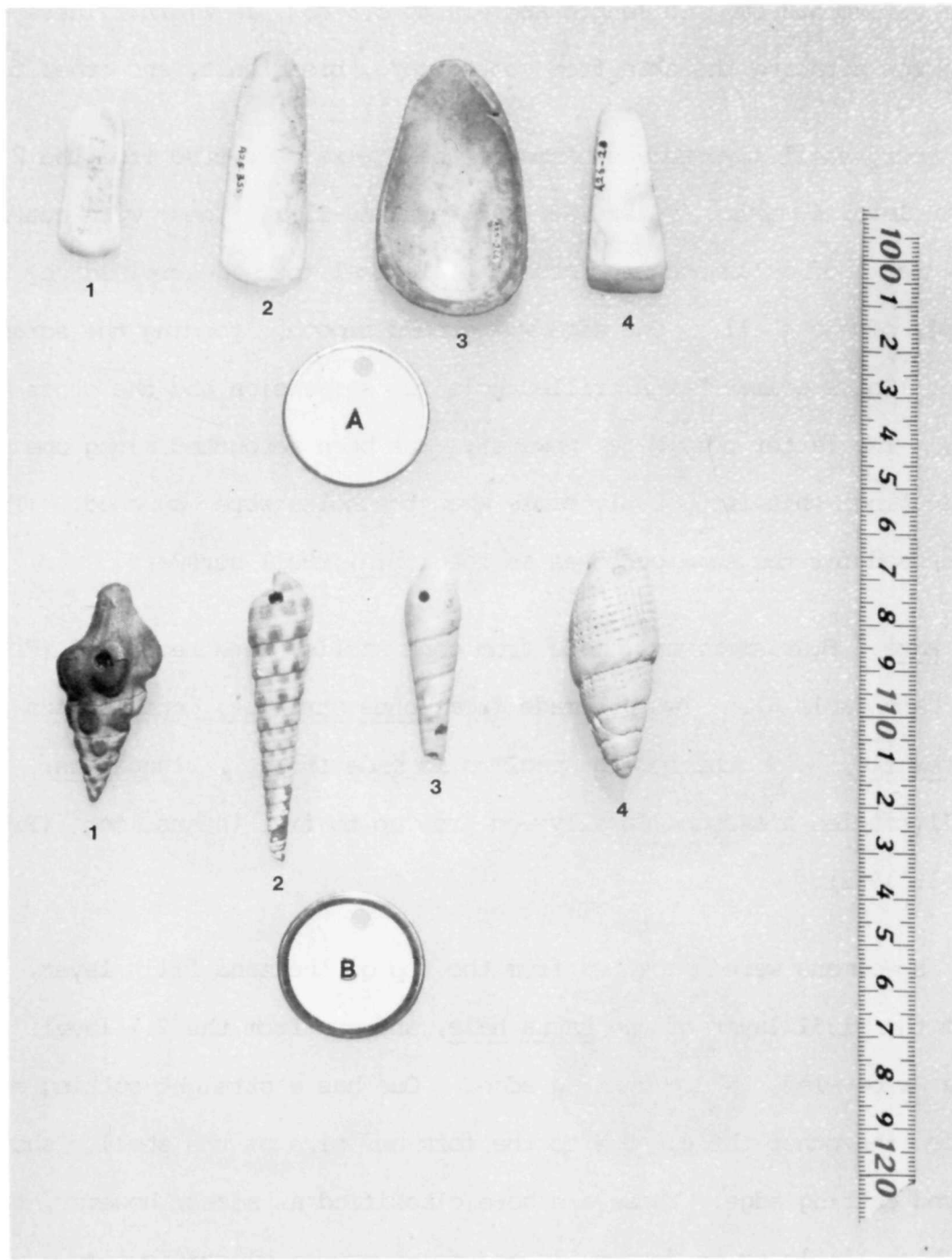


Figure 44. Shell adzes and stoppers. A1. A25-D9/349; A2. A25-F11/4-2/355; A3. A25-E9/1-1/266; A4. A25-G6/3-1/20. B1. A25-E10/2-3/207; B2. A25-G9/4-2/376; B3. A25-D7/4-3/145; B4. A25-F11/3-2/62.

Table 6

Shell Adzes

Field Catalogue No.	Shell	Length	Width at Bit	Width at Poll	Thickness	Poll
A25-D9/349	*Conus status*	2.3 cm	1.3 cm	1.1 cm	0.2 cm	Rounded
A25-F11/4-2/355	*Conus status*	5.1 cm	1.8 cm	1.2 cm	0.2 cm	Rounded
A25-E9/1-1/266	*Conus textile*	5.5 cm	3.3 cm	1.9 cm	0.3 cm	Rounded
A25-G6/3-1/20	*Conus leopardus*	3.9 cm	1.8 cm	1.0 cm	0.5 cm	Squared

Table 7

Shell Stoppers

Field Catalogue No.	Shell	Length	Diameter
A25-E10/2-3/207	Spindle shell (*Latirus modus*)	4.7 cm	2.1 cm
A25-G9/4-2/376	Auger shell (*Terebridae* sp.)	6.2 cm	1.2 cm
A25-07/4-3/145	Auger shell (*Terebridae* sp.)	4.5 cm	1.3 cm
A25-F11/3-2/62	Miter shell (*Mitridae* sp.)	5.1 cm	2.0 cm

one from Mitridae (miter shells), and one is made from a small knobby, spindle shell (Latirus nodus Martin). All have a small drilled hole in back of the aperture. The holes are presumably for attaching a loop for easy removal from the "bottle" and to keep from losing the stopper. It is also assumed that a bit of tapa cloth was wrapped around the shell, especially the knobby, spindle shell, so that it would fit snugly into the opening. These are all rather small. The longest is 6.2 cm.; the shortest is 4.5 cm. long. They vary in diameter from 1.3 to 2.1 cm. They all show a good sheen as if they had been handled a great deal.

Beads. Twenty-one shell beads were classified in the field, but only five specimens are undisputed. The others, which were discarded, were natural beach-washed shells with naturally abraded holes. Two of the five beads are made from cone shells (C. ebraeus, Hebrew cone, and C. pertusus, pricked or perforated cone) (Figure 45.4-5), and two are made from a species of Neritidae, the sea snail family, probably N. polita, named kupe'e by the Hawaiians (Figure 45.7-8). The fifth one is made from a species of Turbinidae, the turbine shell family (Figure 45.6). All exhibit an abraded hole for stringing and, with the exception of the turbine shell, are illustrated by Buck (Buck 1957:542).

Cut shell. Three cut shell fragments were recovered. Two are pearl shells (Figure 45.1-2) and the third is the core from a very heavy shell, probably a conch shell (Figure 45.3). The two pearl shell specimens are, undoubtedly, left over from the making of hooks. The heavy shell shows abrasion marks on all surfaces and especially on one end. Its function is not known.

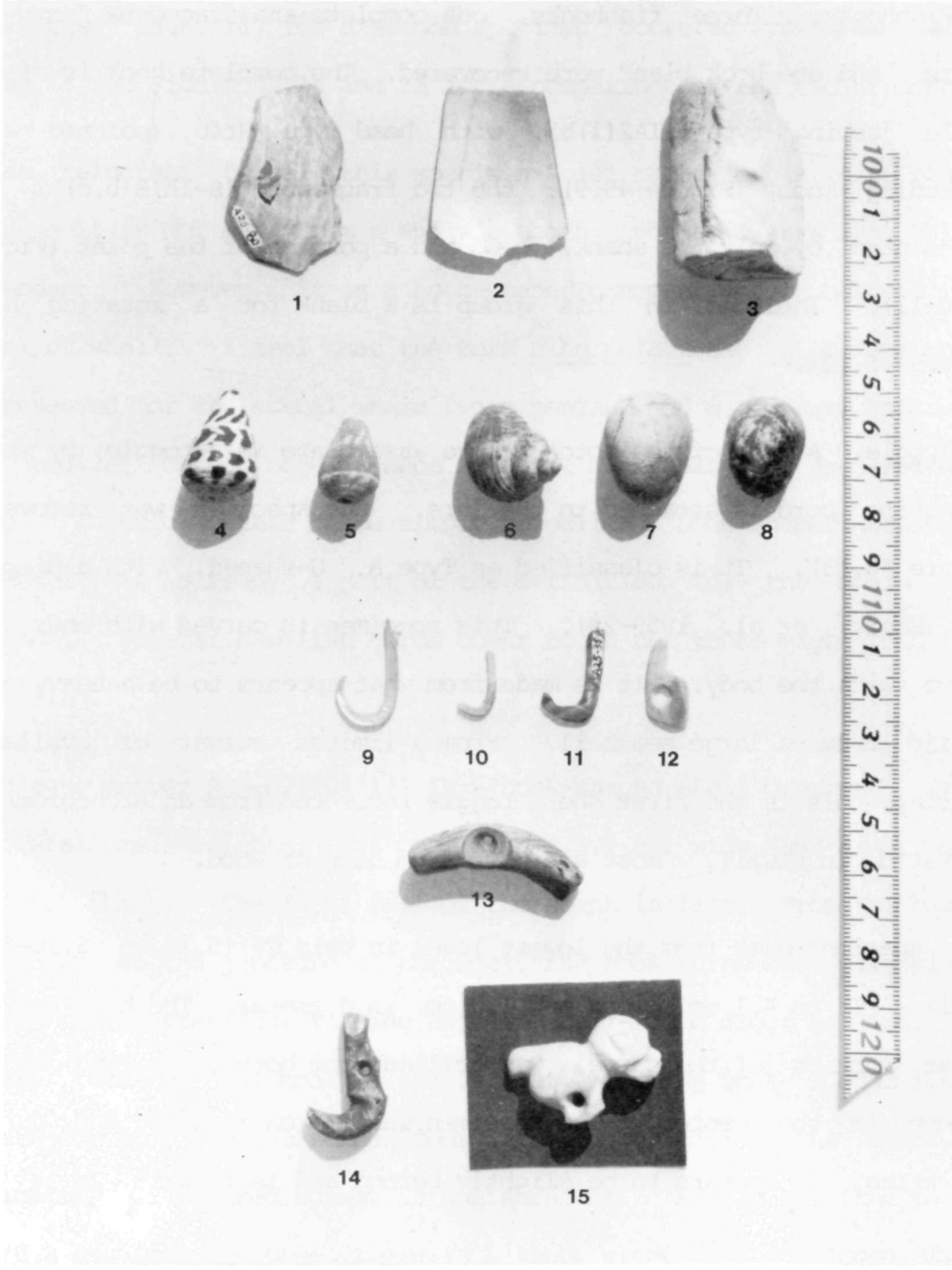


Figure 45. Shell artifacts. 1-3. Cut shell fragments; 4-8. Shell beads; 9-12. Fishhooks; 13. Toggle; 14. Hook-shaped ornament; 15. Carved shell object.

Fishhooks. Three fishhooks, one complete and fragments from two others, and one hook blank were recovered. The complete hook is of the simple jabbing type (IA2(1)b), with head type Ht4b (pointed with protruding knob) (Figure 45.9); the two fragments (S-IA/B(b,c)b) are represented by only the shank, bend and a portion of the point (Figure 45.10-11). Included in this group is a blank for a rotating hook (Figure 45.12).

Toggle. A part of the octopus lure assemblage is a toggle, by which a lashing cord is attached to the lure. One specimen was recovered (Figure 45.13). It is classified as Type A, U-shaped, with a pierced hole (Emory, et al. 1959-29). This specimen is curved with ends cut square with the body. It is made from what appears to be a heavy core or lip from a large seashell. From a limited survey of available material, this is the first shell toggle recovered from an archeological excavation in Hawaii. Most are made from bone or wood.

This specimen came from the lowest level in grid C7 (5.16 to 5.96-foot level). It is 4.1 cm. long and 1.0 cm. in diameter. The hole, at the widest portion of the curve, was drilled from both sides and broken through in the center. The specimen was broken at one end during excavation. It appears to be slightly burned and is fragile.

Hook-shaped ornament. A small shell ornament, carved in the form of a pendant, identified in Hawaiian culture as a hook-shaped, whale tooth pendant (lei palaoa or niho palaoa) was recovered from the 1.93 to 2.46-foot level in grid D7/1-4 (Figure 45.14). (See section on bone

artifacts, page 117 for a second specimen recovered from the Hale-o-Keawe. See Figure 52.14 and 15 for a comparison of the two ornaments.)

I am reluctant to call this specimen a lei palaoa or a niho palaoa because it is NOT made from a whale's tooth, nor am I sure that this is a pendant. However, it is a hook-shaped ornament and it happens to be made of shell. I feel that the term niho palaoa and lei palaoa should be reserved for the actual whale ivory pendant and a new term applied to the smaller carved objects made of other materials such as shell and bone. I suggest that these simply be called "hook-shaped ornaments" since it is already a part of the definition for the whale tooth pendant. Several Hawaiian terms occur to me but these might tend to be confusing.

Catalogue number A25-D7/1-4/131 is a hook-shaped shell ornament. It is, in overall measurements, 2.9 cm. long, 1.9 cm. wide, and a maximum of 0.7 cm. thick. The front face of the shank is flat. From the base of the shank, at the juncture of the hook, the hook turns back slightly and widens or flattens out forming a nearly half-round cross section. The inside face of the hook is nearly flat, forming what looks like a modern-day hook and eye screen door latch. The back of the shank, as indicated, is tapered but it is not straight. At 1.0 cm. from the top and 0.9 cm. from the base, there is a knob, creating a scalloped effect. At 1.3 cm. from the top, 0.7 cm. from the base, 0.4 cm. from the front face and 0.3 cm. from the back, is a hole. The top of the hole is 0.4 cm. in diameter on one side and nearly 0.5 cm. in diameter on the other.

The actual opening is 0.2 cm. in diameter. The hole was drilled from both sides toward the center.

Carved shell. Included in this group is a exquisitely carved shell object, in the form of a dog, recovered from the 3.88 to 4.18-foot level in grid H8/2-3 (Figure 45.15). The seashell from which the object is carved is probably a species of rock chama, a very heavy oyster-like bivalve common to these waters. There is a very slight tint of red (purple-red) along one edge forming the head of the dog. The hole is concave from both sides indicating that it was probably drilled with a stone tool. The object has a very high sheen and appears almost waxy.

Coral

In this group are 174 artifacts made from coral or reef-rock. These are mostly cutting or abrading tools. The total group consists of 61 rubbing stones; 86 reamers, files and saws; 12 game stones; and 15 sinkers. There may be a significant absence here. What I identified as "bottle covers" elsewhere (Ladd 1969b:148) and what Tuohy (1965) and Soehren (1962) identify as spinning tops, conical shaped coral objects, are completely absent. These occur in almost every site in the park and the by-pass and entrance road.

Rubbing stones. These are generally unworked, natural chunks of coral that were used as abrasive stones. They all exhibit at least one working surface.

Saws, saw-files, files, reamers and reamer files. Among the most common tools, especially in coastal sites, and the most troublesome to

typogically classify, are the coral tools associated with the manufacture of fishhooks. Emory and Sinoto (1961:54) attempted a classification for coral files, based primarily on the number of filing edges and cross section. However, they found there are many borderline and overlapping forms. Following is Emory and Sinoto's table for classification of files:

I. One filing edge
II. Two filing edges
  A. Elliptical cross section
    1. Sharpened edges
    2. Rounded edges
  B. Oval-flat cross section
    1. Sharpened edges
III. Three filing edges, triangular cross section
IV. Four edges, quadrangular cross section
V. Rounded in cross section

The above classificatory scheme is adequate for the classification of files, but it makes no provisions for the classification of other kinds of tools associated with the making of fishhooks. To stimulate and interest others in the field of Hawaiian archeology, an expanded classification scheme, based partly on the above, is suggested (Table 4).

In format, my scheme follows Dr. Sinoto's classification of fishhook head types (1962:164). This will facilitate additions and deletions as more research becomes available. The one major difference between my proposal and that suggested by Emory and Sinoto (1961:54) is the addition of, or the differentiation of, the terms "filing edge" and "cutting edge." My classification key is based on (1) number and type of cutting edges for saws, (2) number and kind of cutting edges and FILING facets (surfaces) for saw-files, (3) number of filing facets for

files, and (4) form and type of cross section for all types. One category in this scheme that has been ignored, due to certain obvious reasons, is that of relative size and range of sizes for each classification. Words such as "large," "heavy," and "small" have been held to a minimum until a more realistic statistical study can be made. Although this scheme provides for a distributional analysis, no attempt will be made in this report. As implied above, this is not the final word on classification of coral and basalt tools. Additional studies might reveal a correlation between hooks and tool types.

The researcher, even with this key, has to make the original judgement. There will probably be no problem with saws, whether it be ST-A or ST-B; there should be no confusion of identification due to its "size -- it is large and heavy." Once the basic classification is made there is then the simple matter of using the key to classify the type. This is a typological and not a chronological scheme.

There will be borderline and overlapping forms, especially in ST-B and SFT-C (between saw and saw-file) and RT-D and FT-C (between reamer and file). There will also be certain tools that were originally made for one function and re-used for another. Worn down saws become an excellent supply for saw-files; worn down files become reamers, etc. The classification of such tools should apply only to its terminal uses. For example: In the Oahu Excavation Report (Emory and Sinoto 1961:54), Figure 48, item c is identified as a file "rounded, with worn point." This is apparently a file that was used as a reamer. Therefore, I would class this as a reamer with shouldered point (RT-C).

Coral tools, for the making of fishhooks, comprise nearly 50 percent of the total coral artifacts recovered from the Hale-o-Keawe. These include 34 complete or nearly complete saws and 10 fragments and pieces too small for classification, 12 saw-files, 7 files, 10 reamers, 5 reamer-files, and 8 fragments, mostly tips, broken from larger tools (see Figures 46 and 47). To my knowledge, this is the first attempt to identify and classify the "reamer" as a distinguishable tool type. Its key to identification is based on point type and general form.

Sea urchin spine tools (Heterocentrotus mammillatus). These were used in the making of bone fishhooks. Most are flat for about two-thirds the length of the spine. I found, by experimenting, that this tool is necessary for the very fine cutting around the knob or head end of the hook. Because these are generally easily made they were not saved. Therefore, they are the most numerous artifacts recovered from excavated sites and may still provide a clue to the question of chronology once it is intensively studied.

Game stones. Eight discoidal gaming stones of coral recovered from the Hale-o-Keawe are probably crudely made maika stones used in the ancient Hawaiian game of 'ulu maika. The largest specimen measures 7.4 cm. in diameter and 5.6 cm. thick. The smallest is 3.7 cm. in diameter and 2.1 cm. thick. All eight specimens exhibit a plano-convex cross section. Two specimens are partly damaged. Similar specimens have been classified by Tuohy (1965:55) as "rubbers." These all appear to have been purposely shaped and are hereby classified as gaming stones.

Figure 46. Coral saw files. 1. ST-A; 2. ST-B; C. ST-C; 4. ST-D; 5. ST-E; 6. SFT-A; 7. SFT-B; 8. SFT-C; 9. SFT-D; 10. FT-A; 11. FT-B; 12. FT-C. (For full descriptive classification, see Table 4.)

Figure 47. Files, reamers and reamer-files. 1. RT-A; 2. RT-B; 3. RT-C; 4. RT-D; 5-6. RFT-A; 7-8. RFT-B. (For full descriptive classification, see Table 4.)

Another ancient Hawaiian game played with stones was the game of konane. In this game, black (basalt beach pebbles) and white (coral beach-washed pebbles) stones were used as "men" in a game very similar to checkers. These coral specimens are here classified as "konane stones" because they both show an unnatural sheen. They are otherwise unmodified pebbles.

Sinkers. Fifteen coral sinkers are included in the collection. These include 13 grooved specimens, 1 knobbed, and 1 bread-loaf type. All are well shaped and are made of a reef stone (Figure 48).

Seven of the grooved specimens exhibit a complete longitudinal medial groove (Figure 48.1-4 and 7-9). The largest specimen measures 6.2 cm. long, 4.3 cm. wide, and 3.1 cm. thick. The smallest is 2.5 cm. long and 1.7 cm. in diameter. They range from nearly spherical to flat-oval to elliptical in form.

Two specimens exhibit a deep peripheral groove (Figure 48.5-6). These have been referred to as "pulley form" (Buck 1957:343). They are both pear-shaped and measure from 2.8 cm. to 3.3 cm. in length and 1.6 cm. to 1.8 cm. in thickness.

Four of the coral sinkers recovered from the Hale-o-Keawe fall into the category of unclassifiable (Figure 48.10-13). These resemble both the longitudinal and peripheral-grooved types but have odd forms. Two specimens exhibit a deep longitudinal groove on either face and are oblong in form. One is nearly rounded, flat on one side, with what

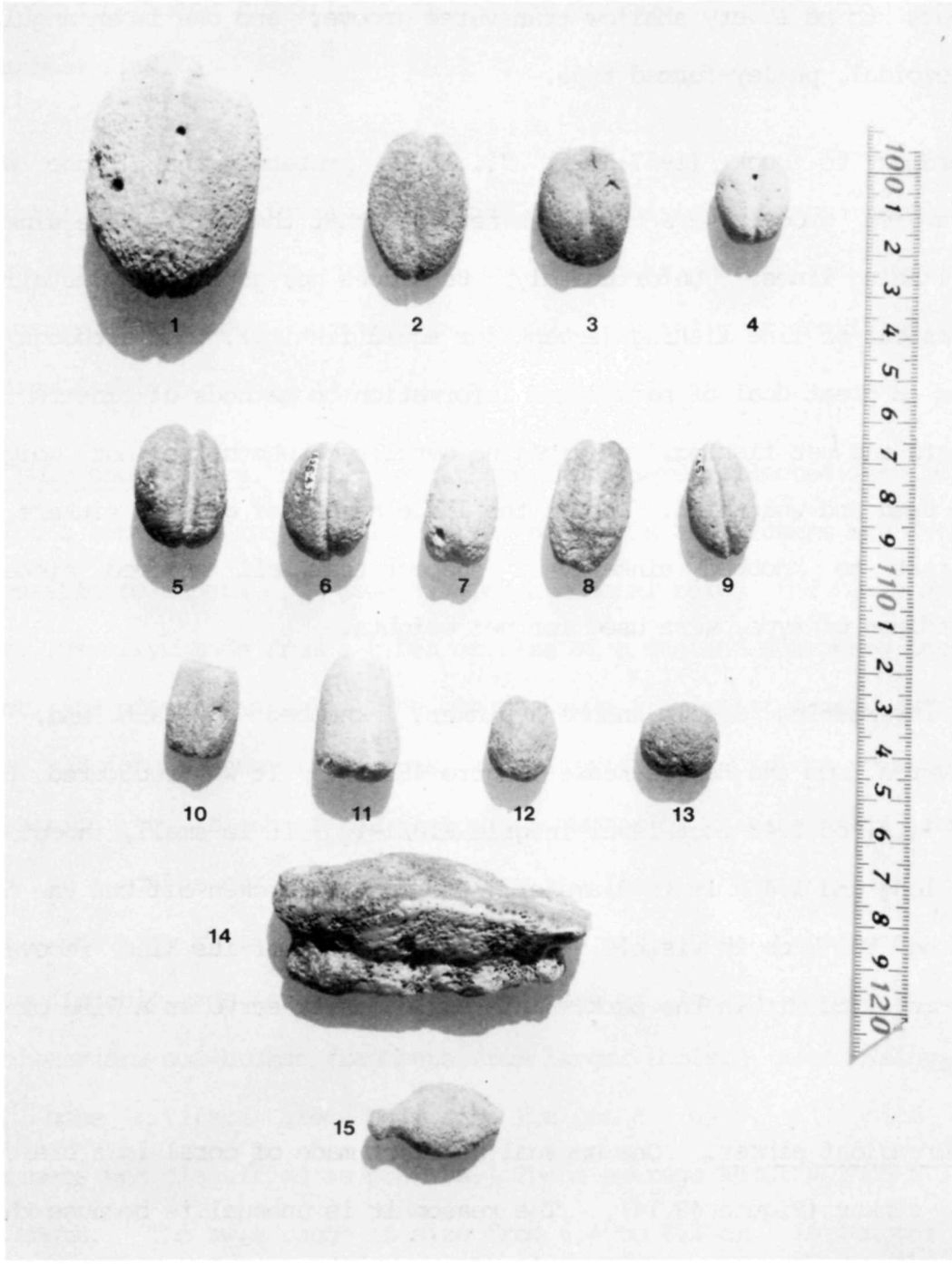


Figure 48. Coral sinkers. 1-4, 7-9. Sinkers with complete longitudinal medial groove; 5-6. Pulley form sinkers with deep peripheral groove; 10-13. Unclassified sinkers; 14. Bread-loaf sinker; 15. Double-knobbed sinker.

appears to be a very shallow transverse groove, and one is an angular, trapezoidal, pulley-formed type.

According to Buck (1957:342), "...It is probable that those with transverse grooves were used with nets and that the others were sinkers for fishing lines." Unfortunately, Buck does not go into any detail on any aspect of line fishing (except for squid fishing), and although he gives a great deal of background information on methods of construction of nets and net fishing, he gives no details on whether or not weights were used and what kind. Due to the large number of grooved sinkers, in contrast to knobbed sinkers, I suspect that all grooved sinkers, regardless of type, were used for net weights.

One interesting double-knobbed sinker, knobbed at each end, was recovered from the Hale-o-Keawe (Figure 48.15). It was recovered from the +1.21 to 1.48-foot level in grid F10/1-1. It is small, about 3.3 cm. long and 1.4 cm. in diameter. One knob is broken off but the neck forming the knob is visible. This is the first of its kind recovered from any site within the park. This could easily serve as a line or net sinker.

Breadloaf sinker. One unusual artifact made of coral is a breadloaf sinker (Figure 48.14). The reason it is unusual is because this type of object is usually made from basalt. This specimen was recovered from the 3.0 to 3.9-foot level in grid C7. It is crudely made but shows all the features of a classic type as described. It is 7.4 cm. long, 3.4 cm. wide, and 3.0 cm. thick. A similar specimen was

recovered by Tuohy (1965:75) from Ki'ilae village. Tuohy's specimen was a surface find.

Bone

A total of 158 artifacts of bone and 43 animal teeth were recovered. These include bone awls, pickers, needles, hooks, hook blanks, cut bone fragments, scrapers, ornaments, and several unidentified and unclassifiable objects.

Awls and Pickers. Fifty-eight specimens were collected (see Figure 49 for a sample of those collected). Bone awls and pickers are nearly impossible to separate. However, as a general rule, the heavy animal bone, usually made from a tibia or ulna of a dog and sharpened into a point, are classed as awls. The others, made from split mammal and bird bones and long slender fish bones, are classified as pickers -- used for extracting the flesh of the pipipi, a member of the sea snail family used as a source of food. Except for the large pickers, which could easily serve as awls, the small, sharpened split bones, sharpened, were unquestionably made for the specific purpose of picking pipipi. These specimens are not broken fragments from larger tools. Also, since the bird bone artifacts are too fragile for use as awls, all bird bone specimens are classified as pickers. These average about 4.3 to 6.9 cm. in length. The awls range in size from 6.4 to 8.1 cm. in length; the split bone pickers range from 2.5 cm. to 6.8 cm. in length; and the sharpened fish bone specimens (pickers) are from 6.3 to 10.7 cm. in size.

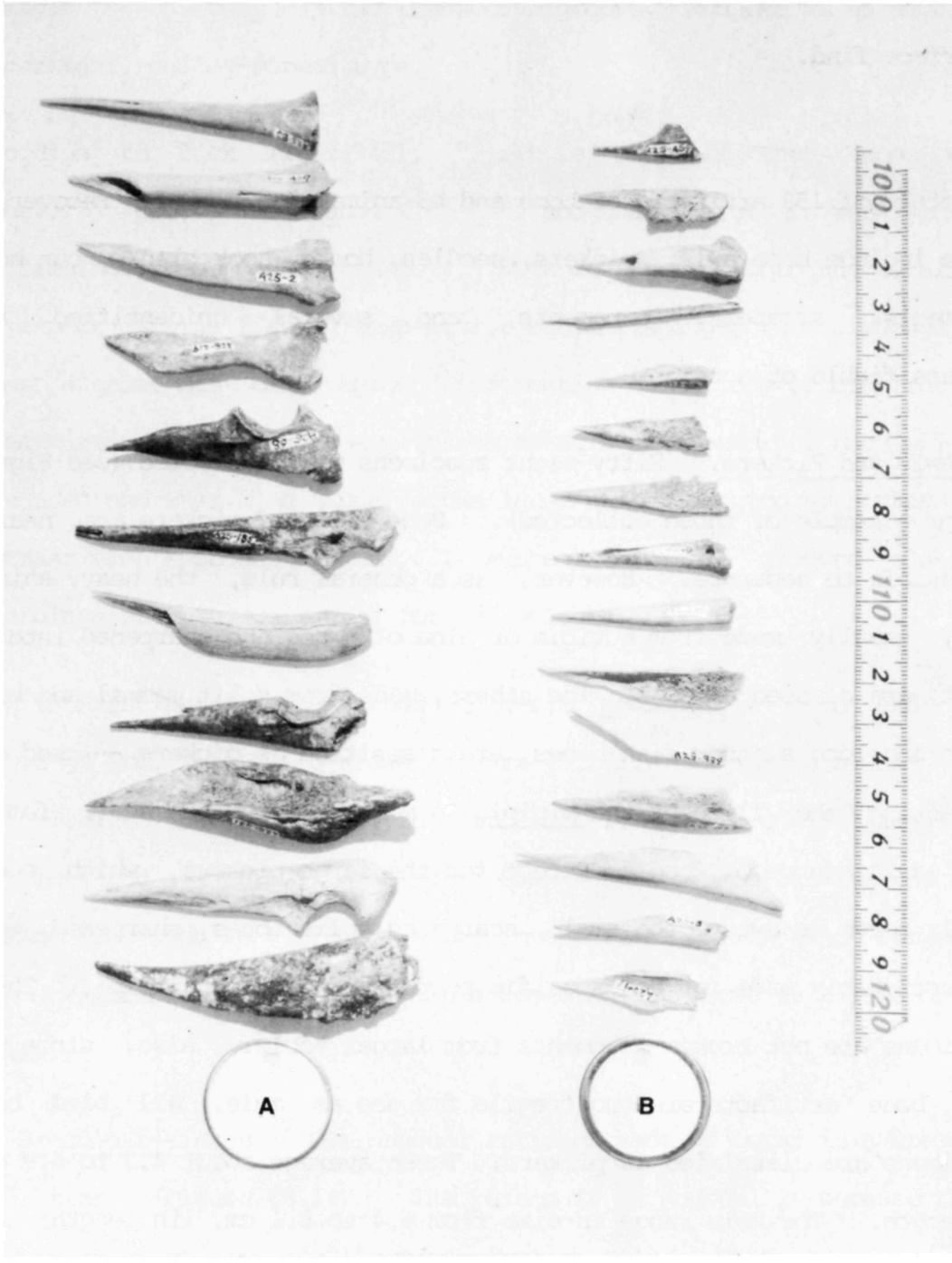


Figure 49. Bone awls (A) and pickers (B).

Needles. Nine bone needles were recovered. These include a complete one (A25-H7/2-1/31) which is 15.3 cm. long and 0.3 cm. in diameter (Figure 50.A2). One end is pointed and the other is slightly flat to provide a surface for the eye. The eye, drilled from both sides, is not complete. This specimen was recovered from the 2.03 to 3.03-foot level in grid H7. The other nearly complete specimen (A25-E10/4-3/202) was recovered from the sand fill layer in grid E10 (Figure 50.A4). It appears to be made from a fish bone. It is 7.0 cm. long. It is nearly flat and has a slight curve. One end is pointed, the other is broken at the eye.

Three specimens are the tip portions of rather large needles, and two are the eye end of large specimens. Specimen number A25-5D/252 (Figure 50.A5) is interesting in that it appears to have been purposely cut and drilled on the tip to form a socket. There is an eye toward the blunt end. It is about 2.0 cm. long and 0.5 cm. in diameter and the point is well polished. One side of the drilled end is broken.

Specimen number A25-F9/4-3/240 is here classified as a needle fragment, however, it could have served equally well as an awl. It is 13.3 cm. long, 0.7 cm. wide, and 0.4 cm. thick. One end is pointed and the other end is smoothed, rounded and flat (Figure 50.A1).

Two other illustrated specimens are A25-G5/174 (Figure 50.A3) and A25-011-2-2/354 (Figure 50.A6). Specimen 174 was broken during excavation and only the illustrated portion was recovered. The recovered portion is the tip of a specimen that was probably as big as specimen 31 (Figure 50.A2). It is 8.5 cm. long and 0.3 cm. in diameter.

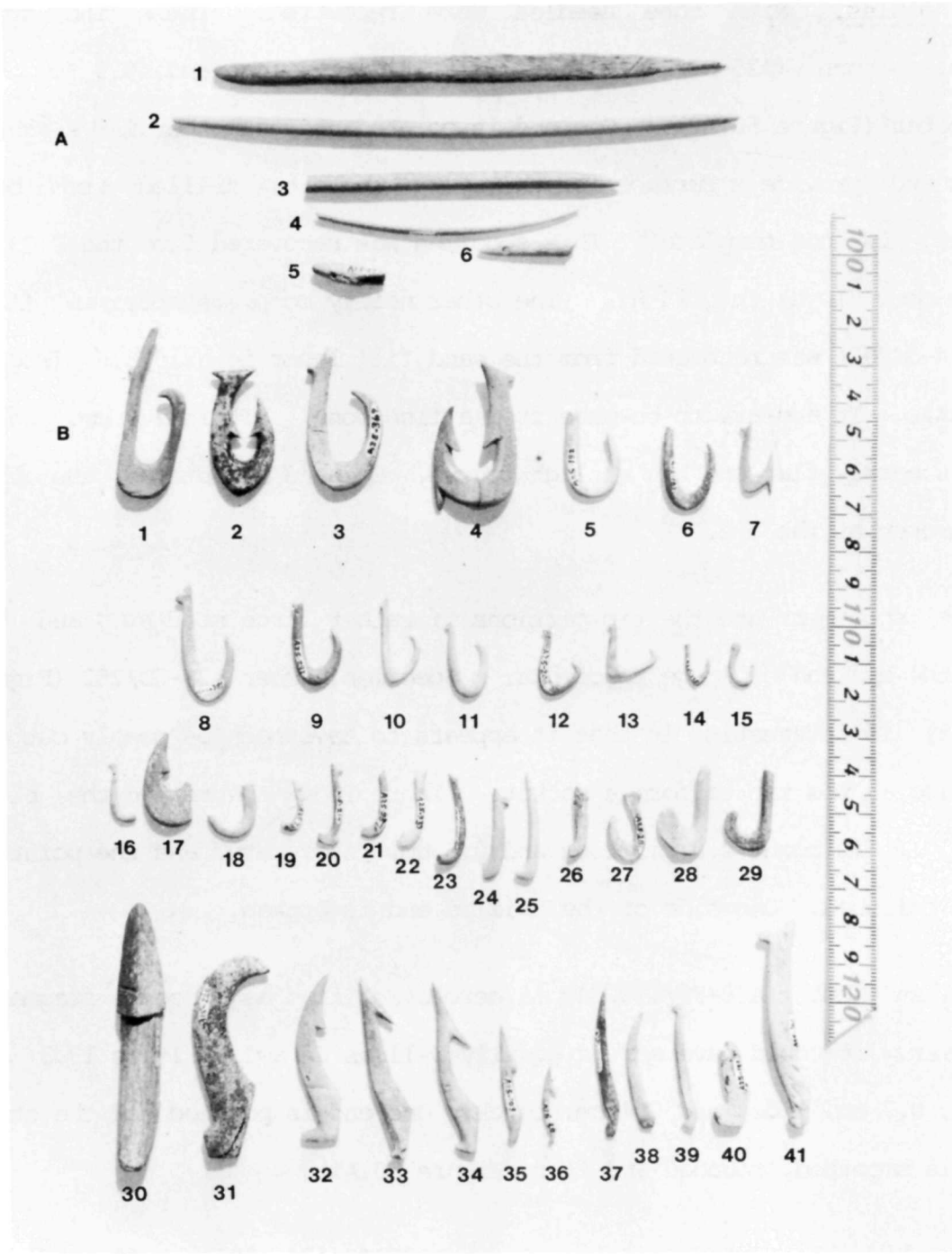


Figure 50. Bone needles, fishhooks and hook fragments. A1.240 (Accession number); A2.31; A3.174; A4.202; A5.252; A6.354; B1.164; B2.366; B3.369; B4.241 and 41 (mended); B5.132; B6.183; B7.84; B8.389; B9.291; B10.56; B11.390; B12.206; B13.253; B14.238; B15.108; B16.241; B17.126; B18.282; B19. 286; B20.217; B21.34; B22.335; B23.36; B24.95; B25.294; B26.28; B27.281; B28.264; B29.270;B30.200; B31.220; B32.61; B33.15; B34.289; B35.103; B36.40; B37.25; B38.91; B39.38; B40.192; B41.161.

Specimen 354 is only a portion of the body and the eye of a needle. It is 2.5 cm. long and 0.2 cm. in diameter.

Fishhooks. Included in this group are 44 fishhooks, fishhook fragments, and a shark-hook point. The complete fishhooks are classified and tabulated (Table 8) according to the scheme provided by Emory (Emory et al. 1959:10), and the fragments and head types are classified following the system provided by Sinoto (Sinoto 1962:164). Ample descriptive material is available on Hawaiian fishhooks. Therefore, all that is presented here is a simple tabulation of hook forms and types.

The collection from the Hale-o-Keawe is too small to be of much value in terms of chronology. However, it is agreed that with this number added to the already respectable collection, it will not be long until a reliable essay can be made. This collection includes 18 complete fishhooks of the one-piece jabbing and rotating types, 13 fragments of the same types, 8 two-piece points, 3 two-piece hook shanks, and one shark-hook point (Figure 50.B). The latter specimen requires special comment since it is the first shark-hook point from Honaunau.

According to Buck (1957:338), "Hawaiian shark hooks (makau mano) are the largest of the local fishhooks." This type is classified by Emory, Bonk, and Sinoto (1959:10), as "crescent points," that is, the hook shank is separate from the hook point. The Hale-o-Keawe specimen (Figure 50.B.30) was recovered from under a very large base stone in the east face of the Great Wall, in grid D5, at what would be "ground

level," or about 4.5 feet from base or zero level (base or zero level is 8.86 feet above sea level).

In overall size, it is 7.2 cm. long, 1.4 cm. wide, and 1.5 cm. thick. The point, triangular in cross section, is 3.0 cm. long and the tang is 4.2 cm. in length. It has a transverse lashing groove on the back, 0.6 cm. from the juncture of point and tang and 1.6 cm. up from the rounded base of the tang. The groove is 1.8 cm. wide and 0.1 cm. deep. The base of the tang is rounded with a sloping notch. The front of the tang, opposite the grooved back, is 4.2 cm. long and the back of the tang, same side as the groove, is 3.8 cm. long. The long side of the tang is slightly flattened.

Hook blanks. Fishhooks in various stages of completion, either discarded or lost, are classified as hook blanks. Nine such specimens are included in the collection from the Hale-o-Keawe (Figure 51.A). Waste material from the manufacture of fishhooks shows cut or abrasion surfaces. Six cut bone specimens were collected and are here included (Figure 51.B). Two smoothed and polished specimens are unclassified. Also, included in this group is a large chunk of unworked whale bone.

Miscellaneous. A group of nine specimens have not been identified or classified. These include a very thin button-like object 1.8 cm. in diameter and 0.1 cm. thick. It shows a very high polish on one surface, and judging from its nearly perfect symmetry it is probably machine made.

Table 8

Fishhooks and Hook Fragments

One-Piece Hooks

Catalogue No.	Level	Code	Head	MEASUREMENTS IN CENTIMETERS Shank	Point	Width	Remarks
A25-F10/2-1/238	+1.49	IA(1)a	HT1d	1.1	0.6	0.6	
A25-E10/3-4/108	2.91-4.04	IA(1)a	HT1d	1.2	0.7	0.7	
A25-D7/3-1/390	3.6	IA(1)i	HT4a	2.1	1.4	1.0	
A25-G7/2-1/164	Fill	IB2(1)a		4.6	3.0	1.4	
A25-F10/4-3/291	+1.21-1.48	IA(1)a	HT4a	2.2	1.5	1.2	
A25-D7/3-1/389	3.6	IA(1)a	HT4a	3.1	1.7	1.3	
A25-I7/1-3/369	4.81	IB2(1)a	HT3c	3.8	2.7	1.9	
A25-G7/3-3/56	1.83-2.66	IA(1)a	HT4a	2.3	1.2	0.9	
A25-E10/4-1/206	Fill	IB1(1)a	HT4b	1.7	0.9	1.0	
A25-G7/3-3/84	3.39-3.87	IA(4)a	HT4a	1.8	1.2	0.8	
A25-I6/2-2/366	3.6	IB4(2,5)a	HT3c	3.3	2.6	1.6	
A25-F9/4-3/241	+1.49						Mended. Two Catalogue Numbers.
A25-H8/3-3/41	1.44-3.22	IB4(2,4,5)a	HT3c	4.0	2.9	2.3	
A25-D6/1-1/270	2.52-4.22	IA/Bx		2.1	1.0	1.1	
A25-F10/1-1/281	+1.21-1.48	IA/Bx		1.8	1.2	0.9	
A25-E5/4-2/264	2.52-4.22	IA/Bx		2.4	1.2	1.1	
A25-F9/4-4/253	+1.49	IB1(1)i	HT4a	1.6	0.3	1.4	
A25-C8/1-2/183	3.79-4.50	IA(1)a	Broken	2.2	1.8	1.4	Head broken.
A25-D7/2-3/132	1.93-2.46	IA(1)a(f)	Broken	2.3	1.8	1.5	Shank cut and filed.
A25-G6/4-2/36	4.70	S-IA/B(a,b)a	HT4a	2.3			
A25-G8/335	Fill	S-IA/B(a,b)a	uncl.	2.0			
A25-F10/1-4/294	+1.21-1.48	S-IA/B(a,b)a	HT2a	2.8			
A25-E9/1-4/95	Fill	S-IA/B(a,b)a	HT4a	2.5			
A25-G6/4-3/28	3.5.4.7	S-IA/B(a,b)a	HT4a	1.3			Very crude.
A25-F9/4-3/241	+1.49	SIA/B(a,b,c)a	HT4a	1.7			
A25-E10/2-3/217	2.62-3.29	S-IA/B(a,b,c)a	HT4a	2.1			Knob on shank not barbed.
A25-F10/1-4/286	+1.21-1.48	S-IA/B(a,b,c)i	HT4a	1.4			
A25-F10/1-1/282	+1.21-1.48	S-IA/B(b,c)a					
A25-F6/4-4/34	3.27-4.97	S-IA/B(b,c)a					
A25-D5/3-3/263	2.52-4.22	S-IA/B(d)a					
A25-C8/3-4/126	2.87-3.50	S-IA/B(2)(d)a					
			Shark Hook Point				
A25-D5/1-2/200	Fill	II C 1 C(1)a	PP338				Total Length L.7.2, W.1.4, Th.1.5
			Two-Piece Hook Points				
A25-E10/2-3/220	3.46-4.1	IID4(1)Bb1a				5.3	
A25-H9/3-3/61	3.2-3.9	IID4(2)Bb1a				4.3	
A25-H6/4-3/15	2.1	IID3(2)Bb1a				4.9	
A25-F10/4-1/289	+1.21-1.48	IID3(2)Bb1a				4.6	
A25-E9/4-1/103	2.96-3.48	IID3(2)Cb1a				3.2	
A25-F7/3-1/40	1.85-3.09	IID3(a)AAb1a				2.0	
A25-H6/2-3/25	4.1-4.7	IIIF3(1)BBb1a				3.8	
A25-E10/1-4/91	2.48-3.48	S-IIIE/F3a				3.1	
A25-C7/2-3/192	4.24-4.81	IID5Bb1a			2.3		Broken
A25-F7/3-1/38	1.85-3.09	IID5BBb1a			3.3		
A25-E8/2-2/161	2.79	IID5Bb1a			5.5		

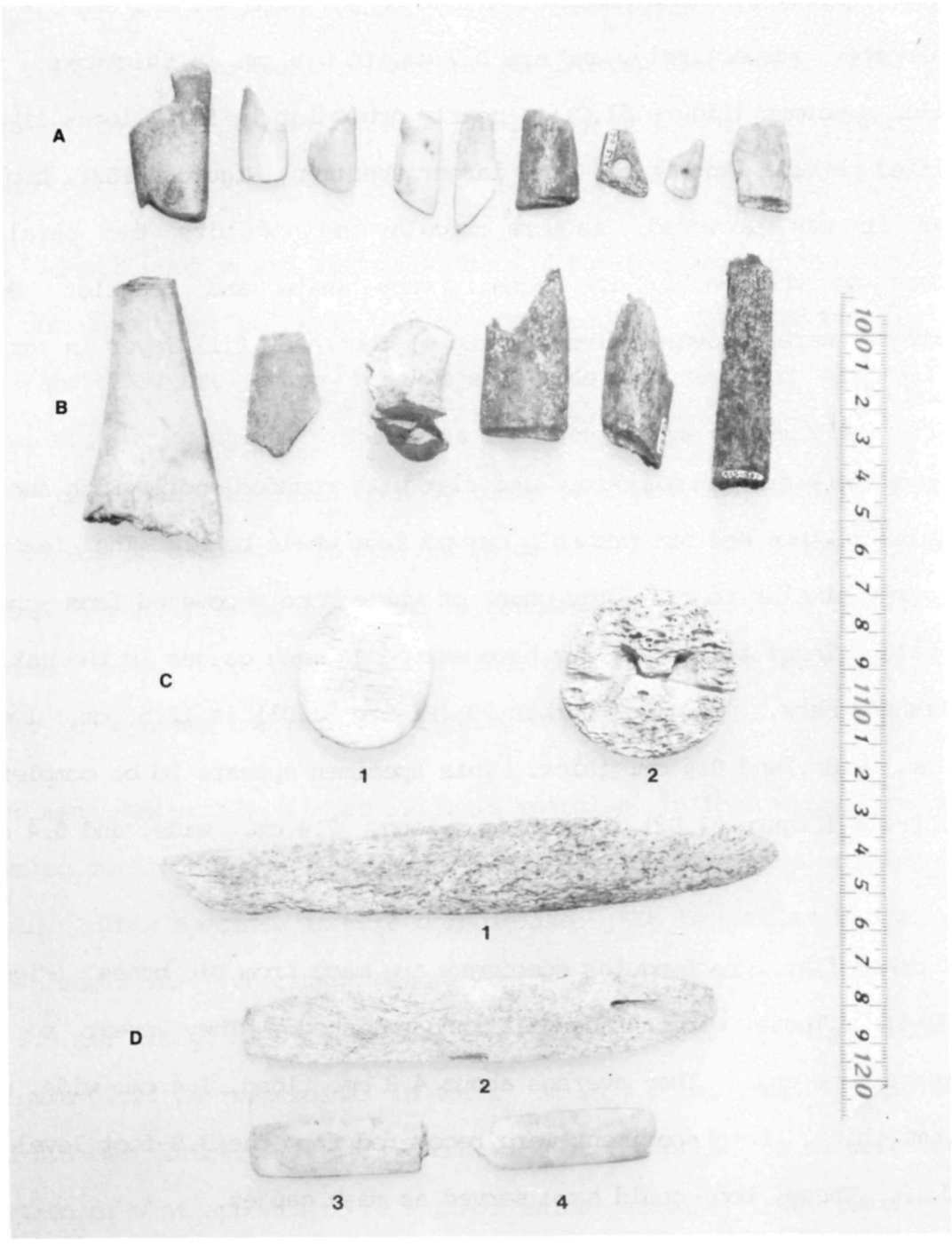


Figure 51. Hook blanks (A), cut bones (B), bone disks (C), and net guages (D).

Two very thick, bleached bone, disk-like objects are 4.3 cm. and 3.8 cm. in diameter, respectively, and are 0.7 cm. to 0.8 cm. in thickness. The smaller specimen (Figure 51.C1), nearly orbicular in form, looks like a modified patella (knee cap). The larger specimen (Figure 51.C2), broken after it was recovered, is more circular and exhibits two parallel grooves on the back. The bone is very white and fragile. Both specimens were recovered from the top of the sandy fill layer in grids C9 and D9.

Two specimens are long, thin, and flat with rounded ends. Both show a cellular texture and are probably carved from whale bone. The texture is very similar to the large chunk of whale bone recovered from under the wall. These flat bones may have served as mesh gauges in the making of fishing nets. Specimen number 99 (Figure 51.D1) is 12.5 cm. long, 2.3 cm. wide, and 0.4 cm. thick. This specimen appears to be complete. Number 418 (Figure 51.D2) is 16.3 cm. long, 2.4 cm. wide, and 0.4 cm. thick.

Two other flat, rectangular specimens are made from rib bones (Figure 51.D3-4). These were abraded flat and polished. They appear to be broken at one end. They average about 4.8 cm. long, 1.4 cm. wide, and 0.2 cm. thick. Both specimens were recovered from the 3.9-foot level in grid 17. These, too, could have served as mesh gauges.

The last two unidentified specimens are cut from what appears to be the ulna of a small dog. Specimen number 500 is 6.9 cm. long, 1.1 cm. wide, and 0.6 cm. thick. The ends are cut and show some degree of polish, but the body of the bone is unmodified. Specimen number 375 is 3.8 cm.

long, 0.9 cm. wide, and 0.4 cm. thick. One end is cut and polished and has evidence of two small, longitudinal grooves along each side. The rest of the bone is unmodified. These may have been for making small fishhooks.

The identification and classification of the following three artifacts are not consistent or clear in previous reports. Specimen numbers 19, 79, and 129 are sharp bone objects made for cutting (chiseling), scraping, or gouging. Specimens identical to my number 129 (Figure 52.1) have been classified both by Tuohy (1965:49) and Soehren (1962:15) as chisels or gouges. It appears to be made from the radius of a small animal, possibly a dog. One end is rounded and flat with a very smooth, beveled edge. It was suggested that this could have been used as a wedge to separate the weft in patching mats.

Specimen number 79 (Figure 52.3) is spatulate in form with a rounded, beveled cutting edge. It is made from a portion of a rib, probably from a pig. This specimen is more chisel-like. It is similar in shape to the "shell adze" specimens described on page 91 (see Figure 44.2). It is 5.9 cm. long, 1.9 cm. wide, and 0.3 cm. thick. Specimen number 19 (Figure 52.2) is trapezoidal in form. It is 4.1 cm. long, 2.5 cm. wide, and 0.5 cm. thick. It is 1.6 cm. wide at the poll. It is made from a portion of what appears to be a small animal scapula. The cutting edge is beveled and rounded on one corner. This, too, is similar to the shell adze described above.

Hook-shaped ornament. Artifact number 337 (Figure 52.14) is a hook-shaped bone ornament (see also section on shells, this report, page 97

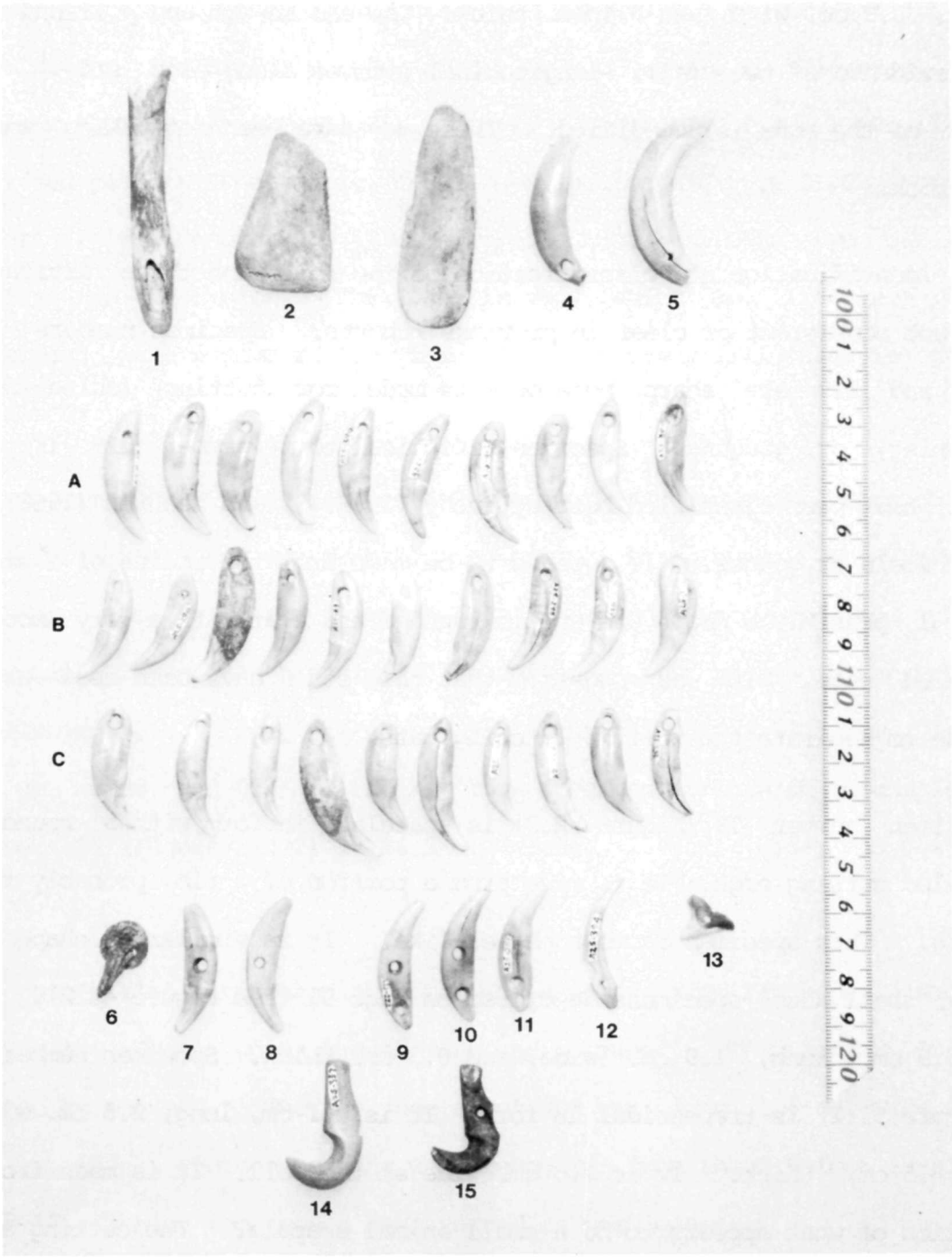


Figure 52. Bone scrapers, teeth and hook-shaped ornaments. 1-3. Sharp bone objects for cutting, scraping or gouging; 4. Pig incisor, single performation proximal end; 5. Pig tusk, single performation; Rows A,B,C. Dog canines, single perforation proximal end; 6. Toggle; 7-8. Dog canines, single perforation center; 9-11. Dog canines, two perforations proximal and center; 12. Pig tusk, filed groove near proximal end; 13. Shark tooth, drilled hole; 14. Bone hook-shaped ornament; 15. Shell hook-shaped ornament.

and Figures 45.14 and 52.15). In overall measurements it is 3.4 cm. long, 2.2 cm. wide, and 1.0 cm. thick. The shank is plano-convex in section and measures 1.8 cm. to the juncture with the hook. The face of the shank is 0.9 cm. wide and is flat. A slight groove separates the shank from the hook portion. The shank is 0.9 cm. wide at the juncture and 0.6 cm. wide at the top. This specimen may be unfinished as there is no means provided for suspension. It could, however, have been suspended by wrapping a cord around the mid-portion of the shank. This is a well-made and well-polished specimen.

Toggle. A type C bone toggle "arched with a broad foot at each end" (Emory et al. 1959:29, 31) was recovered from the 2.18 to 3.01-foot level in grid E10. This specimen is broken on the arch; only one foot is present (Figure 52.6).

Shark tooth. One shark tooth with a drilled hole was recovered from the 3.29-foot level in grid E10 (Figure 52.13). With only one specimen, it is difficult to classify; however, it was probably a part of a shark-tooth dagger or knife (Buck 1957:434).

Dog and pig teeth. Dog canine teeth and boar-tusks were apparently a ready source of supply for pendants, bracelets, and anklets. Forty-two specimens, all exhibiting one or two perforations for suspension, were collected from the Hale-o-Keawe.

According to Buck (1959:545),

> The canine teeth of dog (*'ilio*) with holes drilled through the root and strung on a cord have been regarded as dog-teeth necklaces (*lei*

'ilio). They may have been used temporarily as such, but is is more likely that they were so strung until a sufficient number had been collected to make the dog-tooth leg ornament characteristic of Hawaii.

Thirty-three of the canine specimens recovered have a single perforation at the proximal end (Figure 52, Rows A, B, and C). The hole, in every case, is drilled from both sides. Four of the specimens show some modification on the crown tip.

Two of the canine specimens exhibit a single-drilled hole in the center (Figure 52.7 and 8). These specimens have been flattened on each side. The crown is cut and filed flat, and the roots have been slightly modified by filing. These are probably bracelet plaques. They are similar in form to the boar tusk bracelet illustrated by Buck (1959:547, 549).

Two specimens exhibit two holes, one hole at the proximal end and the other in the center (Figure 52.9 and 10). A third specimen also shows two holes at the proximal end, but they are only 3 mm. apart (Figure 52.11). The crown of each is filed flat, but the root portion is unmodified. The two specimens with the central and proximal perforations are flattened on each side. These are identifical in length (3.5 cm.), and the holes line up perfectly.

In the description of feather images Buck (1959:508, 509) describes various methods of affixing teeth on the images. One method of preparation of the teeth he describes thus: "The crown point of the

teeth have been filed off and each tooth drilled laterally with two holes..." (Buck 1959:509) The present specimens could have been prepared for such a function. Again, however, they could also have served as bracelet plaques as they are similar to the boar-tusk referred to above.

Four of the specimens are made form pig teeth. One is a tusk which has a single perforation at the base (Figure 52.5). One specimen (No. 394) has a lateral V-cut groove near the proximal end (Figure 52.12). The tooth is split but shows a portion of a groove on the opposite side. This was probably used as a pendant. Specimen number 256, also a pig incisor, is very highly polished with a drilled hole for suspension (Figure 52.4). Both the proximal and distal end are filed round. The other two specimens of the group are made from boar's tusks. These were all probably pendants.

Human Remains

The foreman who worked with Mr. Wall in 1902, when interviewed by Mr. Stokes in 1919, reported that he

> had been informed that a large flat stone, then laying at the water's edge was the cover of "the bone pit" and was originally set level with the pavement of the main platform near its eastern edge. During reconstruction, the bone pit was found and consisted of an arched place, i.e., horizontal on vertical stones. Human bones were found in the cavity... (Apple 1966:Appendix AA3).

During the present investigations a complete search was made for this bone pit, the luapa'u, with negative results. There was some pao, open work construction, or arched places (Figure 53), found near the northern edge of the 1902 reconstruction outside the courtyard of the temple platform, and a small paved section (Figure 54), but no bones of any kind. If there was a bone pit here, there is no evidence of it.

Even though the foreman reported human bones being found, I feel this to be an error. He was being interviewed 17 years after the fact, and this type of heiau does not require human sacrifice. The deified bones of royalty were placed in the temple, not under it. If there was a luapa'u located in the area indicated, it would have been for the removal of the animal offerings and other debris collected from the temple. Since there was no evidence to support this thesis, however, I suspect that the offerings were collected and disposed of at sea.

Human remains from the Hale-o-Keawe are all secondary deposits. They were not purposely buried. Therefore, I am reluctant to call them burials. These human remains were found in the upper portion of the temple level that was reconstructed by Mr. Wall in 1902. There was no evidence of a prepared crypt such as those found in the Alealea temple platform (Ladd 1969a:115).

The bones are well bleached but not fragile (Figure 55). One group is made up of three tibias and two femurs and was recovered from the 1.87-foot level in grid C8/1-3. From the 3.55-foot level in grid C8/3-4 another group made up of five tibias and four femurs was recovered.

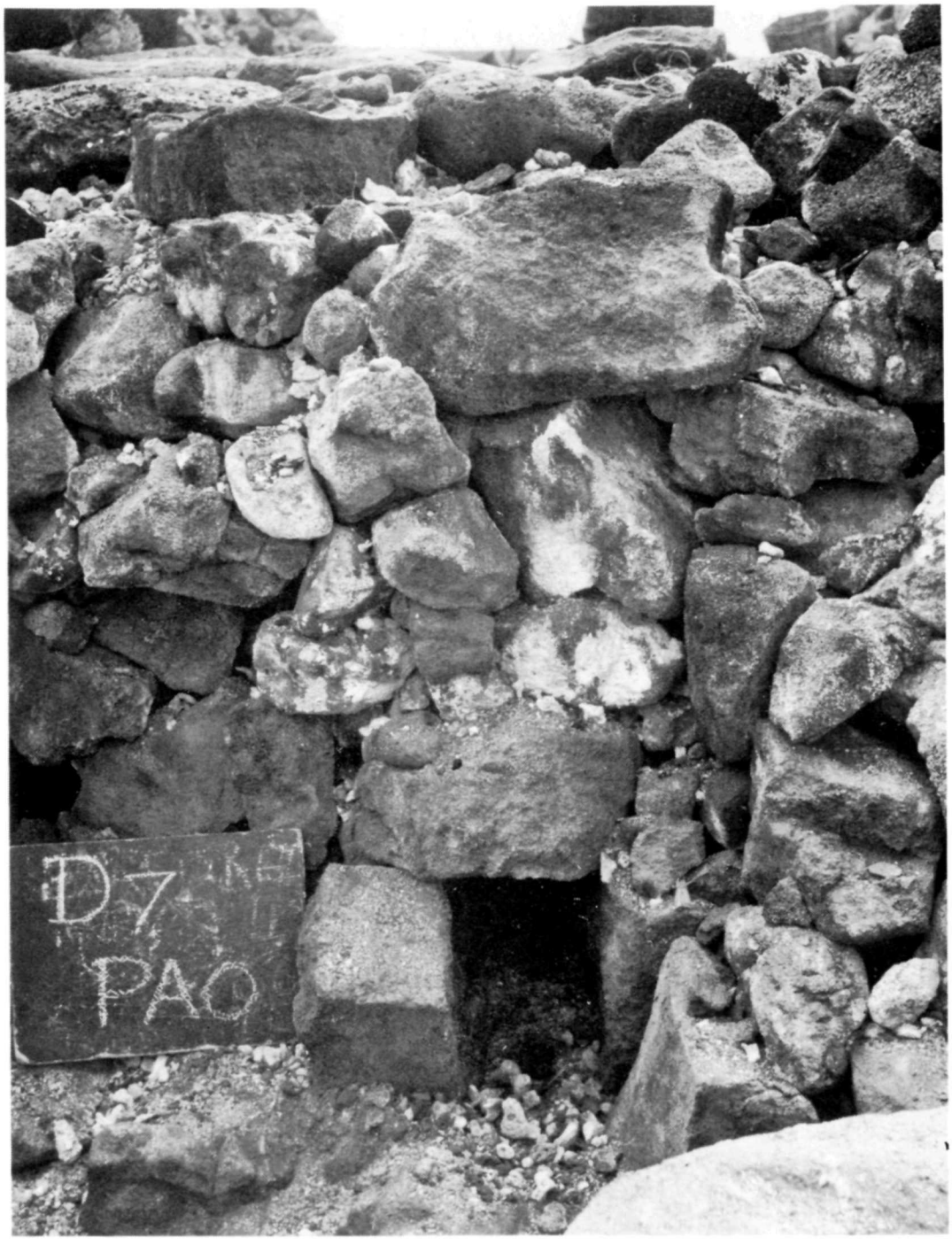


Figure 53. Pao or open work construction found in Grid D8. (Photo taken in 1966.)

Figure 54. Small (one square meter) paved section in grid D8. (Photo taken in April, 1966.)

Figure 55. Group of human long bones (3 tibias, 2 femurs), covered with one stone near corner of grid C8. (Photo taken in April, 1966.)

In 1961 a third group was removed by Miss Amy Greenwell. The exact location of this latter group was not determined; however, Miss Greenwell indicated the general location of grid F10 as near as she could recall.

In grid H10/1-3, at the 2.80-foot level, in the rock fill outside face LL, a heavy concentration of human and animal bones was located. The human bones were mostly vertebrae and rib fragments. There were no skull or long bones. The bones, which were not bleached, were generally small and may represent a female or several sub-adult individuals.

Chapter 5

STABILIZATION AND RESTORATION

The main objective of this project, as stated elsewhere in this report, was to relocate, if possible, the architectural features of the original stone platform of the Hale-o-Keawe for an accurate and complete restoration. (Figure 5 is a map of the platform after restoration.) In doing this, the historical data as collected and compiled by Mr. R. A. Apple (1966) were reviewed and re-evaluated in terms of the archeological content. These and the field experience and field evidence gained from the present archeological investigations were all brought to bear.

Armed with the historical data and field experience in working with Hawaiian stone structures, the 1902 restoration was systematically excavated. Fortunately, Mr. Wall, in his restorations did not disturb any of the underlying foundations of the prehistoric structure but protected them by adding platforms to the side, front, and top.

During the excavations the remains of the original seawall facing the ocean parallel to Honaunau Bay, extending eastward from the 1902 platform, were located in grid E2. In this same grid, running at about a 45-degree angle northward off of the preceding seawall, the foundations of the angled seawall as shown in the Ellis drawing were located. The foundations, resting on pahoehoe surface, were stabilized in place and the upper portions were reconstructed (see Figures 25, 26, 27, and 32).

Since the stabilization and reconstruction of this seawall, an earlier sketch made by Ellis has been located (see Figure 17). The sketch shows the seawall as restored. The remainder of the seawall, facing Akahipapa Island (Face F, G, and I) extending to the southwest, was reconstructed on top of what is thought to be a county and 1902 reconstruction, and also on top of some foundation stones found in place further west which are probably prehistoric (Face JJ).

Three sides of the house level, and the paved courtyard formed by Face II, LL, and features 5 and 9 were definitely established (see Figures 29, 30, 31, 56, 59). Feature 5 was first located in grid G7 and was traced westward under Face K, lining up with what Mr. Stokes called the Hale-o-Puni (see Figures 28, 29, 58, and 59). The foundation for feature 5 was at the same level as that of the Great Wall (5.1 below datum zero) and was in some cases on pahoehoe surface. All efforts to determine where this face joined feature 9, west face of the Great Wall, turned out negative. A complete search, with negative results, was made extending to the south under Faces BB, Y, P, and KK.

The southern edge of the platform was reconstructed on top of feature 5. Face LL was simply cleared along the base to show the foundation and was not excavated below the existing ground surface. This face was not reconstructed. It could not be determined where the platform abutted the Great Wall. After consulting with Dr. Kenneth Emory, however, it was agreed that in order to accommodate the images in the courtyard, it was assumed that the courtyard was longer than the house level to the south. The joining portion of the restoration on the south is therefore

Figure 56. Reconstructed north face of the courtyard and house level formed by Face II. (Photo taken in 1967.)

Feature 57. Hale-o-Keawe platform, with some of the temple images in place, as restored in 1966-1967. (Photo taken in 1967.)

Figure 58. Back view of Hale-o-Keawe prior to 1966-1967 restoration. In 1919 Stokes was told the area to the left of the pathway was the site of the Hale-o-Puni. (Photo taken February 8, 1963.)

Figure 59. Back view of Hale-o-Keawe after 1966-1967 restoration. The two walls (face LL and II) formed the south and north boundaries of Hale-o-Keawe and did not form a separate structure (Hale-o-Puni.) (Photo taken in 1967.)

based on an "educated guess," but feature 5 and Face LL definitely form the south boundary of the house platform. The foundation was stabilized and the upper facing wall (feature 5) was reconstructed (Figures 28 and 29).

The front of the paved courtyard, as reconstructed by Mr. Wall, extended to face U, V, and W to the east, to face X on the north, and face CC and around to face BB on the south. The latter (CC and BB) formed the passageway. The pavement to the south extended over feature 5. It was determined during excavations that the foundation of U, V, W, and X rested on top of a rubble layer.

Feature 9, the west face of the Great Wall (Figure 31), extended from grid H6 all the way into grid B7 on the north. The foundation of feature 9 was composed of very large select boulders resting on sand. From the corner of grid H6 to where it cornered with G6, the foundation was one stone high. This was the opening for the former entrance and two very large facing stones had been moved. From grid G6 to the center of grid D7, it was two stones high and the top of the second stone was just below the pavement as reconstructed by Mr. Wall. From the center of grid D7 to face X and beyond to the juncture with faces F and G, it was one stone high.

Because the large stones in the top row of feature 9 were not disturbed by Mr. Wall, and since there was no other evidence of a pavement in the areas tested, it was determined that the east face of feature 9 formed the front or eastern edge of the paved ccurtyard. Only the section joining the north face on the end of the Great Wall was reconstructed on

top of the original foundation. The wall was in such good condition that only the chinking stones were replaced.

The base of face II was cleared in grids E11, F12, and F13 and was found to rest on a pahoehoe surface. Stokes reported this portion as part of his Hale-o-Puni. Also, the base of face J was cleared and found to rest on top or very near the present ground level, and to extend over face II in grid F11. A test was made in grids F11 and F10 to determine the nature of the fill. About six feet toward the east a wall, facing west, feature 10, was located.

This feature was traced toward face II and was found to abut face II at the lower level, lower than face J. Therefore, it became imperative that the total extent of face II be traced. It was found that the foundation rested, in some areas, on sand and, in some other areas, on pahoehoe surface, and was very well constructed of large select stones. It abutted feature 9 near the center of grid D7. The foundation of face II was stabilized and the top line of stones were reconstructed (see Figure 56) forming the northern boundary of the platform.

Since feature 10 abutted face II, it was traced to the south where it abutted feature 5, east end of face LL, in grid H9. During the test in the fill, the dark sand layer was found to extend only to feature 10. Therefore, it was determined that Mr. Wall in 1902 had reconstructed the back of the kahua hale on its original foundation, and that face J was a later addition. (The foundation of feature 10 was well below ground level.) Since feature 10 was in very good condition, only the chinking stones and the top line of stones were replaced.

To aid in the reconstruction of the House of Keawe, plywood casings were installed to accommodate the house posts (Figure 60). This was done so that the platform need not be taken apart again for the actual construction. Since the installation of the casings, however, some research into actual construction techniques and methods has led to the conclusion that the original measurements by Reverend Ellis in 1823 were probably made on the outside of the house rather than the inside. Therefore, the house posts were probably as much as 3 feet from the outside of the wall all around the building; i.e., the ti leaf thatching formed a pad nearly 3 feet thick on the outside. A change will be made at the time of the house construction.

The same method as the above was used for reserving a hole for each of the seven images to be placed in the courtyard. Rather than plywood casings, however, two 55-gallon oil drums welded together to form the sleeve were installed with the top just below the pavement. An image will be installed in each casing (Figure 61).

During the entire search every effort was made to find evidence of the wooden fence or palisade around the platform with negative results. A few fragments of wood were collected but these were scattered and random finds. In grid H6 there were some heavy concentrations of charcoal and on the paheohoe surface some burned areas, which may have been caused by cooking fires. Some of the sand was floated and the charred material consisted mostly of candle-nut shells.

Figure 60. Plywood casings for house posts installed in platform to facilitate reconstruction of Hale-o-Keawe. (Photo taken in 1966.)

Figure 61. Casings made from two 55-gallon oil drums installed in platform to reserve holes for images. (Photo taken in 1966.)

Based on the combination of historical accounts and on-site evidence in the form of architectural remains, I feel that the present restoration of the platform (Figure 57) is as nearly accurate as it can be.

Chapter 6

REMARKS AND CONCLUSIONS

To reach conclusions based on a long-range comparative analysis is tempting. However, tempting as it might be, it must be deferred until a sufficient working sample is collected, not only from Honaunau but from other sites in Hawaii as well. Individual site reports from Hawaii, grist for the comparative mill, are limited and few in number. Therefore, the brief comparisons presented here will have to suffice.

I agree with Tuohy (1965:103) that Hawaiian archeology needs some kind of chronological scheme for the identification and classification of the various archeological horizons, such as the suggested "phase system." Only one morphological classification with chronological implications based on fishhook and fishhook head types has been developed by Dr. Y. Sinoto (1962) of the Bishop Museum. Therefore, until "traits sufficiently characteristic" are defined in Hawaii, we must be content with working out the classifications, defining terms, and working within the broad general outlines of the established Hawaiian pre-history. This is not to imply that every attempt should not be made, as more site reports become available, to bring to bear all aspects of archeological techniques and data on this question of chronology.

The artifact assemblage from the Hale-o-Keawe reveals little. As a group, with a few minor exceptions, the artifacts are no different from the material excavated from other sites within the park. I'm sure, however, that when this collection, along with the other data collected

from the park, are intensively examined, a number of bothersome questions will be answered.

It was interesting to talk with a couple of the more enthusiastic amateur archeologists after they had made a survey of the excavated material in the field laboratory. Their only comment was, "How disappointing; we thought there would be all kinds of exotic, sacred, and hitherto unidentified religious artifacts. This material is no different from any other beach site material." This observation, though made in disappointment, is important. It shows that there is little or no difference in the artifact assemblage between a religious site, as shown by this and the nearby equally important 'Ale'ale'a temple site excavated in 1964 which also showed only the "common" types of artifacts, and the regular dwelling sites. Of interest and speculation, too, is the fact that the Hale-o-Papa, the so-called Women's Temple, excavated and reported by Tuohy (1965), revealed only artifacts associated with fishing -- a practice denied women in prehistoric Hawaii.

In terms of relative chronology, artifacts, including several coins, recovered from within the top loose stone fill layer are of western origin. Below this level only artifacts of pre-contact vintage were recovered. The other important artifact-bearing area was within the confines of the kahua hale, the house area (stratigraphically above the loose stone level).

This accumulation is not the result of usage of the house by the early Hawaiians but by the fact that the fill material (soil) for the floor

was collected from nearby abandoned house sites and shallow rock crevices where soil could accumulate and upon which people lived and left their daily trash. Therefore, because the floor of the heiau was made of domicile debris, the artifacts do not reflect the use of the site as a temple (heiau) but as a simple, normal dwelling site. Under the Hale-o-Keawe there is evidence to indicate two periods of platform construction prior to the construction of the Great Wall and the Hale-o-Keawe.

Hale-o-Puni, Hale-o-Lono, Ka-iki-alealea, and Hale-o-Keawe:

In 1919, J. F. G. Stokes test excavated a number of areas in the vicinity of the Hale-o-Keawe temple site. At that time, he was told that the area just west of the 1902 reconstructed platform was the site of the Hale-o-Puni or Hale-o-Kapuni, House of Puni (Stokes 1957:166). The area to the east of this same platform, he was told, was the site of the Hale-o-Lono (1957:211), the house of Lono. In addition, Barrere (1957:42) reports the name Ka-iki-'ale'ale'a, the Little 'Ale'ale'a, as a transference of names in reference to the platform of the Hale-o-Keawe. ('Ale'ale'a is the name of the large rectangular temple platform in the center of the refuge area that was excavated in 1964.)

A complete and thorough search was made for the Hale-o-Puni and the Hale-o-Lono, with negative results. At about the time the search was nearing its completion, Dr. Kenneth P. Emory of the Bishop Museum, visited the site at my request. Because these were names recorded earlier and it has always been assumed that there were three distinct and separate sites, and since there was no archeological evidence to

support these assumptions, other sources and explanations had to be consulted.

It was agreed that the names, Ka-iki-'ale'ale'a and Hale-o-Keawe, were in reference to a single site, the site which was now being examined. The first name was a simple transference, as suggested by Dorothy Barrere. The second name referred to the builder of the temple or to the person for whom the temple was built, whichever tradition you follow (see Barrere 1957:38-80 for traditional accounts of this structure). This left two names.

According to Stokes (1957:211), "South of the Keone'ele cove stood, according to local informants, a Hale-o-Lono, a secondary grade of temples not used for human sacrifice but for the four periods of prayer held monthly for eight months of the year." This then is a type of temple and not a place name. There are many Hale-o-Lonos noted on various maps. The temple of the Hale-o-Keawe, though not likely, may have been at sometime referred to as a Hale-o-Lono, since it was not generally a place of human sacrifice. The Hale-o-Lono type of temple did not require human sacrifice. If there was ever such a temple at, on, or near this site, we were unable to locate it.

Again, Stokes (1957:166) records, "Adjacent to the Hale-o-Keawe platform, to the west, was a heap of rubble, which on being cleared revealed edging of a rectangular platform...The men said that this was the site of the Hale-o-Puni or Hale-o-Kapuni, the priests' quarters."

The platform, if indeed it was a house platform, located and excavated during this research is contiguous with the Hale-o-Keawe platform.

I believe that Stokes only located the south edge and assumed that it was a separate and complete rectangular platform. During the present excavations the west end of this platform could not be determined since it was destroyed by high seas. The north edge is parallel to the ocean, and the east end is demarked by the kahua hale of the Hale-o-Keawe.

One of the literal translations of the word "puni" means "surrounded" or "enclosed" house. The Hale-o-Keawe, as reported in 1823, was "surrounded by a strong fence of paling..." (Ellis 1979:110). It could be that this was simply a descriptive name applied to the temple and transferred to mean the house of a person. I believe there was a house on the platform extending to the west, but I don't know if the name of it was Hale-o-Puni. Prior to excavating and replacing the coral surfacing, there was some indication of a former coral and stone pavement in this section.

The only reason for believing that there was a house on the platform is by inference and the fact that the site was identified as "the priests' quarters." Whether or not it was called Hale-o-Puni is a question which may never be answered. If there was a house here, it was destroyed or removed prior to 1823. Reverend Ellis makes no mention of any other houses or structures within the pu'uhonua. Furthermore, nearly 100 years had elapsed between the time of Ellis' visit and when Stokes did his work. Add a few more years to this elapsed time and no one at the time of Stokes would have had any direct knowledge of the site. The

buried architectural features are all that remain to indicate that here was some kind of structure.

Based on the re-evaluation and analysis of the historical data, the conclusions and guidelines developed from the analysis, and the present archeological investigations, my previous conclusions are here restated:

1. Even though the Hale-o-Keawe site and the north end of the Great Wall was a heap of stones in 1902, Mr. Wall recognized the location of the platform and the end of the wall. The present location of the site is determined to be accurate.

   The historical data are supported by the evidence recovered during the 1966-1967 excavations. The ancient seawall and the northern limit of the kahua hale, face II, were definitely established.

2. The reconstruction of the Hale-o-Keawe in 1902 was based on one informant's story and two stones which were suspected to be in the original position. The upper restoration in four levels is inaccurate.

   Fortunately, for the 1966-1967 research, Mr. Wall did not disturb any of the buried features in 1902. He added platforms to the front, side, and on top thus preserving the original structure. The level of the courtyard as restored by Mr. Wall is accurate. This is supported by the fact that the front of the courtyard, formed by the west face of the Great Wall, had not been disturbed below the level of the courtyard. The level of the kahua hale, under Mr. Wall's level 4, was determined by the soil layer which composed the floor

of the hale. The stone used by Mr. Wall for his datum was incorporated into the present restoration.

3. The original pavement located in what was thought to be the passageway in 1902, is probably a portion of the lower platform as seen and described by Reverend Ellis in 1823.

   If there ever was a pavement in this area, it could not be relocated during the 1966-1967 excavations. It may have been completely destroyed by Mr. Wall during his reconstruction.

4. The former north end of the Great Wall is now the southern border of the passage and is identified as wall Z on Figure 4. Wall Z was built on the base of a former wall in 1902.

   It was determined that this passageway was the north end of the Great Wall as seen by Ellis in 1823. The foundations of this wall are very well laid and are better made and extend below or even with those of the Great Wall.

5. The general height of the original platform is established by the description of the original pavement in the passageway and the 1823 Ellis drawing. The latter provided the general scale at between 12 and 18 inches above present ground level.

   The on-site evidence did not support this original conclusion (see conclusion 3 above). The top of the courtyard and the kahua hale were determined by the composition of the fill material and the west face of the Great Wall, which formed the front of the courtyard and

kahua hale. The general vertical scale, however, is still valid in relation to the Ellis drawing.

6. The hole in a large boulder, located in grid square C3, on the 2-1/2 or 3-foot contour level, is probably the image hole in which an image is shown in the Ellis and Dampier drawings.

   There is no doubt in my mind that this is an image hole. However, since an earlier drawing (Figure 17) (earlier than the one available when this project was started (Figure 18)) by Ellis has been located, which shows the small image in front of the temple at the juncture of the turn in the seawall, I am more inclined to believe that the boulder has moved, either by natural forces (high seas) or perhaps during the county construction period.

7. If conclusion 6 is acceptable, then Ellis' measurement of 715 feet for the east side of the Great Wall is an error; it shcuild be 615 feet. Ellis was measuring the inside face of the Great Wall.

   There is no doubt in my mind that the location of the Hale-o-Keawe has never been changed. Not only the image hole, but the location of the other archeological features of the temple platform confirm this. Therefore, I am convinced that Ellis, or the type-setters, made this error, and each succeeding visitor who read Ellis tried to reconcile his measurements accordingly.

8. The foreman who worked with Mr. Wall in 1902, when interviewed by Mr. Stokes in 1919, reported that there was an "arched place..." in which "Human bones were found..."

During the 1966-1967 excavations, a small area of pao open work, or arched, construction, was located near the northern edge of the 1902 reconstructed section. There were no bones. If there were bones here, they more than likely would be animal bones, since this was a "Lono" type temple and not a "luakini" or "state" temple. The latter required human sacrifice but the former did not. I believe that when the remains of the offerings were collected for disposal, they were taken out to sea, and that there was no luapa'u. The large flat stone was originally a part of a courtyard pavement.

GLOSSARY OF HAWAIIAN TERMS

For translations of Hawaiian terms, see Hawaiian-English Dictionary by Pukui and Elbert (1961).

Hale o Keawe	House of Keawe
Hale o Lono	House of Lono where prayers to Lono were offered, as for rain and good crops.
Hale o Papa	House of the goddess Papa; i.e., house where religious services were held for women.
Hale o Puni	House of Puni
heiau	Pre-Christian place of worship; some heiau were elaborately constructed stone platforms, others simple earth terraces.
'ili'ili	Pebble, small stone.
'ilio	Dog
kahua hale	House foundation or site.
kahuna	Priest, minister, sorcerer.
kapu	Taboo, prohibition.
konane	Ancient game resembling checkers, played with pebbles placed in even lines on a stone or wood board.
kupe'e	An edible shellfish (Nerita polita); the shells were used for ornaments.
lei 'ilio	Dog-tooth necklace.
lei palaoa	Ivory pendant, originally probably whale's tooth.
luakini	Large heiau where ruling chiefs prayed and human sacrifices were offered.
luapa'u	Refuse pit in the luakini or temple enclosure.
maika	Ancient Hawaiian game suggesting bowling.
makau mano	Shark hook
niho palaoa	Whale tooth, whale-tooth pendant, a symbol of royalty.

'opihi	Limpet, any of several species of Helcioniscus.
pahu kapu	A stake beyond which it was taboo to pass; sanctuary.
pao	Cave, pit, cavern; arch of a bridge (when applied to construction techniques refers to open work or arched places).
pipipi	General name for small mollusks, including Nerita picea and Nerita neglecta.
pu'uhonua	Place of refuge.
'ulu maika	Stone used in maika game.

APPENDIX 1

HALE-O-KEAWE ACCESSION LIST

1. File, Coral - complete
2. Awl, bone - complete
3. Awl, bone - broken (tip only)
4. Saw file, coral - complete
5. Hook blank - shell
6. Scraper, cowry shell - complete
7. Rubbing stone, coral
8. Marble, clay
9. Awl, bone - complete
10. Awl, bone - complete
11. File, coral - fragment
12. Pendant, dog tooth
13. Awl, bone - broken (mended)
14. Awl, bone - complete
15. Fishhook, two-piece, bone - complete
16. Saw file, coral
17. Awl tip, bone
18. Pendant, dog tooth
19. Scraper, bone
20. Adz, shell - complete
21. Pendant, dog tooth
22. Saw file, coral - tip broken
23. Awl, bone - complete
24. Sinker, basalt - breadloaf (complete)
25. Hook point, bone - complete
26. File, coral
27. U. S. Penny - 1920
28. Fishhook, one-piece, bone - broken
29. U. S. Penny - 1920
30. Scraper, 'opihi shell
31. Needle, bone - complete
32. Scraper, 'opihi shell
33. Adz, basalt - broken
34. Fishhook, one-piece, bone (fragment - shank and portion of bend)
35. Fishhook, one-piece, shell (complete - shank and bend)
36. Fishhook, one-piece, bone (head, shank, and portion of bend)
37. Saw file fragment, coral
38. Fishhook, two-piece, bone - shank (complete)
39. File, coral
40. Fishhook, two-piece, bone - point (complete)
41. Fishhook, one-piece, bone - broken
42. File, coral - fragment
43. Rubbing stone, coral
44. Saw, basalt - complete
45. Sinker, coral - pulley shape
46. Cut shell
47. Sinker, coral - pulley shape

48. Saw file, basalt
49. Saw file, basalt - broken
50. Awl tip, bone - broken
51. Rubbing stone, coral - broken
52. Rubbing stone, coral - broken
53. Saw file, coral - fragment
54. Picker, bone - tip broken
55. Carved shell
56. Fishhook, one-piece, bone
57. Rubbing stone, coral - broken (mended)
58. Rubbing stone, coral - fragment
59. Game stone, coral
60. Saw, coral - broken (mended)
61. Fishhook, two-piece, bone - complete
62. Ornament, shell
63. Game stone, coral
64. Bone blank
65. Ornament, tooth - dog
66. Awl, bone - complete
67. Ornament, tooth - dog
68. Awl, bone - complete
69. File, coral - fragment
70. Ornament, tooth - dog
71. Rubber, coral
72. Scraper, shell
73. File, coral
74. File, coral - broken
75. Adz, fragment
76. File, coral - tip broken
77. U. S. Penny - 1940
78. Grinding stone, basalt - fragment
79. Chisel, bone
80. Cut shell, pearl
81. Rubbing stone, coral
82. Awl, bone - broken
83. Awl, bone - complete
84. Fishhook, one-piece, bone - complete
85. Button, coconut (?) - chipped
86. Awl, bone - complete
87. Awl, bone
88. Hook blank, bone
89. Awl, bone
90. Saw, coral - broken
91. Fishhook, two-piece, bone - broken
92. Awl tip, bone
93. Rubbing stone, coral
94. Awl, bone
95. Fishhook, one-piece, bone - broken
96. Awl, bone
97. Awl, bone
98. Saw file, basalt
99. Bone object - broken (mended)

100. Awl, bone
101. Picker, bone - tip broken
102. Awl, bone
103. Fishhook, two-piece, bone - point
104. File, coral - broken tip
105. Awl, bone - tip broken
106. Bowl fragment, basalt
107. Saw file, coral
108. Fishhook, one-piece, bone - complete
109. File, coral - complete
110. Awl, bone - complete
111. File tip, coral - broken
112. Scraper, shell
113. U. S. Penny - 1944
114. Safety pin, metal
115. Rubbing stone, coral
116. Bowl fragment, basalt
117. Adz, basalt - fragment
118. U. S. Penny - 1911
119. Bowl fragment, basalt
120. Saw file, coral - broken
121. Saw file, coral
122. File, coral
123. Game stone, coral
124. File, basalt - triangle shape
125. Floater, cork
126. Fishhook, one-piece, bone - broken
127. Bowl fragment, basalt
128. Rubbing stone, coral
129. Scraper, bone
130. Sinker, coral - grooved
131. Ornament, shell (Niho Palaoa)
132. Fishhook, one-piece, bone - broken
133. Toy, plastic - pipe like object
134. Metal object
135. Cut shell
136. File fragment, coral
137. Saw file, coral - fragment
138. Awl, bone
139. U. S. Dime - 1943
140. Saw file, basalt
141. U. S. Quarter - 1944
142. Saw file, coral
143. Rubbing stone, coral
144. Pendant, tooth - boar (half)
145. Ornament, shell - Auger
146. Picker, bone
147. Awl, bone
148. Toggle, bone - broken
149. Rubbing stone, coral
150. Saw file, coral - broken
151. Rubbing stone, coral

152. Saw file, coral
153. Saw, coral
154. Rubbing stone, basalt
155. Awl, bone
156. Saw file, coral - broken
157. Awl, bone
158. Worked bone
159. Saw file, coral
160. Ornament, tooth - dog
161. Fishhook, two-piece, bone - shank
162. File, coral
163. Ornament, tooth - dog
164. Fishhook, one-piece, bone
165. Fishhook, one-piece, shell
166. Pall Mall pack and twine
167. Adz, basalt - broken
168. Worked bone
169. Adz, basalt
170. Bowl fragment, basalt
171. Game stone, basalt
172. Rubbing stone, coral
173. Rubbing stone, coral
174. Needle, bone - broken
175. Game stone, coral
176. Adz, basalt - fragment
177. Saw file, coral
178. Saw, coral - broken
179. Saw file, coral - broken
180. Ornament, tooth - boar
181. File, coral - broken
182. Saw file, coral - broken
183. Fishhook, one-piece, bone - broken (mended)
184. File, coral - broken
185. Awl, bone
186. Saw file, coral
187. File, coral
188. Saw file, coral
189. Bowl fragment, basalt
190. File, coral
191. Rubbing stone, coral
192. Fishhook, two-piece, bone - broken
193. Rubbing stone, coral - fragment (mended)
194. Rubbing stone, coral
195. Rubbing stone, coral
196. File, coral
197. Toggle, shell
198. Saw file, coral - broken
199. File, coral
200. Fishhook, bone (complete)
201. Saw file, basalt
202. Needle, bone
203. Awl, bone

204. Scraper, shell
205. Saw file, coral
206. Fishhook, one-piece, bone - complete
207. Ornament, shell
208. Scraper, shell
209. Awl, bone - broken
210. Worked bone
211. Hook blank, bone
212. Awl, bone
213. Adz, basalt - broken
214. Fishhook, one-piece, bone - broken
215. Awl, bone
216. Rubbing stone, coral
217. Fishhook, one-piece, bone
218. Drilled tooth, shark
219. Sinker, coral - grooved
220. Fishhook, two-piece, bone (point)
221. Game stone, coral
222. Ornament, tooth - dog
223. Adz, basalt - broken
224. Pestle, basalt - fragment
225. Pencil, slate - fragment
226. Awl, bone
227. Saw file, coral
228. File, coral - fragment
229. Pencil, slate
230. Game stone, basalt
231. Ornament, tooth - dog
232. Rubbing stone, coral
233. Saw file, coral
234. Pendant, tooth - dog
235. Fishhook, one-piece, shell - broken (mended)
236. Awl, bone
237. Fishhook, one-piece, bone - broken
238. Fishhook, one-piece, bone - complete
239. Worked bone
240. Awl, bone
241. Fishhook, one-piece, bone - broken
242. File, coral
243. Pendant, tooth - dog
244. Awl, bone
245. Sinker, coral - coffee beans
246. Saw file, coral
247. File, coral
248. Rubbing stone, coral - broken (mended)
249. Awl, bone
250. Adz, basalt - broken
251. Pendant, tooth - dog
252. Worked bone - broken
253. Fishhook, one-piece, tooth
254. Rubbing stone, coral
255. Sinker, grooved - coral

256. Ornament, tooth - pig
257. Needle, bone - broken
258. Awl, bone
259. File, coral
260. Rubbing stone, coral
261. Rubbing stone, coral
262. Worked bone
263. Fishhook, one-piece, bone - broken
264. Fishhook, one-piece, bone - unfinished
265. Rubbing stone, coral
266. Chisel, shell
267. File, coral - broken
268. Saw file, coral
269. Adz, basalt
270. Fishhook, bone - unfinished
271. Awl, bone
272. Awl, bone
273. Worked bone
274. Carbon like object (?)
275. Awl, bone
276. Ornament, tooth - dog
277. Awl, bone
278. File, coral
279. Awl, bone
280. Adz, basalt
281. Fishhook, bone - unfinished
282. Fishhook, one-piece, bone - broken
283. Ornament, tooth - dog
284. Sinker, coral - double knob (one knob broken)
285. Rubbing stone, coral
286. Fishhook, one-piece, bone - broken
287. Rubbing stone, coral
288. Rubbing stone, coral
289. Fishhook point, two-piece, bone
290. Ornament, tooth - dog
291. Fishhook, one-piece, bone - complete
292. File, coral - broken
293. Ornament, tooth - dog
294. Fishhook, one-piece, bone - broken
295. Ornament, tooth - dog - broken
296. Pin, metal
297. Rubbing stone, coral
298. Ornament, tooth - dog
299. Scraper, shell
300. File, coral (reamer)
301. File, coral - broken
302. Sinker, coral - coffee bean
303. Sinker, coral - pulley
304. Rubbing stone, coral
305. Rubbing stone, coral
306. Saw file, coral - broken
307. Saw file, basalt (triangular)

308. Rubbing stone, coral
309. Rubbing stone, coral
310. Saw file, coral
311. Rubbing stone, coral
312. Scraper, shell
313. Rubbing stone, coral
314. Rubbing stone, coral
315. Awl, bone - broken (mended)
316. Awl, bone
317. Adz blank, basalt
318. Rubbing stone, coral - broken
319. Rubbing stone, coral
320. Circular bone, worked
321. Lamp, basalt - broken (mended)
322. Rubbing stone, coral - fragment
323. Adz fragment, basalt
324. Sinker, coral - grooved
325. Awl, bone
326. Saw file, coral
327. Adz fragment, basalt
328. Rubbing stone, coral
329. Rubbine stone, coral
330. Rubbing stone, coral
331. Rubbing stone, coral
332. Awl, bone
333. Rubbing stone, coral
334. Ornament, tooth - dog
335. Fishhook, one-piece, bone - broken
336. Worked bone - polished
337. Niho Palaoa, bone
338. File blank, basalt
339. Awl, bone
340. File fragment, coral
341. File, coral - broken (mended)
342. File, coral
343. File, coral
344. Worked bone object, circular - broken (mended)
345. Rubbing stone, coral
346. Pencil, slate - broken (mended)
347. Adz, basalt
348. Saw file, coral
349. Chisel, shell
350. Sinker, coral - pulley type
351. Sinker, coral - pulley type
352. File fragment, basalt
353. Rubbing stone, coral
354. Needle, bone - broken
355. Chisel or adz, shell
356. Rubbing stone, coral
357. Scraper, shell
358. Pencil, slate - broken
359. Bead, glass

360. Worked shell
361. Bead, shell
362. Game stone, coral - broken
363. Awl, bone
364. Ornament, tooth - dog
365. Worked bone
366. Fishhook, one-piece, bone - complete
367. Stopper, coral - broken
368. File, coral
369. Fishhook, one-piece, bone - broken (mended)
370. Rubbing stone, coral
371. Awl, bone
372. Rubbing stone, coral
373. Grinding stone, basalt - broken
374. Scraper, shell - 'opihi
375. Worked bone
376. Ornament, shell - auger
377. Ornament, shell
378. Saw, coral - broken
379. Rubbing stone, coral
380. Sinker, coral - grooved
381. Cuff link, bone
382. Sinker, coral - grooved
383. Saw file, coral
384. Saw file, coral - broken
385. Worked bone
386. Adz, basalt
387. Game stone, coral
388. Big bone
389. Fishhook, one-piece, bone - complete
390. Fishhook, one-piece, bone - complete
391. Game stone, basalt
392. Saw, basalt - broken
393. Rubbing stone, basalt
394. Ornament, tooth - dog - broken
395. Fishhook blank, bone
396. Ornament, tooth - dog
397. Ornament, tooth - dog
398. Ornament, tooth - dog
399. Ornament, tooth - dog
400. Ornament, tooth - dog
401. Ornament, tooth - dog
402. Ornament, tooth - dog - broken
403. Ornament, tooth - dog
404. Ornament, tooth - dog
405. Ornament, tooth - dog
406. Ornament, tooth - dog
407. Ornament, tooth - dog
408. Ornament, tooth - dog - broken (mended)
409. Ornament, tooth - dog
410. Ornament, tooth - dog
411. Ornament, tooth - dog

412. Ornament, tooth - dog
413. Adz fragment, basalt
414. Adz chip, basalt
415. Japanese coin - 50 cents (1908)
416. Rubbing stone, coral
417. Rubbing stone, coral
418. Worked bone, broken (mended)
419. Awl, bone
420. Toy cup, metal
421. Awl, bone
422. Worked bone
423. Marble, glass
424. Pin, plastic
425. U. S. Penny - 1929
426. Scraper, shell - 'opihi
427. Adz chip, basalt
428. Awl, bone
429. Awl, bone
430. Marbel, clay
431. Whetstone, basalt - broken
432. Ornament, shell - cone
433. Adz, basalt
434. Awl, bone
435. Ornament, shell - pipipi
436. Ornament, shell - pipipi
437. Adz chip, basalt
438. Worked bone
439. Rubbing stone, coral
440. Shell object
441. Adz chip, basalt
442. Rubbing stone, coral - broken (mended)
443. Rubbing stone, coral
444. Adz chip, basalt
445. Adz fragment, basalt
446. Whetstone fragment, basalt
447. Bead, shell
448. Awl, bone - broken (mended)
449. Worked bone
450. Adz fragment, basalt
451. Worked bone
452. Whetstone fragment, basalt
453. Worked bone
454. Bead, shell
455. Bead, shell
456. Rubbing stone, coral
457. Whetstone fragment, basalt
458. Awl, bone - broken
459. Worked bone
460. Rubbing stone, coral
461. Adz chip, basalt
462. Bead, shell - cone
463. Sinker, basalt - breadloaf

464. Rubbing stone, coral
465. Bead, shell - cone
466. Bead, shell
467. Adz chip, basalt
468. Adz bit chip, basalt
469. Scraper, shell - 'opihi
470. File, coral - broken
471 Rubbing stone, coral - broken
472. U. S. Penny - 1952
473. U. S. Penny - 1918
474. Awl, bone
475. Awl, bone
476. Adz, basalt
477. Saw file, coral
478. Whetstone, basalt
479. Bowl fragment, basalt
480. Marble, glass
481. Scraper, shell
482. File, coral - broken
483. Game tone, coral - broken
484. Rubbing stone, coral - broken
485. Coral object
486. Adz chip, basalt
487. Whetstone fragment, basalt
488. Adz chip, basalt
489. Rubbing stone, coral
490. Rubbing stone, coral
491. Bead, shell - Lucinidae
492. File, coral
493. Cut bone
494. Marble, clay
495. Grinding stone, basalt - fragment
496. Saw file, coral
497. Bead, shell - Lucinidae
498. Coral object - polished
499. Scraper, shell
500. Cut bone
501. Worked tooth, pig
502. Picker, bone
503. Whetstone fragment, basalt
504. Adz chip, basalt
505. Adz chip, basalt
506. Bead, shell - cone
507. Marble, clay
508. Worked bone
509. Bead, shell - Lucinidae
510. Saw file, basalt
511. Whetstone fragment, basalt
512. Adz chip, basalt
513. Cut bone
514. Sinker, coral - breadloaf
515. Comb, plastic

516. U. S. Penny - 1941
517. Rubbing stone - coral
518. Rubbing stone - coral
519. Rubbing stone - coral
520. Rubbing stone - coral
521. Saw file, coral - broken
522. File, coral - broken
523. Polished pebble, basalt
524. Awl, bone
525. Saw file, coral
526. Bead, shell - cone
527. Polished coral object
528. Polished pebble, basalt
529. Saw file, coral - broken
530. Scraper, shell
531. Bullet, .45
532. Cartridge, .22
533. Marble, clay
534. Bead, shell - Kupe'e
535. Cut bone
536. Cut bone
537. Cut bone
538. Marble, glass
539. Button, bone
540. Button, bone
541. Bead, shell - Kupe'e
542. Marble, clay
543. Polished pebble, basalt
544. Adz chip, basalt
545. Bead, shell - Turbinidae
546. Grinding stone, basalt

APPENDIX 2

Quote from Journal of William Ellis (1979:109-115)

CHAPTER VI

IN AND ABOUT HONAUNAU.

Ever since Saturday last, I had suffered violent pain, probably induced by the bad water we had been obliged to drink since leaving Kairua; and shortly after passing over the battle ground, I found myself too ill to walk any further. I reclined about an hour on the rocks of lava, under the shade of a small shrub, and then travelled on slowly to Honaunau, which I reached about noon.

The town contains 147 houses, yet we could procure no better accommodation than what an open house for building canoes afforded, as it screened me from the scorching rays of an almost vertical sun.

Towards the evening Mr. Thurston preached to the people of the place, who gave good attention.

I found myself much better the next morning, but too ill to resume the journey that day.

A WELL CULTIVATED SECTION.

After breakfast, Messrs. Thurston and Goodrich examined the inland part of the district, and found, after proceeding about two miles from the sea, that the ground was generally cultivated.

They passed through considerable groves of bread-fruit trees, saw many cocoa-nuts, and numbers of the prickly pear (cactus ficus indicus), growing very large, and loaded with fruit. They also found many people residing at the distance of from two to four miles form the beach, in the midst of their plantations, who seemed to enjoy an abundance of provisions, seldom possessed by those on the sea shore. They returned about noon.

Finding ourselves in want of cooking utensils, and a little tea and sugar, which, in order to lighten our baggage, we had left at Kairua, and perceiving our stock of medicines nearly expended, it was thought best that one of our number should return for them. Mr. Thurston accordingly left Honaunau in the canoe at 2 p.m. and reached Kairua about sunset. He returned about three the next morning, with most of the articles we needed.

The night of the 22d was a restless one with us all, on account of the swarms of vermin that infested our lcdging. We should have been glad to have changed our quarters, but I was not yet well enough to proceed.

Another day's detention afforded us time for the more minute examination of whatever was interesting in the neighborhood, and the more ample development of the object of our visit to the unenlightened people of the village; and those were the occupations of the day.

DESCRIPTION OF HALE O KEAWE.

Honaunau, we found, was formerly a place of considerable importance, having been the frequent residence of the kings of Hawaii for several successive generations.

The monuments and relics of the ancient idolatry with which this place abounds, were, from some cause unknown to us, spared amidst the general destruction of the idols &c. that followed the abolition of the aitabu, in the summer of 1819.

The principal object that attracted our attention, was the Hare o Keave, (the House of Keave,) a sacred depository of the bones of departed kings and princes, probably erected for the reception of the bones of the king whose name it bears, and who reigned in Hawaii about eight generations back.

It is a compact building, twenty-four feet by sixteen, constructed with the most durable timber, and thatched with ti leaves, standing on a bed of lava that runs out a considerable distance into the sea.

It is surrounded by a strong fence of paling, leaving an area in the front, and at each end about twenty-four feet wide. The pavement is of smooth fragments of lava, laid down with considerable skill.

MANY IDOLS STILL IN PLACE.

Several rudely carved male and female images of wood were placed on the outside of the enclosure; some on low pedestals under the shade of an adjacent tree, others on high posts on the jutting rocks that hung over the edge of the water.

A number stood on the fence at unequal distances all around; but the principal assemblage of these frightful representatives of their former deities was at the south-east end of the enclosed space, where, forming a semicircle, twelve of them stood in grim array, as if perpetual guardians of "the mighty dead" reposing in the house adjoining.

A pile of stones was neatly laid up in the form of a crescent, about three feet wide, and two feet higher than the pavement, and in this pile the images were fixed. They stood on small pedestals, three or four feet high, though some were placed on pillars, eight or ten feet in height, and curiously carved.

IDOLS APPEARED NEGLECTED.

The principal idol stood in the centre, the others on either hand; the most powerful being placed nearest to him: he was not so large as some of the others, but distinguished by the variety and superior carvings of his body, and especially of his head.

Once they had evidently been clothed, but now they appeared in the most indigent nakedness. A few tattered shreds round the neck of one that stood on the left hand side of the door, rotted by the rain and bleached by the sun, were all that remained of numerous and gaudy garments, with which their votaries had formerly arrayed them.

A large pile of broken calabashes and cocoa-nut shells lay in the centre, and a considerable heap of dried, and partly rotten, wreaths of flowers, branches of shrubs and bushes, and fragments of tapa, (the accumulated offerings of former days,) formed an unsightly mound immediately before each of the images.

The horrid stare of these idols, the tattered garments upon some of them, and the heaps of rotting offerings before them, seemed to us no improper emblems of the system they were designed to support; distinguished alike by its cruelty, folly, and wretchedness.

CONDITIONS INSIDE THE HOUSE.

We endeavoured to gain admission to the inside of the house, but were told it was tabu roa, (strictly prohibited,) and that nothing but a direct order from the king, or Karaimoku, could open the door.

However, by pushing one of the boards across the door-way a little on one side, we looked in, and saw many large images, some of wood very much carved, others of red feathers, with distended mouths, large rows of sharks' teeth, and pearl-shell eyes.

We also saw several bundles, apparently of human bones, cleaned, carefully tied up with cinet made of cocoa-nut fibres, and placed in different parts of the house, together with some rich shawls and other valuable articles, probably worn by those to whom the bones belonged, as the wearing apparel and other personal property of the chiefs is generally buried with them.

When we had gratified our curiosity, and I had taken a drawing of the building, and some of its appendages, we proceeded to examine other remarkable objects of the place.

CITY OF REFUGE AT HONAUNAU.

Adjoining the Hare of Keave to the southward, we found a Pahu tabu (sacred enclosure) of considerable extent, and were informed by our guide that it was one of the pohonuas of Hawaii, of which we had so often heard the chiefs and others speak. There are only two on the

island; the one which we were then examining, and another at Waipio, on the north-east part of the island, in the district of Kohala.

These Puhonuas were the Hawaiian cities of refuge, and afforded an inviolable sanctuary to the guilty fugitive, who, when flying from the avenging spear, was so favoured as to enter their precincts.

This had several wide entrances, some on the side next the sea, the others facing the mountains. Hither the manslayer, the man who had broken a tabu, or failed in the observance of its rigid requirements, the thief, and even the murderer, fled from his incensed pursuers, and was secure.

To whomsoever he belonged, and from whatever part he came, he was equally certain of admittance though liable to be pursued even to the gates of the enclosure.

Happily for him those gates were perpetually open; and as soon as the fugitive had entered, he repaired to the presence of the idol, and made a short ejaculatory address, expressive of his obligations to him in reaching the place with security.

PROTECTION OF DEFEATED IN WAR.

Whenever war was proclaimed, and during the period of actual hostilities, a white flag was unfurled on the top of a tall spear, at each end of the enclosure, and, until the conclusion of peace, waved the symbol of hope to those who, vanquished in fight, might flee thither for protection. It was fixed a short distance from the walls on the outside, and to the spot on which this banner was unfurled, the victorious warrior might chase his routed foes; but here, he must himself fall back; beyond it he must not advance one step, on pain of forfeiting his life.

The priests, and their adherents, would immediately put to death any one who should have the temerity to follow or molest those who were once within the pale of the pahu tabu; and, as they expressed it, under the shade or protection of the spirit of Keave, the tutelar deity of the place.

In one part of the enclosure, houses were formerly erected for the priests, and others for the refugees, who, after a certain period, or at the cessation of war, were dismissed by the priests, and returned unmolested to their dwellings and families; no one venturing to injure those, who, when they fled to the gods, had been by them protected.

We could not learn the length of time it was necessary for them to remain in the puhonua; but it did not appear to be more than two or three days. After that, they either attached themselves to the service of the priests, or returned to their homes.

The puhonua at Honaunau is capacious, capable of containing a vast multitude of people. In time of war, the females, children, and old people of the neighbouring districts, were generally left within it, while the men went to battle. Here they awaited in safety the issue of the conflict, and were secure against surprise and destruction, in the event of a defeat.

The form of it was an irregular parallelogram, walled up on one side and at both ends, the other being formed by the sea-beach, except on the north-west end, where there was a low fence. On measuring it, we found it to be 715 feet in length, and 404 feet wide. The walls were twelve feet high and fifteen thick.

Holes were still visible in the top of the wall, where large images had formerly stood, about four rods apart throughtout its whole extent.

Within this enclosure were three large heiaus, two of which were considerably demolished, while the other was nearly entire. It was a compact pile of stones, laid up in a solid mass, 126 feet by 65, and ten feet high.

Many fragments of rock, or pieces of lava, of two or more tons each, were seen in several parts of the wall, raised at least six feet from the ground.

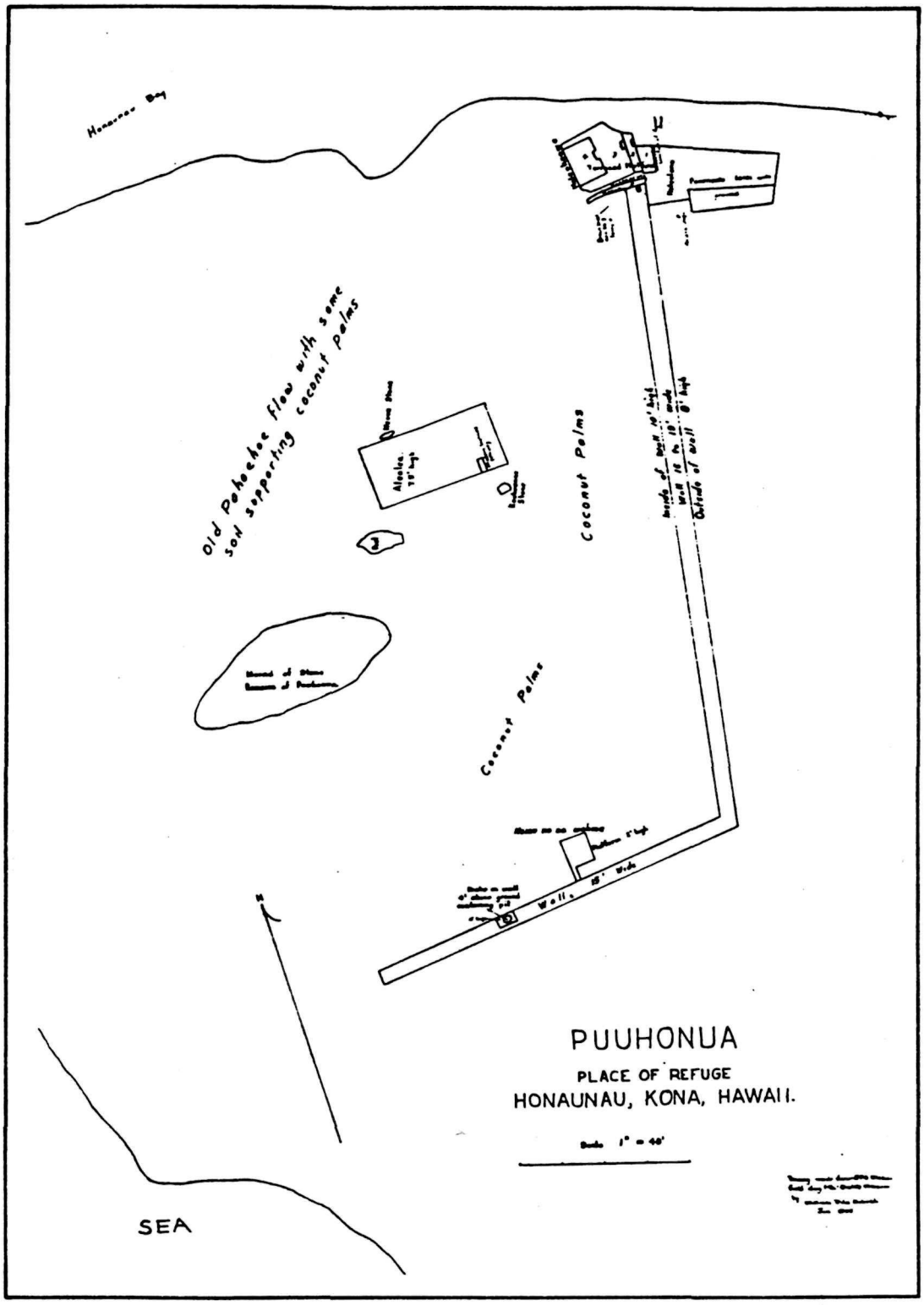
The erection of such a place as the puhonua at Honaunau, under the circumstances and with the means by which alone it was reared, (as they had no machinery,) must have been an herculean task, and could not have been completed but by the labour of many hands.

ORIGIN OF CITY OF REFUGE.

We could not learn how long it has been standing, but were informed it was built for Keave, who reigned in Hawaii about 250 years ago. The walls and heiaus, indeed, looked as if it might claim such antiquity; but the house of Keave and the images must have been renewed since that time.

We had often passed over the ruins of deserted heathen temples, and the vestiges of demolished altars, in the Sandwich Islands, and I had frequently visited those in other groups of the Pacific; but the feelings excited on these occasions had always been those of deep melancholy and horror, at the human immolations and shocking cruelties which they had so often exhibited. Here, however, idolatry appeared at least in the form of clemency, and the sacred enclosure presented a scene unique among the ruins of paganism, which we contemplated with unusual interest.

Whether its establishment was originally projected by the priests, to attach to their interests all who might owe their lives to its institution, or by some mild and humane prince, anxious to diminish the barbarous cruelties of idolatry, and soften the sanguinary character of savage warfare; or whether derived traditionally from the Israelitish cities of refuge, to which some of its features are strikingly analogous, — we do not pretend to determine.



Appendix 3. Copy of Stokes' map of Puuhonua, Place of Refuge.

REFERENCES CITED

Apple, Russel A.

1966 Pre-Restoration Study of Hale-o-Keawe. Ms. on file, Pacific Area Office, Honolulu.

Barrere, Dorothy B.

1957 A Reconstruction of the History and Function of the Puuhonua and the Hale-o-Keawe at Honaunau. In The Natural and Cultural History of Honaunau, Kona, Hawaii, Volume II, pp. 38-80. Ms. on file, Pacific Area Office, Honolulu.

Buck, Peter H.

1957 Arts and Crafts of Hawaii. Bernice P. Bishop Museum Special Publication 45.

Ellis, William

1979 Journal of William Ellis. Charles E. Tuttle, Rutland, Vermont.

Emory, Kenneth P.

1957 Honaunau in Transition to the Present. In The Natural and Cultural History of Honaunau, Kona, Hawaii, Volume II, pp. 32-37. Ms. on file, Pacific Area Office, Honolulu.

Emory, Kennth P.; Sinoto, Yoshiko H.; Bonk, William J.

1959 Fishhooks. Bernice P. Bishop Museum Special Publication 49.

Emory, Kenneth P.; Sinoto, Yoshiko H.

1961 Oahu Excavations. Bernice P. Bishop Museum Special Publication 49.

Guralnik, David B. (editor)

1972 Webster's New World Dictionary, Second College Edition. The World, New York.

Ladd, Edmund J.

1966 Kiilae Village Test Excavations. Ms. on file, Pacific Area Office, Honolulu.

1969a 'Alealea Temple Site. Honaunau: Salvage Report. In Archaeology on the Island of Hawaii, edited by Richard Pearson. Asian and Pacific Archaeology Series 3: 95-130.

1969b The Great Wall Stabilization: Salvage Report. In Archaeology on the Island of Hawaii, edited by Richard Pearson. Asian and Pacific Archaeology Series 3: 133-160.

1969c Hale-o-Keawe Temple Site, Honaunau: Pre-salvage Report. In Archaeology on the Island of Hawaii, edited by Richard Pearson. Asian and Pacific Archaeology Series 3: 163-189.

Lyman, Chester S.

1846 Chester Smith Lyman Journal, Copy 4, 1846. Ms. on file, Hawaii Mission Children's Society Library, Honolulu.

Pukui, Mary Kawena and Samuel H. Elbert

1961 Hawaiian-English Dictionary. University of Hawaii Press, Honolulu.

Sinoto, Yoshiko H.

1962 Chronology of Hawaiian Fishhooks. Journal of Polynesian Society. 71(2):162-166.

Soehren, Lloyd J.

1962 Archeological Excavations at City of Refuge National Historical Park, Honaunau, Kona, Hawaii. Ms. on file, Pacific Area Office, Honolulu.

Stokes, J. F. G.

1957 Archaeological features of the Puuhonua area. In the Natural and Cultural History of Honaunau, Kona, Hawaii, Volume II, pp. 137-190. Ms. on file, Pacific Area Office, Honolulu.

Tinker, Spencer Wilkie

1962 Pacific Seashells: A Handbook of Common Marine Molluscs of Hawaii and the South Seas. Charles E. Tuttle, Rutland, Vermont.

Tuohy, Donald R.

1965 Salvage excavations at City of Refuge National Historical Park, Honaunau, Kona, Hawaii. Ms. on file, Pacific Area Office, Honolulu.