EXCAVATIONS AT JOHN YOUNG'S HOMESTEAD, KAWAIHAE, HAWAII

Archeology at Pu'ukohola Heiau National Historic Site

By
Paul H. Rosendahl and Laura A. Carter

NATIONAL PARK SERVICE
U.S. DEPARTMENT OF THE INTERIOR
Cover Illustration. Western-style Structure 2, John Young Homestead (Upper Portion), cleared to 'ili'ili paving, view to the northeast.
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(edited by Gary F. Somers)

Western Archeological and Conservation Center
Publications in Anthropology No. 47

1988
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ACKNOWLEDGEMENTS

As with any project the efforts of many people made this report possible. We want to thank Dr. Robert Hommon, archeologist, U. S. Navy, and Dr. David Hanlon, assistant professor, Department of History, University of Hawaii, Manoa, for reviewing an early draft of the report. Their comments were appreciated and contributed to an improved final report. Mark Hamasaki photographed the artifacts illustrated in figures 36, 41, 42, 46, 47, and 48, and Peter Gilpin did the same for figures 33, 34, 43, and 44. Melia Lane-Hamasaki drafted figures 1, 3, 15, 16, 17, 18, 35, 38, and 51 and shepherded the prints and manuscript through the mock-up and printing process. To those three go our sincerest thanks.
ABSTRACT

This report describes the archeological excavation of the first Western style structure in Hawai‘i. The structure is one of the Western style features, Structure 2, of the John Young Homestead and is part of Pu‘ukohola Heiau National Historic Site, Kawaihae, Hawai‘i island. Archeological excavation was conducted under the direction of Paul H. Rosendahl, Ph.D. in 1978.

A brief summary of Kawaihae is presented through excerpts taken from visitors journals who stopped in the area during the 18th and early 19th centuries. Their recollections of the terrain and people provide the historical setting for interpreting the John Young Homestead. The archeological importance of this site is also presented by correlating the results of this project to previous archeological work in the West Hawai‘i region in general and more specifically the Kawaihae area within the district of South Kohala.

Excavation methods and results are also presented. Over 1,150 portable remains were identified including traditional Hawaiian objects, Western objects and non-artifactual remains. These remains represent a sample of the material possessions of Young and his family at their homestead between 1793 and 1840. Traditional items such as sea urchin spine abraders and volcanic glass flakes were recovered next to English creamware and Chinese porcelain vessel fragments. All artifacts were classified, described, and many of these are illustrated. The importance of the archeology at this site is provided and guidelines to the interpretive prospectus are also given.
Chapter 1

INTRODUCTION

John Young Homestead (Upper Portion) is located in the northern corner of Pu‘ukohola Heiau National Historic Site, on the dry leeward sea coast of Hawai‘i Island, at Kawaihae in the District of South Kohala (Figure 1). The site is a complex comprised of the surface remains of eight major structural features situated atop a low ridge between two gulches overlooking Kawaihae Bay. It is bounded on the north by Makahuna Gulch, on the south by Makeahua Gulch, on the west by Akoni Pule Highway (State of Hawai‘i Highway 27) and on the east by an old quarry. The site is referred to as the "Upper Portion" to distinguish it from a lower portion which lies buried beneath a fill of dredged coral (Apple 1978: Fig. 2). This complex was first designated a site by the Bishop Museum as 50–HA–E5–7\(^1\) (Soehren 1964) and has been assigned State of Hawaii Register of Historic Places site number 50-10-05-2296\(^2\).

Significance

The structural remains of this historical site were included in the designated Pu‘ukohola Heiau National Historic Site in 1972, and as a complex are listed on the National Register of Historic Places and the National Park Service's List of Classified Structures. The John Young Homestead is a complex of structures that comprise a unique archeological site in Hawai‘i, and is of particular significance, in terms of both research and interpretive value, for two major reasons.

First, the site was for many years (ca. AD 1798–1835) the permanent residence of John Young (Figure 2), an English sailor who became friend and close advisor to Kamehameha the Great. Consequently a person of substantial influence and importance in the government of Kamehameha, Young was either directly or indirectly involved in most of the major events that shaped the early post-contact history of the Hawaiian Islands. Thus

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\(^1\) 50 = State of Hawaii; HA = Island of Hawaii; E5 = ahupua’a of Kawaihae 2; 7 = consecutive site number for that ahupua’a.

\(^2\) 50 = State of Hawaii; 10 = Island of Hawaii; 05 = ahupua’a of Kawaihae 2; 2296 = consecutive state number.
Figure 1. Location map of John Young's Homestead, Site 50-HA-E5-7.

PUUKOHLA HEIAU
National Historic Site
Island of Hawaii, South Kohala District
Kawaihae 2 Ahupua'a
the John Young Homestead complex is a site intimately related to an individual of considerable historic importance. The general history and historical significance of John Young and the John Young Homestead complex has been discussed by many (Apple 1969, 1978; Kelly 1974; Somers 1985).

Secondly, the John Young Homestead complex is the only known historic period residential site in Hawai‘i that bridges the late proto-historic (Kirch 1985:306-308) to historic (Carter 1987) periods in Hawaii. As such, the site has very high potential for yielding significant archeological data, especially in terms of portable artifacts, non-artifactual remains, and architectural details, relevant to the study of changes in material culture, exploitation and consumption patterns, domestic residence patterns, and other aspects of Hawaiian culture and society during this period.
Previous Research

The district of South Kohala, in which the John Young Homestead is located, has been the focus of major archeological projects including the Ka'ahumanu Highway survey which transected the leeward coast between Kawaihae and Kailua (Ching 1971; Rosendahl 1972a, 1973) and the research projects at 'Anaeho'omalu (Barrera 1971) and Kalāhuipua'a (Kirch 1979), both of which focused on human settlement and coastal resource utilization. Within the Kawaihae area numerous projects have been conducted that document the historic and archeological resources of this leeward vicinity (Barrera and Kelly 1974; Bonk n.d.; Clark and Kirch 1983; Hammatt and Folk 1980; Luscomb 1974; Rosendahl 1969, 1972c; Soehren 1964, 1980). Additional work within the present boundaries of the Pu'ukohola Heiau National Historic Site includes intensive surveys (see archeological base maps 454-82003, 454-82005, and 454-82010, on file at Pacific Area Office, Honolulu, and Pu'ukohola Heiau National Historic Site) and stabilization and restoration of Pu'ukohola heiau platform (Ladd 1986).

The first archeological reconnaissance level survey to identify resources within the coastal portions of Ouli and Kawaihae 2 ahupua'a, which included John Young's homestead, was conducted by Lloyd J. Soehren for the Bishop Museum (1964). It was during this survey that the complex was designated by the Bishop Museum Site Number 50-HA-5-E7. Apple (1969) briefly provides a historical sketch of the Kawaihae area which includes details on the activities of the Hawaiian chiefs and John Young. Kelly (1974) details in a concise form the historical documentation for the Kawaihae area including the activities of John Young between 1791 and 1835. It was during this survey that the complex of structures identified as John Young's homestead was given the State of Hawaii Register Site Number 50-10-05-2296.

During this same year Edmund J. Ladd made a detailed plane table map of all surviving surface structural remains (see archeological base maps 454-82003, -82005, and -82010 on file at Pacific Area Office, Honolulu, and Pu'ukohola National Historic Site). Ladd also stabilized the Western-style Structure 1 by constructing a temporary wood and sheet metal shelter over its standing walls and by adding wooden bracing to the plastered faces of these walls.
A major compilation of historical information produced by Russell A. Apple (1978) summarizes Young's family life and activities at Kawaihae between 1793 and the mid-nineteenth century. Also in 1978 the National Park Service hired the senior author of this report to conduct excavations in Western-style Structure 2. Since that time, the Bishop Museum completed excavations within the Mudlane-Waimea-Kawaihae road corridor (Clark and Kirch 1983). The sites that were excavated were well outside Park boundaries and most of the sites that were excavated were mid-nineteenth century historic house sites or burial features.

**Project Scope**

The original overall scope of the project was contained in the statement of purpose given in the research proposal by the National Park Service which stated:

The proposed archeological studies have the purpose of generating detailed information concerning the structures in this complex; their structural features, their function, their chronological (relative) ages, and their stabilization needs. The primary purpose, however, is to recover as much data as is possible to support the historical interpretation of the site. Although not critical at this time, the site is now open to visitors and is slowly being impacted by increasing numbers of visitors. The project is also needed for the planning and development of visitor use facilities, i.e. interpretive signs and trails (National Park Service 1977:4).

Specific project field objectives intended under the original scope of work outlined in the research proposal included: (a) excavation and stabilization of Western-style Structure 2; (b) excavation and stabilization of Western-style Structure 3; (c) stabilization of Hawaiian-style Feature 1; and (d) test excavation and stabilization of Hawaiian-style Feature 4.

Early during the fieldwork period, it became obvious it was necessary to modify sharply the original project scope. Due to the lack of prior subsurface archeological investigations original estimates of time and manpower requirements for the research as initially proposed were unrealistically low. Preliminary findings during the fieldwork generated many questions and excavation problems that had not been anticipated in the research proposal. Adequate investigation of these would have considerably increased the costs and time required to complete within the framework of the original scope of work.

5
Consequently, it became necessary to modify many of the project objectives. The original project objectives were transformed into a series of specific objectives for the excavation of Western-style Structure 2. These were as follows: 1. define the provenience, nature, and patterning of any features; 2. define the characteristics of the structural walls, both the appearance and the construction attributes; 3. determine the sequence of construction; 4. recover evidence possibly suggesting earlier prehistoric and/or historic period occupation of the site location prior to the construction of the John Young Homestead; 5. recover as completely as possible the full portable artifact assemblage by excavating the entire interior cultural deposit of Western-style Structure 2; 6. recover sufficient and adequate dating samples, both basaltic glass pieces for hydration-rind dating, and other portable artifacts of assignable approximate ages, to provide an independent check on the absolute chronological age of the site based on the historical documentary sources; 7. recover a representative sample of the non-artifactual remains from the cultural deposit of Western-style Structure 2; and 8. define the relationship of the burial feature (D) to the rest of Western-style Structure 2.

Research Methods and Procedures

Fieldwork

Supervised overall by the Project Archaeologist, Paul Rosendahl, the field crew consisted of an experienced Field Supervisor (Work Leader), Cathy Vernon, and three field workers. The three field workers had no previous archeological excavation training or experience. Therefore, a considerable portion of the early field work progressed slowly and concentrated on instructing them in methods, techniques, and procedures of excavation and recording. The field work extended from July 17 to September 30, 1978, and approximately 230 person-days overall were expended during the fieldwork portion of the project.

Western-style Structures 2 and 3 and Hawaiian-style Feature 4 were first cleared of brush and thick grass. One-meter square control grids were established over Structures 2 and 3 using 10 meter tapes and plumb bobs. Orientation was along the main axes of each structure. An alpha-numeric system was used to label the grid squares of Structure 2 with letters extending from west to east and numbers from north to south. Individual grid
squares were designated according to the alpha-numeric intersection at their northwest corner. The control grid over Structure 3 was not labeled.

A primary datum point (DP-A) was established by pounding a nail into a bedrock outcrop about 8 m (26.2 ft) north of the northeast corner of Structure 1, at the approximate location of the arbitrary datum set up for contour mapping of the base map in 1974. Based on the known actual elevation of a U.S.G.S. datum point (HP-18) located about 23 m (75.5 ft) to the east-southeast (bearing 121 degrees magnetic) of DP-A, the actual elevation of DP-A was determined to be 16.71 m (54.82 ft) above mean sea level. Secondary on-site datum points were subsequently established as needed: DP-B, a nail in the ground 1.97 m (6.46 ft) south of grid point B9, elevation 15.31 m (50.23 ft) above mean sea level; DP-C, the top of an iron pipe found pounded into the surface of Feature 1, elevation 15.19 m (49.83 ft) above mean sea level; and DP-D, a temporary point used during excavation of a burial feature inside Structure 2 and located on the north wall midway between grid points C4 and D4, elevation 15.16 m (49.74 ft) above mean sea level.

Excavation was conducted in one-meter square grid units, according to natural stratigraphy, using hand trowels and small hand brooms. Initial excavation strategy involved clearing fallen wall rubble and accumulated debris from the wall foundation on both the interior and the exterior of the structure. Wall fall and rubble consisting of cobble to boulder-sized stones were removed and stacked into piles adjacent to assumed source wall.

After removal of the stone rubble and debris, the interior floor of the structure was finely cleaned by hand, using small 2 inch paint brushes to sweep carefully the entire interior area of the structure removing the thin post-occupation soil deposit. The entire periphery immediately adjacent to the exterior face of the walls was also cleaned in the same fashion.

Prior to complete excavation of Structure 2, testing of two one-meter square units, F4 and I6, was initiated. This procedure was used to define the stratigraphy within the structure. After the interior stratigraphy was determined the entire interior area was excavated. Possible openings through the south and east walls were also explored, but because of the structural instability of the plastered walls and the intention to stabilize the structure for
preservation and interpretive purposes, no trenches were excavated through the existing walls.

All excavated soil was processed through 0.25 inch mesh screens to facilitate recovery of portable remains. Non-artifactual remains were bagged according to grid square and stratigraphic layer or feature. All portable artifacts were collected. Excavated artifacts were assigned temporary field numbers according to grid square and sequence of recovery. Individual artifact and feature proveniences were plotted on individual excavation plans (1:10 scale) of each grid square. A complete black and white photographic record was made during the excavation and stabilization of Structure 2. This photographic record complements the detailed written record provided by the plans, excavation forms, and field notes.

**Laboratory and Office Methods**

Portable remains were removed from the site to a temporary laboratory and office structure located behind the Visitor Information Center at Pu'ukohola Heiau National Historic Site. An attempt was made during the fieldwork period to spend several afternoons each week in the field lab processing portable artifacts and non-artifactual remains. Portable artifacts were cleaned, labeled, catalogued, and tabulated. Temporary field numbers are currently being replaced by permanent National Park Service national catalogue numbers according to a single sequence of unique numbers for the entire excavation site. Non-artifactual remains were sorted, identified, recorded, and tabulated. Selected pieces of basaltic glass artifacts were removed for submission to Maury Morgenstein of Hawaii Marine Research, Inc. for hydration-rind age determinations. Plaster samples from each of the three Western-style structures were also submitted to the same consultant for petrological and physical properties analyses. Fishbones were submitted to Craig Severance for identification. Morgenstein's (1978) and Severance's (1979) reports are on file in the Pacific Area Office of the National Park Service.

Laboratory and office work, including completion of processing and basic descriptive analyses of the portable artifacts and non-artifactual remains, and preparation of the draft manuscript, were carried out intermittently by the Project Archeologist and Field Supervisor during the period of October 3, 1978, to January 15, 1979. Work on the draft manuscript by the Project Archeologist continued intermittently through March, 1979. In
July and August, 1987 the junior author was hired to complete the draft manuscript. The final report is the result of the collaborative efforts of the senior author, the junior author, and the editor.

Present Site Condition

Upon completion of the fieldwork, in 1978, Structure 2 was stabilized in such a manner as to return it as close as possible to its pre-excavation appearance. To a large extent, the soil and pebble materials resulting from the screening of the excavated deposits, and the cobbles and boulders cleared from the wall foundations were used in the stabilization work. Not all of the cobbles and boulders from the walls could be used without beginning to reconstruct the walls of the structure; therefore remaining stones were left in several stacked piles immediately adjacent to Structure 2. (See Appendix for a photographic record and a more detailed description of this work.)
Chapter 2

SITE DESCRIPTION

Physical Environment

The John Young Homestead is situated on a ridge above Kawaihae Bay on the dry leeward side of Hawai‘i Island. The site rises in elevation from about 11.75 m (35.5 ft) at the seaward end to about 16.75 m (55 ft) at the inland extreme. The climate in this area is arid with fewer than 250 mm (10 in) of rain annually. More than 75% of the annual precipitation falls during the six month winter season between October and March.

Mean annual temperature is ca. 25 degrees Celsius (77 degrees Fahrenheit), with seasonal maximum variations in the low and high mean from 15.5 degrees Celsius (60 degrees Fahrenheit) to 32 degrees Celsius (90 degrees Fahrenheit). The northeast trade winds predominate most of the year, with the direction shifting somewhat to the east as winds sweep down from the Waimea Plain between Mauna Kea and Kohala Mountain. Wind patterns are often marked by a strong diurnal shift, from daytime on-shore winds to nighttime off-shore winds. The winter season is marked by strong southwesterly winds (kona winds) which generate much of the winter rainfall.

The terrain consists of gentle, widely dissected slopes with dry, intermittently flowing channels and gulches. Soil development is thin to almost non-existent and is derived from a high proportion of relatively recent volcanic materials. Pliocene and older aged basaltic flows of the Pololu Volcanic Series form the geologic foundation of the site area. The principal soil present is a Kawaihae stony loam derived from Pahala ash deposits, which overlay the flows of the Pololu Volcanic Series. This soil has little organic content and is quite shallow and is subject to extensive aeolian erosion. Bare rock outcrops are quite common in the area.

The vegetation is limited to principally historically introduced xerophitic exotics. Kiawe (Prosopsis pallida) and buffel grass (Cenchrus ciliaris), among other varieties of grasses, are predominant. Koa haole (Leucaena glauca) and lantana (Lantana camera) are found in the relatively moister gully bottoms.
Surface Structural Remains

The John Young Homestead (Upper Portion) consists of the remains of eight major structural features situated atop a low ridge. The complex includes five Hawaiian-style features and three Western-style features (Figure 3). The Hawaiian-style features include those that are constructed using traditional Hawaiian construction techniques. They consist of terraces, platforms, pavements and a stone mound constructed using the traditional dry-laid masonry technique. The Western-style features involve construction techniques that are not traditionally Hawaiian. They include standing walls or remnants of standing walls that were constructed with stones set in a mud mortar and covered with coral lime plaster.

The approximate overall dimensions of the site are 35 m (115 ft) by 40 m (131 ft) with the longer axis extending along the ridge, roughly northeast - southwest. The site area possibly extended further inland at one time, but nearby recent quarrying activity has extensively altered the area immediately adjacent to the surviving structural remains. The eight principal structural features, which are clustered at the seaward end of the low ridge, are summarized in Table 1 and illustrated in Figure 3.

Table 1.

PRINCIPAL STRUCTURAL FEATURES OF THE JOHN YOUNG HOMESTEAD (UPPER PORTION)

<table>
<thead>
<tr>
<th>Number</th>
<th>Construction Style</th>
<th>Structural Feature Type</th>
<th>Possible Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-1</td>
<td>Hawaiian-style</td>
<td>Stone platform on terrace</td>
<td>Residential (house?)</td>
</tr>
<tr>
<td>F-2</td>
<td>Hawaiian-style</td>
<td>Paved terrace</td>
<td>Residential (work area?)</td>
</tr>
<tr>
<td>F-3</td>
<td>Hawaiian-style</td>
<td>Stone platform</td>
<td>Residential (?)</td>
</tr>
<tr>
<td>F-4</td>
<td>Hawaiian-style</td>
<td>Low stone mound</td>
<td>Earth oven (?)</td>
</tr>
<tr>
<td>F-5</td>
<td>Hawaiian-style</td>
<td>Stone platform</td>
<td>Burial</td>
</tr>
<tr>
<td>S-1</td>
<td>Western-style</td>
<td>Stone-walled enclosure with mud mortar &amp; plaster</td>
<td>Residential (house?)</td>
</tr>
<tr>
<td>S-2</td>
<td>Western-style</td>
<td>Stone-walled enclosure with mud mortar &amp; plaster</td>
<td>Residential (?)</td>
</tr>
<tr>
<td>S-3</td>
<td>Western-style</td>
<td>Stone-walled enclosure with mud mortar &amp; plaster</td>
<td>Residential (?)</td>
</tr>
</tbody>
</table>
Figure 3. Site map illustrating the eight principal structural features.
Hawaiian-style Feature 1 (F1) is a stone platform built on a large terrace which forms the northwestern, seaward extent of the site (Figure 4). The terrace retaining walls, which range in height from 0.20 m (0.66 ft) to 1.5 m (4.9 ft), have collapsed to a great extent and are in poor to fair condition. Near the southwestern corner of the terrace a small area of the inside face of the retaining wall appears to have been plastered. The terrace measures approximately 13 m (42.7 ft) by 16 m (52.5 ft) in size, and is oriented with its longer axis parallel to Makahuna Gulch, immediately down slope to the north. The surface of the platform measures approximately 7 m (23 ft) by 11 m (36 ft) and is elevated to a maximum of about 30 cm (11.8 in) above the surface of the terrace. The surface of the platform is divided into unequal sections. The larger central area is paved with waterworn basalt pebbles, while the northwest and southwest portions are paved with a combination of similar pebbles and scattered larger flat stones. Feature 1 is probably a residential feature, with the platform representing the raised foundation and floor for a wooden pole and thatch structure that was possibly a house.

Hawaiian-style Feature 2 (F2) is a large paved terrace, measuring about 7 m (23 ft) by 10 m (33 ft), situated in the southwest part of the site (Figure 5). The terrace retaining walls, which are in poor condition, vary in height from a minimum of 25 cm (9.8 in) to 30 cm (11.8 in) on the southeast side to a maximum of 1 m (3.3 ft) on the southwest side. The terrace surface is paved with waterworn basalt pebbles, 'ili'ili. Several probable stone-lined or braced post holes were noted in the surface of the pavement. This is probably a residential feature and may have functioned as an open working or eating area with an open-sided shade structure supported by wooden posts.

Hawaiian-style Feature 3 (F3) is a low stone platform located below and on the seaward side of Hawaiian-style Feature 2 on the southwestern corner of the site, adjacent to the edge of Makeahua Gulch. The platform measures approximately 7 m (23 ft) by 9 m (29.5 ft), and has a maximum height of 20 cm (7.9 in) to 25 cm (9.8 in). It is in poor condition overall. The surface is paved with flat stones, except for the southern corner which is clear of stones and defined only by a stone alignment. This is probably a residential feature, although it might be a burial feature instead.

Hawaiian-style Feature 4 (F4) is a low pile or mound of cobble sized stones located on the southeast edge of the site. The pile measures approximately 2.5 m (8.2 ft) by 5 m (16.4 ft) and has a maximum height of about 25 cm (9.8 in) to 30 cm (11.8 in). Many of the
Figure 4. Hawaiian-style Feature 1, view to the west.

Figure 5. Hawaiian-style Feature 2, view to the east.
stones appear to have been exposed to fire and are fire cracked. This feature is possibly the remains of an earth oven (imu).

**Hawaiian-style Feature 5 (F5)** is a stone platform abutting the southeast side of the larger platform of Hawaiian-style Feature 1 (Figure 6). The smaller platform measures approximately 2 m (6.6 ft) by 4 m (13.1 ft), and has a maximum height of about 30 cm (11.8 in). The surface is paved with waterworn basalt pebbles and has partially collapsed, leaving a shallow depression in the center. This is probably a burial feature constructed after the presumed abandonment of the site sometime after AD 1835.

**Western-style Structure 1 (S1)** is the most prominent structural feature on the site (Figure 7). It is a large rectangular stone-walled enclosure situated in the central portion of the site. The overall dimensions of the fairly well preserved structure are approximately 6.5 m (21.3 ft) by 15 m (49.2 ft). The exterior and interior dimensions of the main portion of the structure (see Figure 3) are approximately 6.5 m (21.3 ft) by 9.5 m (31.2 ft) and 5 m (16.4 ft) by 8 m (26.2 ft) respectively. The walls are constructed of unmodified stones laid in a mud mortar, and subsequently covered on both the interior and exterior faces with coral lime plaster. The existing walls stand as much as 1.2 m (3.9 ft) in height and vary from 50 cm (19.7 in) to 60 cm (23.6 in) in width (at the top). Beneath the rubble wall fall on the interior of the structure can be seen portions of an interior paving of waterworn basalt pebbles. This structure is generally regarded as the ruins of John Young’s house (Soehren 1964:13-14; Kelly 1974:10-18).

**Western-style Structure 2 (S2)** is the poorly preserved remains of a large, rectangular, stone walled enclosure located only a few meters northwest of and parallel to Structure 1 (Figures 8, 9, and 10). Structure 2 measures approximately 6.5 m (21.3 ft) by 10.5 m (34.4 ft) overall. Although the walls are now fully in ruins, exposed portions of the foundation indicate walls varying from about 60 cm (23.6 in) to 1.2 m (3.9 ft) in width, and of similar construction to those of S1, i.e. unmodified stones laid in mud mortar with plastered faces. The relatively clear central area of the interior of the structure revealed the presence of a waterworn basalt pebble pavement. The pavement was laid in place after the interior faces of the walls were plastered. This structure was probably also a residential feature.

**Western-style Structure 3 (S3)** is located several meters down slope to the southeast of S1. The rectangular stone walled enclosure is in very poor condition and is similar to, but not
Figure 6. Hawaiian-style Feature 5, view to the northwest.

Figure 7. Western-style Structure 1, view to the northeast.
Figure 8. Western-style Structure 2 before clearing wall rubble and debris; western end, view to the north.

Figure 9. Western-style Structure 2 before clearing wall rubble and debris; center and eastern end, view to the north.

Figure 10. Western-style Structure 2 before clearing wall rubble and debris; eastern end, view to the north.
as well constructed as, Structure 2. It measures approximately 5 m (16.4 ft) by 8.5 m (27.9 ft) overall, and remaining remnants of the wall foundations indicate wall widths of 35 cm (13.8 in). The walls were constructed in the same manner as the walls of Structure 1 and Structure 2.
Chapter 3

HISTORICAL BACKGROUND

The proto-historic or early historic period environment of the present site area would have been desolate and would appear to have little to recommend it to human occupation. However, the presence of numerous archeological sites and features in this arid coastal region around Kawaihae Bay and to the north and south of Kawaihae indicate that aboriginal Hawaiians successfully inhabited and exploited much of this barren area during the late prehistoric and proto-historic periods (Barrera and Kelly 1974; Ching 1971; Clark and Kirch 1983; Kirch 1979; Rosendahl 1969, 1972a; Soehren 1964). After the construction of Pu‘ukohola in 1790 and the establishment of John Young’s homestead in 1798, the Kawaihae area increased in popularity with both Hawaiian people and later foreign visitors (Barrère 1983; Fornander 1969:328; Kelly 1974;).

The historical analysis of this site focuses on references that identify the general appearance of the Kawaihae area before John Young’s arrival in the islands, his residence in Kawaihae, and the abandonment of his homestead in the mid-nineteenth century. References cited are those that provide insight into the specific appearance of the homestead and the lifestyle of John Young and his family. Particular aspects of that lifestyle may be identified through the association of historical documentation and the results of the analysis of the archeological data.

On February 6, 1779 Lieutenant King noted that Kawaihae Bay:

...looks green & pleasant, yet as it is neither wooded or hardly any signs of culture, & a few houses, It has certainly some defect, & does not answer the purposes of what the natives cultivate. The s [sic] part appeard rocky & black, & partakes more of the nature of the land about Karakaooa [Kealakekua]. (Beaglehole 1967:525).

A month later King remarked on the appearance of the bay:

...along the NE side of the bay close to which we Saild [sic], It is very little Cultivated, & we saw but few houses; the Peoples appearance shewd that they were the lowest Class that inhabited them. (Beaglehole 1967:608).

---

³ This chapter is taken largely from Apple (1978).
These quotes are the first recorded impressions indicating the desolate appearance of Kawaihae both in cultivated areas and residential structures. The appearance of this coastal town changed little over the next sixteen years until John Young's whitewashed stone and mud house was built on a ridge top above Kawaihae Bay. Although desolate in general appearances Kawaihae produced a variety of cultivated foods that were primarily for trade. The variety of food that was traded to visiting ships included watermelon, cantaloupe, cucumbers, and tomatoes in addition to taro and sweet potatoes (Clark 1983:42 Table 3.1).

John Young arrived in Hawai'i on a fur trading vessel, the *Eleanora*, captained by Simon Metcalfe in 1790. While the *Eleanora* was at anchor in Kealakekua Bay, Chief Kameʻeiamoku lead an attack on the ship *Fair American* off the coast of north Kona. During that attack the captain, Thomas Metcalfe (Simon's son), and crew except for one person, Isaac Davis, were killed. John Young, the boatswain of the *Eleanora*, was on shore trading for supplies unaware of the arrival in Hawaiian waters of the *Fair American* or the attack on that vessel. Kamehameha, fearing retaliation by the crew of the *Eleanora* for attack on the *Fair American*, detained Young on shore until his ship departed (Kuykendall 1957:24-26). Both Young and the survivor of the *Fair American*, Isaac Davis, became top advisors to Kamehameha and played important roles in inter- and intra-island battles and as liaison in transactions with visiting foreigners.

Young was given the *ahupua'a* of Kawaihae Hikina (Kawaihae 2); as landlord all residents of this parcel owed their allegiance to him (Apple 1978:8-9). Other land given to Young for his use and control were in the districts of Hilo and Puna, also on the island of Hawai'i, and on other islands including Lana'i, Moloka'i, and O'ahu (Apple 1978:10). Kamehameha designated Young as Governor of Hawai'i between the years 1802 and 1812. During this time horses were introduced, the sandalwood trade began, the cattle that had been introduced by Vancouver were free of the imposed 10 year *kapu*, and Kauai came under Kamehameha's suzerainty.

Prior to 1793 Young maintained a residence at Kealakekua Bay. He moved to the lower portion of his homestead in Kawaihae Hikina (Kawaihae 2) in 1793, and in 1798 he started building the first Western-style house on the upper portion of his property in Kawaihae Hikina (Apple 1978:17). His construction methods incorporated styles from his English homeland and Hawai'i. Young wrote:
Have begun four buildings. My house the cook house and storage room the house for the children and tahus and near the small temple a house for storage. My house at the small rise below the great temple [is] more suitable then the ravine which washes away withe [sic] Whymea floods. (Apple 1978:47).

Young constructed his houses out of basalt but had "coral blocks brought by canoe from [the] reef at Puako", dried them and made a plaster mixture of "sand, burnt coral ... mixed with poi and hair" (Apple 1978:47). The plastering of his houses was not completed until March of 1799; even the fences around the animal pens were whitewashed "as in Wales" (Apple 1978:48). The roof was typical of Hawaiian house construction requiring that bundles of the native grass *pili* (*Heteropogon contortus*) be attached to a wooden framework. After the European style buildings were erected on this prominent point above Kawaihae Bay all subsequent visitors to the islands after 1798 commented on their presence. The buildings provided a familiar sight to many sailors but contrasted sharply with the Hawaiian thatched houses.

According to Young’s Log Book (Young n.d.) he constructed a cook house in August of 1809. It is unclear where this cook house was built or for what reason. It would have been a second one as he said a cook house was built initially on the ridge in 1798. More structures were constructed when Young hired a carpenter in April of 1817. The carpenter was to build a *malu* (Young n.d.). This indigenous type of shelter may or may not be considered a private or restricted area (Pukui and Elbert 1967:215).

It is unclear from the Log Book whether this structure was erected on the upper ridge section or on the lower portion closer to the coast. His wife was known to have maintained a traditional Hawaiian lifestyle by living in a grass house, thought to be closer to the coast. It is possible that such a structure could have been built for his wife on the lower portion of his land. However, examples of traditional architecture exist on the upper portion of Young’s homestead adjacent to the structure that is generally regarded as the ruins of his house. Hawaiian-style Features F1, F2 or F3 (see Figure 3) could be the remains of this structure.

Captain Louis De Freycinet, leading an expedition to Hawai’i, provides one of the earliest maps of the Kawaihae area. This map, Figure 11, was executed by L. I. Duperrey during the French expedition in 1819 (Freycinet 1978:26–27). It illustrates Young’s house along
Figure 11. Map of Kohai-hai Bay and the Island of Owyhi, August 1819, executed by L. I. Duperrey; reprinted courtesy of the Bernice P. Bishop Museum, negative number 56249, cropped view.
with other structures including Pu‘ukohola Heiau, the residences of Liholiho and Ke‘eaumoku.

Freycinet also provides valuable insight into the family and residence of John Young:

Married to a chief’s daughter, he had by her six children, three boys and three girls, who are all interesting children; as for the mother, who probably was very attractive, she is now no longer young. For that matter, this family, thanks to Tamehameha’s good graces, lives here in plenty; they possess several stone houses and considerable land of Owyhi as well as on the other islands (Freycinet 1978:22).

A visit to Young’s homestead by Laura Judd in 1828 provides the only documentation that reveals what the interior of his home looked like:

He lived in a dirt adobe house, adorned with old rusty muskets, swords, bayonets, and cartridge boxes. He gave us supper of goat’s meat and fried taro, served on old pewter plates...We were sent up a rickety flight of stairs to sleep...I was afraid of the wind...[so I] got up at midnight, [and] went down to the grass house of Mrs. Young, which was neat and comfortable. She is a noble woman. She lives in native style; one of the sons is with the king, and the daughters are in the train of the princess (Judd 1928:36).

This reference also indicates Ka’oana’eha lived apart from Young, possibly on the lower portion of the homestead. She lived in a traditional house and probably maintained her traditional lifestyle apart from Young (Apple 1978:77-78).

Young died on December 17, 1835. His house on the upper portion of the homestead was probably deserted by the 1840’s and it may have been used as a Catholic school (Kelly 1974:12). His second wife, Ka’oana’eha (a niece of Kamehameha I), presumably lived on the lower portion of the homestead until sometime after 1837 (Townsend 1921:280). By 1848 Ka’oana’eha had given her land, Land Claim Award 4522, to her resident land manager, Puna (Apple 1978:50,66,78,Figure 3). She died in Honolulu on January 23, 1850 at her daughter’s (Grace Kamaikui Rooke) house (Died 1850:147, col. 3).
Chapter 4

EXCAVATIONS

Excavation Plan

The basic purpose of the excavation was the recovery of archeological data to support the historical interpretation of the site, and at the same time provide information needed for park planning and the development of future interpretive programs and visitor use facilities. The excavations at John Young's homestead centered around one of the Western style structures, Structure 2 (Figures 12, 13, and 14). The specific objectives of the project were discussed in Chapter 1 (see page 6).

Figure 12. Crew excavating side of north wall, view to the southwest.
Figure 13. Eastern portion of Structure 2 cleared to paving, view to the southeast; Structure 1 with stabilization shelter in the background.

Figure 14. Overview of Structure 2 with paving cleaned, view to the west.
The structure was cleared of fallen wall rubble and accumulated debris from the wall foundations of both the interior and exterior of Structure 2. Wall stones were carefully stacked into separate piles on the basis of approximate provenience or in terms of the exterior sides of the north, south, east, or west wall. The piles were later measured to determine the approximate volume of stone present. This information was then used to calculate estimates of the minimal heights of the walls.

After the removal of stone rubble and debris, the interior floor, which was paved with waterworn basalt pebbles, was finely cleaned by hand using 2" paint brushes to carefully sweep the entire interior area of the structure and remove a thin soil deposit. The entire periphery immediately adjacent to the exterior faces of the walls was also cleaned in the same fashion. Initial excavations consisted of two one meter square test pits in different sections of the interior area of the structure, grid squares F4 and I6, to determine stratigraphy. After a single interior stratigraphy was determined, the entire interior area cultural deposit was excavated. Possible openings through the south and east walls were also explored, but because of the structural instability of the plastered walls and the intention to stabilize the structure for preservation and interpretive purposes, no trenches were excavated through the walls or wall foundations. Figures 15, 16, 17, and 18 illustrate the post excavation condition of the structure and three profiles across it.

The total excavated area at Structure 2 was 71.9 sq m (773.9 sq ft). This total included 35.31 sq m (380 sq ft) of interior area, 4.09 sq m (44 sq ft) on the wall foundations, and 32.5 sq m (350 sq ft) of exterior area immediately adjacent to the walls of the structure. The total excavated volume is somewhat difficult to estimate. Excluding removed stones and rocks and including only the excavated deposits that were processed through screens for recovery of artifacts and non-artifactual remains, the total volume excavated is estimated to be 13.91 cu m (491.2 cu ft). This includes 8.83 cu m (311.8 cu ft) from the interior area, 4.88 cu m (172.3 cu ft) from the exterior area, and 0.20 cu m (7.1 cu ft) from the wall foundations.
Figure 15. Structure 2, post-excavation, with alpha-numeric one meter square grid system.
Figure 16. Cross section (Profile X-X') of Structure 2.

Figure 17. Cross section (Profile Y-Y') of Structure 2.

Figure 18. Cross section (Profile Z-Z') of Structure 2 showing postholes.
Stratigraphy

The stratigraphy defined during the excavations was relatively simple. The basic stratigraphies of the interior and exterior areas are compared in Table 2. A detailed description of the stratigraphy in the interior of the structure is presented in Table 3.

Table 2.
GENERAL DESCRIPTION OF STRATIGRAPHY
STRUCTURE 2, JOHN YOUNG HOMESTEAD (UPPER PORTION)

<table>
<thead>
<tr>
<th>General Nature of Layer</th>
<th>Layer</th>
<th>Interior</th>
<th>Exterior</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>S &amp; W</td>
<td>N &amp; E</td>
</tr>
<tr>
<td>Non-cultural/natural;</td>
<td>I</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>post-occupational;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>principally aeolian</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>deposition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural; waterworn</td>
<td>II</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>pebble pavement</td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Cultural; fill</td>
<td>III</td>
<td>+</td>
<td>?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Non-cultural/natural;</td>
<td>IV</td>
<td>+</td>
<td>?</td>
</tr>
<tr>
<td>well-weathered subsoil</td>
<td></td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>base</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-cultural/natural;</td>
<td>V</td>
<td>+</td>
<td>?</td>
</tr>
<tr>
<td>lava bedrock base</td>
<td></td>
<td></td>
<td>?</td>
</tr>
</tbody>
</table>

4 + = Present; - = Absent; ? = Presence inferred, but excavations not sufficiently deep to expose
Table 3.
DETAILED DESCRIPTION OF INTERIOR AREA STRATIGRAPHY
STRUCTURE 2, JOHN YOUNG HOMESTEAD (UPPER PORTION)

<table>
<thead>
<tr>
<th>Layer</th>
<th>General Nature of Layer</th>
<th>Detailed Description$^5$</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Non-cultural/natural;</td>
<td>7.5YR 4/4$^6$, brown to dark-brown</td>
</tr>
<tr>
<td></td>
<td>post-occupational</td>
<td>silty clay; 15-20 cm (5.9-7.9 in) thick;</td>
</tr>
<tr>
<td></td>
<td>(cultural debris</td>
<td>structureless; soft, loose, slightly</td>
</tr>
<tr>
<td></td>
<td>included); principally</td>
<td>sticky and slightly plastic; abrupt,</td>
</tr>
<tr>
<td></td>
<td>aeolian deposition</td>
<td>smooth boundary; soil matrix includes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>rubble (pebbles, cobbles, and small</td>
</tr>
<tr>
<td></td>
<td></td>
<td>boulders) derived from structure walls</td>
</tr>
<tr>
<td>II</td>
<td>Cultural; waterworn</td>
<td>Waterworn basalt pebbles; ave. 2.0 by</td>
</tr>
<tr>
<td></td>
<td>pebble pavement</td>
<td>3.0 to 3.0 by 3.0 cm (0.8 by 1.2 to 1.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>by 1.2 in); ca. 10 cm (3.9 in) thick;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>tightly packed, compressed within</td>
</tr>
<tr>
<td></td>
<td></td>
<td>structureless aeolian fill (Layer I</td>
</tr>
<tr>
<td></td>
<td></td>
<td>material) and midden material matrix;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>abrupt, smooth boundary</td>
</tr>
<tr>
<td>III</td>
<td>Cultural; fill</td>
<td>Composite fill; ca. 30 cm (11.8 in) thick;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>three components:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IIIa Very thin lens (?); medium-grained,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>yellow carbonate sand; ca. 1.0 cm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.4 in) thick;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IIIb 7.5YR 4/2, dark to dark-brown</td>
</tr>
<tr>
<td></td>
<td></td>
<td>silty clay; 9-10 cm (3.5-3.9 in)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>thick; structureless; soft, very</td>
</tr>
<tr>
<td></td>
<td></td>
<td>friable, slightly sticky, non-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>plastic; gradual, broken boundary;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>aeolian soil matrix includes abundant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sub-angular to angular and rare</td>
</tr>
<tr>
<td></td>
<td></td>
<td>rounded basalt pebbles and cobbles,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>and midden material;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IIIc 7.5YR 3.5/4, dark-brown silty clay;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 cm (7.9 in) thick; structureless;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>soft, very friable, slightly sticky,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>non-plastic; abrupt, wavy boundary;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>aeolian soil matrix includes angular</td>
</tr>
<tr>
<td></td>
<td></td>
<td>basalt cobbles and very rare well-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>rounded basalt pebbles, and midden</td>
</tr>
<tr>
<td></td>
<td></td>
<td>material</td>
</tr>
<tr>
<td>IV</td>
<td>Non-cultural/natural;</td>
<td>7.5YR 4/4 to 7.5YR 3.5/4, brown to dark-</td>
</tr>
<tr>
<td></td>
<td>sterile, well-weathered</td>
<td>brown to dark-brown silty fine sand</td>
</tr>
<tr>
<td></td>
<td>subsoil base</td>
<td>(derived from volcanic ash); 17 cm (6.7 in)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>thick; structureless; soft, loose, slightly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sticky, non-plastic; very abrupt, irreg-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ular boundary; soil matrix includes rare</td>
</tr>
<tr>
<td></td>
<td></td>
<td>angular basalt pebbles of decomposing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>basalt bedrock</td>
</tr>
<tr>
<td>V</td>
<td>Non-cultural/natural;</td>
<td>Pahoehoe lava bedrock</td>
</tr>
<tr>
<td></td>
<td>lava bedrock base</td>
<td></td>
</tr>
</tbody>
</table>

$^5$ Description partially derived from Morgenstein (1978:2-4).
$^6$ Munsell Color Chart designation
Walls

The walls varied in width from 60 cm (23.6 in) to 1.20 m (3.9 ft) and the height varied between 22 cm (8.7 in) and 78 cm (30.7 in). Construction methods consisted of unmodified stones laid in a mud mortar covered on both interior and exterior faces with coral lime plaster (Figures 19, 20, 21, 22, and 23). The coral lime plaster as noted earlier was said to be made out of blocks of coral from Puako that were burned and mixed with poi and hair (Apple 1978:47). Hawaii Marine Research collected eight plaster cement samples from Western-style structures 1, 2, and 3 and did compressive strength, water absorption potential and petrological analyses of the samples (Morgenstein 1978). The results of those analyses are presented in detail in Table 4.

The samples were found to be a calcium carbonate (limestone) cement with a matrix of calcium oxide. The petrology of the eight samples was described from thin sections. The compression strength tests were performed using an unconfined hydraulic press and readings were taken at the yield point. The water absorption test was performed by water-soaking each sample and weights were taken before and after this procedure.

The wall heights for the structure were calculated by estimating the volume of rocks that were probably used for wall construction. The volume was calculated by measuring the piles of stones that resulted from clearing the interior of the structure and the exterior immediately adjacent to the walls. The piles had been carefully stacked based on provenience according to the presumed wall of origin. By extrapolating from that information and adding it to the remaining wall heights, the projected original wall heights were determined. The walls are estimated to have been approximately 1.45 m (4.76 ft) high on the north, 1.51 m (4.95 ft) on the east, 1.29 m (4.23 ft) on the south and 1.26 m (4.13 ft) on the west. There was no evidence for a gabled wall on either the east or west end of the structure.
Figure 19. Exterior face of south wall, southwest corner, view to the north.

Figure 20. Unit D3 with Layer II removed and puddled plaster visible on top of Layer III.
Figure 21. North wall interior face with plaster working marks visible, especially near base, view to the north.

Figure 22. Plaster on interior face of northeast corner; note Layer I (‘ili’ili paving) and Layer II (fill), view to the east.
Figure 23. Southwest corner interior face showing plaster working marks, including finger tip and palm prints and smoothing tool, view to the southwest.
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Petrology</th>
<th>Compressive Strength (lbs per sq inch)</th>
<th>% of H₂O</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Dry Yield #1</td>
<td>Wet Yield #2</td>
</tr>
<tr>
<td>1</td>
<td>Structure 2 ext. face, N wall unit B2</td>
<td>&lt; 8% basaltic igneous rock, all grains well-rounded to sub-rounded moderately well-sorted medium to coarse grained bimodal sand</td>
<td>&lt; 10</td>
<td>&lt; 10</td>
</tr>
<tr>
<td>2</td>
<td>Structure 2 int. face, N wall unit H3</td>
<td>&lt; 5% basaltic igneous rock, &lt; 1% soil granules, poorly sorted fine sand to granule; grains sub-angular to rounded; common large voids with intact matrix cement</td>
<td>top &lt; 50</td>
<td>top &lt; 50</td>
</tr>
<tr>
<td>3</td>
<td>Structure 2 int. face, S wall unit H7</td>
<td>ca. 20% basaltic igneous rock, poorly sorted medium sand to granule, rare small voids with intact matrix cement; all grains well rounded</td>
<td>&lt; 50</td>
<td>&lt; 40</td>
</tr>
<tr>
<td>4</td>
<td>Structure 2 ext. face, S wall unit C8</td>
<td>ca. 10% basaltic igneous rock, well rounded grains, moderately &amp; poorly sorted medium sand to granule, rare small voids with intact cement matrix</td>
<td>&lt; 75</td>
<td>&lt; 75</td>
</tr>
<tr>
<td>5</td>
<td>Structure 1 ext. face, S wall (middle of wall)</td>
<td>ca. 20% basaltic igneous rock, poorly sorted, sub-angular to rounded grains, fine to medium sand to granule; rare small voids with intact cement matrix</td>
<td>&lt; 20</td>
<td>&lt; 20</td>
</tr>
<tr>
<td>6</td>
<td>Structure 1 ext. face, S wall (middle of wall)</td>
<td>ca. 5% basaltic igneous rock, poorly sorted fine sand to granule with medium sand mode, sub-angular to rounded grains, rare small voids with intact cement matrix</td>
<td>&lt; 150</td>
<td>&lt; 75</td>
</tr>
<tr>
<td>7</td>
<td>Structure 3 int. face, SW wall (NW corner)</td>
<td>ca. 15% basaltic igneous rock, poorly sorted fine to coarse sand with granules, sub-angular to sub-rounded grains, abundant voids, small to large with intact and degraded cement matrix of clean calcium oxide with abundant ferruginous staining</td>
<td>&lt; 40</td>
<td>&lt; 50</td>
</tr>
<tr>
<td>8</td>
<td>Structure 3 int. fact, SW face (NW corner)</td>
<td>ca. 3% basaltic igneous rock, poorly sorted to moderately well sorted by grading, medium to coarse sand to fine sand to granule, rare voids, intact cement matrix of clean calcium oxide</td>
<td>&lt; 150</td>
<td>&lt; 150</td>
</tr>
</tbody>
</table>

7 Adapted from Morgenstein (1978:Tables 1, 2, and 3)
8 Weight in grams
9 No data, sample dissolved
Features

The features encountered in the excavations included six postholes, Features A, B, C, E, F, and G, and one burial, Feature D (Table 5 and Figure 24). Five of the postholes, A, B, C (Figure 25), E, and G laterally transect Structure 2 roughly at the center. Figure 18, a cross section of the structure, illustrates the position of these postholes including their diameter and depth. Three of the postholes, Features G, E, and F, were positioned on the walls of the structure. The remaining three postholes, Features A, B, and C, were evenly spaced across the center of the structure.

The construction methods used for the three interior postholes included excavation through two layers to a depth that varied between 47 cm (18.5 in) and 65 cm (22.6 in). Each of these postholes was ringed with a pile of stones placed to anchor the post. Some wood chips were recovered in the fill of one hole, and it is assumed that these remains are fragments of the original posts. In contrast to the fill of the five other postholes, the central posthole, Feature C, included fishbones. Soft soil and some ‘ili‘ili made up the remainder of the fill.

The crypt burial, Feature D, (Figures 27, 28, 29, 30, and 31) was situated within the grid designations of C4, C5, D4, and D5. The stone lined and capped crypt feature was outlined by stones that were placed on edge to an overall dimension of 1.40 m (4.6 ft) by 75 cm (29.5 in). The overall depth of the stone lined and capped crypt was 40 cm (15.7 in). The crypt was constructed during or after the occupation of Structure 2 by excavating a pit through Layer II and into Layers III and IV. The presence of waterworn pebbles (‘ili‘ili) from Layer II in the crypt may indicate the pit was dug after the paving had been laid. The crypt held the remains of two individuals, one juvenile and one infant. For a discussion of the human remains, see Chapter 5, page 74.
Figure 24. Crew excavating inside Structure 2 with Features A, C, and D visible, view to the east; especially note Feature D, burial crypt, in left foreground underneath the 'illi'ili paving.

Figure 25. Feature C, posthole, excavated.
Figure 26. Feature D, burial crypt, before opening, view to the north; Feature A in foreground.

Figure 27. Feature D, burial crypt, with capstones removed, view to the north.
Figure 28. Feature D, burial crypt, during excavation; burials partially exposed; collapsed wooden coffin on left side; view to the south.

Figure 29. Feature D, burial crypt, both burials exposed, view to the south.

Figure 30. Feature D, burial crypt, close up view of burials, view to the south.
<table>
<thead>
<tr>
<th>Feature #</th>
<th>Feature Type</th>
<th>Provenience</th>
<th>Dimensions</th>
<th>Description &amp; Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Posthole</td>
<td>II</td>
<td>D5</td>
<td>Dia. 16-18 cm; Dep. ca. 65 cm into Layer III</td>
</tr>
<tr>
<td>B</td>
<td>Posthole</td>
<td>II</td>
<td>H5</td>
<td>Dia. ca. 12 cm; Dep. ca. 60 cm into Layer III</td>
</tr>
<tr>
<td>C</td>
<td>Posthole</td>
<td>II</td>
<td>F5</td>
<td>Dia. ca. 15 cm; Dep. ca. 47 cm into Layer III</td>
</tr>
<tr>
<td>D</td>
<td>Burial Crypt</td>
<td>II(?)</td>
<td>C4,C5, D4,D5</td>
<td>Leng. 1.4 m; Widt. 75 cm; Dep. ca. 40 cm into Layer III</td>
</tr>
<tr>
<td>E</td>
<td>Posthole</td>
<td>II (?)</td>
<td>J5</td>
<td>Dia. ca. 20 cm+; Dep. 40 cm+ (below wall surface)</td>
</tr>
<tr>
<td>F</td>
<td>Posthole</td>
<td>II (?)</td>
<td>F8</td>
<td>Dia. ca. 18 cm+; Dep. 40 cm+ (below wall surface)</td>
</tr>
<tr>
<td>G</td>
<td>Posthole (?)</td>
<td>II (?)</td>
<td>B5</td>
<td>Uncertain</td>
</tr>
</tbody>
</table>
Chapter 5

PORTABLE REMAINS

A total of 1,150+ portable remains were recovered during the excavations at John Young Homestead (Upper Portion). Most of these objects were recovered from the interior area, including walls, of Structure 2 and exterior areas immediately adjacent to Structure 2. The remainder of the artifacts were recovered from the general surface of the site, including a few from the exterior area immediately adjacent to Western-style Structure 1. The items from Structure 1 comprise a small surface collection, about 25 items, made by a private individual during a visit to the site in November 1971, and subsequently returned to the park during the current project.

The artifact assemblage included both indigenous and introduced historic items. Following Kirch (1983:341) indigenous artifacts are defined as "objects that were manufactured from local materials using traditional Hawaiian methods and techniques." They could be either prehistoric or historic in age. Historic artifacts are defined as introduced Western goods. The distribution of indigenous and historic items from Structure 2 is presented in Tables 6 and 7. The portable remains have been separated into four major classes with up to 13 major categories. They are organized along the lines of the classification system for archeological materials outlined in the National Park Service volume, Manual for Museums (Lewis 1976:169-170). This system organizes artifacts principally according to materials.

Within each of these major classes the discussion of portable remains will be presented according to the organization set down by Lewis (1976:169-170). More detailed information regarding the various items is presented in the following individual descriptions of various artifact categories. The temporary artifact number in parentheses in the discussion should be preceded by the site number 50-HA-E5-7. This number and the individual artifact number have been marked on each artifact.

**Indigenous Artifacts**

This category of artifacts includes an abrader, a hammerstone, an anvil, and a core, all of basalt; volcanic glass flakes and cores; sea urchin spine abraders; bone awls, and whale tooth (*niho*) ornaments.
Table 6.
SUMMARY OF HISTORIC ARTIFACTS
STRUCTURE 2, JOHN YOUNG HOMESTEAD (UPPER PORTION)

<table>
<thead>
<tr>
<th>Artifact</th>
<th>Number of Artifacts per Layer</th>
<th>Surface</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mineral - Flint flake</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
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<tr>
<td>Gun flint</td>
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<td>1</td>
<td></td>
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</tr>
<tr>
<td>Slate Fragment</td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Brass button</td>
<td></td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Brass needle</td>
<td></td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Brass drawer handle screw</td>
<td></td>
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<td></td>
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</tr>
<tr>
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<td>2</td>
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<td></td>
<td>4</td>
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<td></td>
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</tr>
<tr>
<td>Brass lock mechanism</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Brass ramrod pipe</td>
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<td></td>
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</tr>
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<td>Total</td>
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<td>54</td>
<td>460</td>
<td>427+</td>
<td>63</td>
<td>1008+</td>
</tr>
</tbody>
</table>
Table 7.
SUMMARY OF INDIGENOUS ARTIFACTS
STRUCTURE 2, JOHN YOUNG HOMESTEAD (UPPER PORTION)

<table>
<thead>
<tr>
<th>Artifact</th>
<th>Number of Artifacts per Layer</th>
<th>Surface</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mineral</strong></td>
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</tr>
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<td>Abrader</td>
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</tr>
<tr>
<td><strong>Whale tooth</strong></td>
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</tr>
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</tr>
<tr>
<td>Piece</td>
<td></td>
<td>Few</td>
<td>Many</td>
<td></td>
<td>32</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>4</td>
<td>37+</td>
<td>28+</td>
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<td>102</td>
</tr>
</tbody>
</table>
Mineral

Included in this group are basalt and volcanic glass artifacts. A total of 31 items were identified with volcanic glass artifacts numbering 27 of the total.

Basalt

Abrader. A single abrader (artifact number 828) made from a basalt cobble that had been pecked and ground around its circumference was collected. One surface is very smooth and slightly convex with numerous parallel striations and shallow small grooves. It is 9.98 cm (3.93 in) long by 7.68 cm (3.02 in) wide with a thickness of 3.60 cm (1.42 in) and was recovered from unit J3, Layer II. This abrader could possibly have been used as a whetstone.

Hammerstone. One hammerstone (artifact number 393) made from an ovoid vesicular basalt cobble was recovered. It is pecked over most of its surface with extensive use wear from battering on both ends and on two (possibly three) side areas. It measures 15 cm (5.9 in) in length and 11 cm (4.3 in) in width with a thickness of 9.8 cm (3.9 in). It was collected from the surface of the site about three meters (9.8 ft) north of the north wall of Structure 2.

Anvil. One anvil (artifact number 392), roughly a circular slab from the end of a waterworn close grained basalt boulder, was recovered from unit D4, surface. It is pecked on both surfaces; the dorsal surface is convex while the ventral surface is flat. The convex dorsal surface shows extensive battering from being used as an anvil. This anvil measures 17.5 cm (6.9 in) in length by 17 cm (6.7 in) in width with a thickness of 4.65 cm (1.83 in). Several other possible anvil stones of small to medium-sized waterworn basalt boulders were also noted (but not collected) on the southwestern surface of the interior area of Structure 2.

Core. One core (artifact number 391) of dense, close-grained basalt was recovered. It is irregular with several large flake scars. Two large, rough percussion bulbs are obvious. The flakes could possibly have been removed by bashing the core against a similar small boulder. It measures 20 cm (7.9 in) in length by 14 cm (5.5 in) in width, is 11.5 cm (4.5 in) thick, and was recovered from unit D5, Layer I.
Volcanic Glass

A total of 27 items were catalogued and 15 were sent to Hawaii Marine Research for hydration rind dating. According to Morgenstein (1978), approximately 30% of the glass material was of local origin, while the majority, ca. 70%, probably came from the vicinity of Pu‘u Wa‘awa‘a, a volcanic cinder cone on the north slope of Hualalai Mountain in the North Kona District of Hawaii Island, approximately 18 miles (29 kilometers) to the south of Kawaihae.

Of the 27 items nine were utilized flakes, 12 were waste flakes and six were cores. One core and twelve flakes were recovered from Layer I and five cores and nine flakes were recovered from Layer II. Concentrations of volcanic glass artifacts were not noted in the recovery. These artifacts were dispersed over the interior of the structure with no more than three artifacts to a unit.

Nine flakes showed some degree of edge damage under inspection with a low-powered hand lens, but no intentional retouching of flakes was observed. Obvious edge damage derived principally from use of flakes for scraping and for cutting operations. As Barrera and Kirch noted:

> Basaltic [volcanic] glass holds a fine, sharp edge and the tools make excellent cutting and scraping implements. They have been used in food preparation, for cutting and scraping plant materials, or for delicate woodworking...The suggestion, is that the ubiquitous basaltic-glass flakes functioned as a prehistoric 'pocketknife', to use a modern analogy (1973:185–186).

It is more than likely that the edge damaged flakes were used as "pocketknives" in the historic period. Volcanic glass flakes as indigenous artifacts provided a function that could be replaced by introduced metal knives, razors, or scissors. However, the quality of material and the fine cutting edge that volcanic glass retains could not be replaced. It is not surprising that indigenous items such as these would remain in the artifact record.

Animal

This category includes sea urchin, bone, coral, and shell artifacts recovered from the excavation.

Shell

Limpet shell. Seven limpet shells (Cellana sp.) that appear to have been used as scrapers were recovered from Layers I and II (Figure 31f, g, and h). Use is indicated by varying
degrees of edge wear, usually along the right lateral margin of the shell. They were probably used for scraping vegetal material, both cooked and raw, and for extracting and grating coconut meat. The smallest specimen (artifact number 678) was 5.06 cm (1.99 in) by 3.90 cm (1.54 in) in size and the largest (artifact number 470) was 7.43 cm (2.93 in) by 6.56 cm (2.58 in).

**Helmet shell.** Five body whorl pieces and fragments of helmet shell (*Cassis cornuta* L.) were recovered from Layers I and II. Evidence of their usage as scrapers (Figure 31e) is indicated by varying degrees of wear on the edge of several specimens. An abraded rounded edge is the principal form of wear.

**Cowry shell.** A medium sized cowry shell (*Cypraea mauritiana* L.) with a small hole through the anterior end of the dorsum was collected from Layer I. The shell is possibly an incompletely manufactured octopus lure and the hole was possibly intentionally punched. The shell is 6.28 cm (2.47 in) long and 4.67 cm (1.84 in) wide.

**Pearl shell.** Nine small irregularly shaped pieces of pearl shell were recovered from Layer I (Figure 31d). They are probably remnants or waste from artifact manufacturing. Two specimens (artifact numbers 454 and 1062) had cut edges. The largest specimen (artifact number 1062) is 2.46 cm (0.97 in) long, 1.51 cm (0.59 in) wide, and 0.28 cm (0.11 in) thick.

**Bone**
One complete awl (artifact number 927) (Figure 32h), one awl fragment (artifact number 462), and two worked bone fragments (artifact numbers 487 and 592) (Figure 32e and i), all of mammal bone, were recovered. The complete awl was 2.94 cm (1.16 in) long and had a maximum width of 0.51 cm (0.20 in) and a maximum thickness of 0.20 cm (0.08 in). It was recovered from unit D4, Layer III. The fragment is the tip of an awl and was recovered from unit K5, Layer I. The worked bone fragments are cut and abraded pieces that are probably manufacturing debris. One piece was recovered from Layer I and the other from Layer II.

**Coral**
One triangular section of an abrader with a tapered point was recovered from the backdirt pile, probably from Layer II. This abrader fragment (artifact number 1050) (Figure 32c)
Figure 31. Artifacts made from Shell: Buttons (a,b,c); Pearl shell with cut edges (d); Helmet shell scraper (e); Limpet shell scrapers (?) (f,g,h).

Figure 32. Artifacts made from Bone, Coral, Turtle Shell, Echinoid Spine: Echinoid spine, tip with drilled hole (a), abraders (b,d); Coral abrader (c); Bone, worked fragments (e,i), button (f), awl (h); Whale tooth, *niho palaoa* (g); Turtle carapace, needle (l), cut pieces (j,k).
is made of *Porites* sp. coral and is 3.83 cm (1.51 in) in length with a maximum width of 1.6 cm (0.63 in) and a thickness of .50 to 1.26 cm (0.20 to 0.50 in).

**Whale tooth**

One complete *niho palaoa* (artifact number 469) (Figure 32g) was recovered from the interface between Layer I and II. The curved hook-shaped pendant, probably a sperm whale tooth, has a transverse perforation for a suspension cord. The artifact is 3.83 cm (1.51 in) long, 0.81 to 1.59 cm (0.32 to 0.63 in) thick and has a maximum width of 1.63 cm (0.64 in). The length of the forward projecting "hook" is 2.43 cm (0.96 in). The specimen is a classic late prehistoric/early historic period form of pendant (Cox 1967). It was a traditional aboriginal Hawaiian symbol of high social rank, worn by both men and women.

Two worked pieces of whale tooth, probably from a sperm whale, were recovered from unit H3, surface. They were cut and abraded to a beveled, tapered point and could be either manufacturing debris or an unfinished artifact. The larger specimen (artifact number 967) had been sawn from both sides almost completely through and then been split in two. It is 2.59 cm (1.02 in) long and has a maximum width of 1.86 cm (0.73 in) and a maximum thickness of 1.52 cm (0.60 in).

**Echinoid spine**

Two complete (artifact numbers 181 and 257) (Figure 32b and d) and two partial abraders, tips only, (artifact numbers 245 and 1089) made from the spines of slate pencil sea urchin (*Heterocentrotus mammillatus* L.) were recovered from Layer I (181, 257 and 245) and Layer II (1089). The abraders have one to four abraded, flat facets and are tapered to a point. On only one specimen (181) was it possible to determine that the abraded facets were on the distal end of the spine. Artifact number 181 is 7.86 cm (3.09 in) long and had a maximum diameter of 1.03 cm (0.41 in). The other complete abrader (257) is 5.75 cm (2.26 in) long and has a maximum diameter of 1.00 cm (0.39 in).

In addition to the abraders there was also a modified portion of a slate pencil sea urchin spine (artifact number 252) (Figure 32a). The specimen is the tip of the distal end of a spine and has five holes drilled into it, but not completely through it. Two holes are on one side and three are on the other side. The artifact is 2.19 cm (0.86 in) long, has a maximum width of 1.00 cm (0.39 in) and was recovered from Layer I.
There were one pin or needle, three shaped pieces and 32 fragments and pieces of turtle carapace recovered. The pin or needle (artifact number 879) (Figure 32l) is a thin, slightly curved shaft of turtle carapace and was recovered from Layer I. It is 5.93 cm (2.33 in) long, 0.33 cm (0.13 in) wide and 0.08 cm (0.03 in) thick. The three shaped pieces are thin, hook-shaped or angled pieces that might be bracelet segments or possibly unfinished hook points. Artifact number 598 is 3.82 cm (1.50 in) long, 1.09 cm (0.43 in) wide and 0.09 cm (0.04 in) thick; number 785 (Figure 32k) is 4.54 cm (1.79 in) long, 1.03 cm (0.41 in) wide and 0.08 cm (0.03 in); and number 1087 is 1.50 cm (0.59 in) long, 0.90 cm (0.35 in) wide and 0.04 cm (0.02 in) wide. In addition to the artifacts, 32 various irregularly shaped pieces of carapace were recovered from Layer I and Layer II. These pieces probably include both raw material and manufacturing debris (Figure 32j).

**Historic Artifacts**

This category of objects includes metal artifacts made of brass (button), bronze (gun parts, nails), copper (wire), iron (hardware, nails) or lead (strips); glass artifacts (beads, bottles, chimney glass); ceramic artifacts (a possible marble, tableware, storage vessels); stone artifacts (gun flint, writing slate); and a shell artifact (button), as presented in Table 6.

**Mineral**

This group of artifacts includes items made from imported stone, metal, clay, and glass.

**Stone**

Flint. The two items recovered include one waste flake (artifact number 831) and a gun flint (artifact number 178) (Figure 33d). The gun flint is complete, of good quality grey to grey-black translucent flint (Munsell Color: 2.5Y N8 – 2.5 Y N3) and is 2.67 cm (1.05 in) long, 1.98 cm (0.78 in) wide, and from 0.70 cm (0.28 in) to 0.12 cm (0.05 in) thick. It is a typical rectangular blade flint with a shortened butt; the dorsal side is slightly concave, and there are very fine retouch flake scars along its edges from use. This specimen was recovered from unit B4, Layer I. Although this artifact has the appearance of a gun flint, it may have been used as a strike-a-light (A siliceous stone struck by a metal fragment and used in producing fire.) The edge damage from these activities is very similar and difficult to distinguish.
Figure 33. Artifacts made from Metal and Flint: Gun flint (d); Bronze, hardware from British arms (a,b), unidentified fragment (c); Brass, drawer handle screw (e), needles (g,h), ornamental fitting (i), lock mechanism fragment (k), modified sheeting (l,m); Iron, key (f), ornamental boss (j).

Figure 34. Artifacts made from Metal: Iron, hinge (a), tack (b), screw (c), rose head nails (d,e), round head nail (f), T-head nails (g,h); Bronze, nails (i,j); Brass, tack (k), wire (l).
Slate. Slate artifacts on sites in Hawai'i occur on sites that post date the arrival of the missionaries (Carter 1987). The exact year varies depending on the local history of the area. Missionaries first arrived in Kawaihae in 1820 and settled there in the summer of that year (Kelly 1974:29). One edge fragment of a writing tablet was recovered from unit B9, Layer I. The fragment had been cut by sawing and there were saw marks on both surfaces along parallel edges.

Metal
This category includes brass, bronze, iron and lead artifacts. Iron nails were the most common artifact in this category, and while there were few objects made of brass, the variety of such items was diverse. Few of the items recovered have documentation that would provide specific chronological accuracy.

Brass. Seventeen items made of brass were recovered. These included a complete button (artifact number 226), the loop from a second button (artifact number 762), two needles (artifact number's 597 and 965) (Figure 33g and h), a drawer handle screw (artifact number 657) (Figure 33e), four sections of modified sheeting (artifact number's 724, 860, 934, and 676) (Figure 33l and m), an ornamental fitting (artifact number 634) (Figure 33i), a lock mechanism fragment (artifact number 1031) (Figure 33k), a ramrod pipe fragment (artifact number 755), two tacks (artifact number's 431 and 740) (Figure 34k), and a coil and two fragments of wire (artifact number's 386, 432, and 757) (Figure 34l).

The complete button has a plain face slightly convex with a simple brass loop soldered to the back. It is 2.20 cm (0.87 in) in diameter. It was recovered from unit E7, Layer II and the loop was recovered from unit C5, Layer II. This type of button is typical of those manufactured prior to 1800 (Noël Hume 1974:99).

Brass needles are rare objects in an archeological excavation because of their poor preservation potential. Two needles (artifact numbers 597 and 965) were recovered from the excavations. These needles are flat, slightly tapered and rectangular in cross section (Figure 33g and h). The perforation is at the wider end and the tips of both needles are missing. These needles were recovered from units C7 and F7, Layer II. No specific date can be assigned to these items but they are not unusual for this period (Noël Hume 1974:254-256).
The collection of brass artifacts includes the screw portion of a handle for a drawer pull (artifact number 657) (Figure 33e). The shaft end is threaded and the other is bulbous with a transverse hole for the insertion of the drawer pull (Revi 1974:80-81). It measures 2.69 cm (1.06 in) in length. This artifact was recovered from unit C3, Layer II and is typical of early 1800's furniture hardware.

Four sections of brass sheeting, (artifact numbers 724, 860, 934 and 676) modified into different forms were recovered. Brass sheeting was easily modified and used for different purposes. Two pieces are roughly square in section, another is folded into a cone shape and pierced through at the widest part (Figure 33l) and the last item is also formed into a cone but with a flattened knob at the apical end (Figure 33m). These fragments vary in size but the thickness of the sheeting ranges between 0.04 and 0.06 cm (0.016 and 0.02 in). These items were recovered from unit E5, Layer II; units F8 and B7, Layer I and unit E8, Layer III respectively.

An ornamental brass fitting (artifact number 634), probably part of a plate for a trunk lock, was identified in the collection. It was originally rectangular but now has one corner folded back, five small holes around the periphery and two small irregular pieces cut out in a step pattern (Figure 33i). It was recovered from unit E7, Layer II.

Another portion of a brass lock mechanism (artifact number 1031) recovered from unit J3, Layer II was a fitting for a skeleton key (Figure 33k). It measures 1.59 cm (0.63 in) in length and 0.53 cm (0.21 in) in width.

One ramrod pipe fragment (artifact number 755), similar to specimens found during surface collection at Russian Fort Elizabeth at Waimea, Kauai (McCoy 1972:28, Fig. 17), was recovered. This artifact is made of tubular brass with paired flanges (partially broken off) and has no attachment perforations indicating the piece may be damaged. It has an overall length of 2.21 cm (0.87 in) and a maximum tube diameter of 0.62 cm (0.24 in). It was recovered in unit E7, Layer I.

Brass tacks are usually found in connection with maritime construction or used as ornamental hardware. Only two tacks (artifact numbers 740 and 431) were recovered in the excavation. Both have convex heads and probably functioned as mentioned above. One tack (740), probably a boat tack, is 2.36 cm (0.93 in) long and between 0.36 cm (0.14
in) and 0.42 cm (0.17 in) wide (Figure 34k). The ornamental tack is smaller measuring only 0.94 cm (0.37 in) in length and 0.16 cm (0.06 in) in width. These tacks were recovered from unit C5 and D9, Layer II respectively. No date can be assigned to these objects because they are standard items that have not changed considerably over time.

One coil (Figure 34l) and two fragments of brass wire (artifact numbers 386, 432, and 757) were recovered. Very fine gauged wire was used for a variety of jobs; it is not known how it was used at the site. The wire was recovered from units E7 and F3, Layer I and from F3, Layer II.

Bronze. Six items made out of bronze were recovered. These included two pieces of hardware from British arms (artifact numbers 383 and 685) (Figure 33a and b), three nails (artifact numbers 636, 690 and 825) (Figure 34i and j), and an unidentified fragment (artifact number 241) (Figure 33c).

Two bronze items (artifact numbers 383 and 685) are thought to be hardware from eighteenth century British arms. Item 383 appears to be a portion of the butt plate of a British musket (Sanford 1975:58) and item 685 may be part of the guard for the trigger mechanism. The unidentified fragment (artifact number 241) looks like a re-worked, flattened piece of armor. These items were recovered in units D6, Layer I, J3, Layer II, and B6, Layer I, respectively.

Three bronze boat nails, two complete (artifact numbers 636 and 690) and one fragment (artifact number 825) were recovered from units E7, F5 and G6, Layer II. In cross section these nails are square with a T-shaped head. The complete specimens measure 4.27 cm (1.68 in) in maximum length with widths of 0.35 and 0.60 cm (0.14 and 0.24 in) (Figure 35i and j).

Iron. One hundred eighty-three items made of iron were recovered. These included a fishhook (artifact number 445), a key (artifact number 557) (Figure 33f), 80 nails and nail fragments, 22 fragments of strap metal, a needle (artifact number 1030), a tack (artifact number 897) (Figure 34b), a fragment of corroded wire (artifact number 905), two sections of a single hinge (artifact number's 992 and 994) (Figure 34a), a bolt (artifact number 621), an ornamental boss (artifact number 826) (Figure 33j), an unidentified
object (artifact number 610), and 71 unidentified fragments. Figure 35 shows the distribution of iron nails, strap metal, and iron fragments.

One fishhook (artifact number 445) was recovered from unit D9, Layer I. It is a small rotating hook with a loop at one end to attach line. It is in poor condition due to its being badly rusted and its point tip is missing. The shank is 2.20 cm (0.87 in) long and the hook 1.03 cm (0.41 in) wide.

One hollow shaft slotted key (artifact number 557) was recovered during the excavation. It has an oval finger grip (Figure 33f), measures 4.26 cm (1.68 in) in overall length with a shaft diameter of 0.48 cm (0.19 in), and was recovered from unit E7, Layer II.

Three nail types were identified in the collection of 80 nails and nail fragments. These nails, which are hand-made, i.e., cut from sheet stock with hand finished heads, can be distinguished from one another only by their head forms, which include T-head, rose head and round head (Nelson 1968:6). The shafts on all three types are square to rectangular in cross section, which are typical of 18th and 19th century material.

The T-head nails were the most abundant with a total of 14 nails (Figure 34g and h). The heads of these nails are roughly square and are positioned with part of the head projecting out on one side over the shaft. These nails range in length from 2.54 cm (1.0 in) to 6.35 cm (2.5 in). Four of these nails are typical of the type used in stair framing (artifact numbers 973, 970, 977, and 978). These are generally longer nails measuring between 5.08 cm to 6.20 cm (2.0 and 2.44 in). Although these four nails were manufactured for stair framing they were recovered in the burial crypt, Feature D, and were probably used to nail down the coffin lid.

There were six rose head nails (Figure 34d and e) ranging in length from 2.54 to 5.86 cm (1.0 to 2.31 in). The heads of these nails are usually faceted with wedge shaped facets that slope down away from the center of the nail head. The center forms a pinnacle or point where the facets come together.

Only one round headed nail was identified (artifact number 908). Its shaft, like the others, is square to rectangular in cross section, with the head added (Figure 34f). It measures 5.86 cm (2.31 in) in length.
Figure 35. Distribution of iron nails, strap metal, and iron fragments within alpha-numeric grid system.
Twenty-two fragments of strap metal were recovered from the excavation and their location is marked on Figure 35. The pieces were both flat and flat with one edge bent back over flat to form a double edge. Several specimens consist of two pieces riveted together and there are several more pieces with open rivet holes. Strap metal was used primarily for binding barrel staves or other containers. The ethnographic literature reveals that strap metal was very popular with the ali‘i in Hawai‘i as representing a form of wealth (Nicol 1931:71-72). The fragments ranged in length between 3.45 and 33.50 cm (1.36 and 13.19 in) and ranged in width between 2.06 and 3.81 cm (0.85 and 1.5 in).

One iron needle (artifact number 1030) was recovered from unit D6, Layer II. It, like the others of brass, is a rare find on archeological sites. It is flat with a perforation at the wider end and the tip is missing.

A single ornamental boss (artifact number 826) was recovered in the excavation. It is round with three projecting nailing attachment flanges and each flange has a small nail or tack rusted to the perforation (Figure 33j). The face of the boss is concave with a raised rim and raised waffle pattern and the back is convex and plain. It measures 2.66 cm (1.05 in) from flange to flange across the face, has a maximum thickness of 0.43 cm (0.17 in), and was recovered from unit G6, Layer II.

One iron tack (artifact number 897) was recovered from unit D6, Layer II and appears to be similar to those rusted to the ornamental boss (artifact number 826) mentioned above. It is square in cross section with a flat round head (Figure 34b) and measures 1.14 cm (0.45 in) in length with a maximum shaft diameter of 0.25 cm (0.10 in); the head is 0.46 cm (0.18 in) in diameter.

One small fragment of corroded iron wire (artifact number 905) was recovered. Its purpose is unknown and no speculation is offered. This segment, which was recovered from unit I4, Layer II, was not measured.

Two sections of one hinge (artifact numbers 992 and 994) were recovered prior to excavation. The two pieces fit together and form a standard wing type hinge with three counter-sunk holes for fastener screws (Figure 34a). Two screws are rusted into holes in one wing and a third screw, which was recovered from Layer II, for this hinge is
illustrated in Figure 34c to the right of the hinge. The hinge parts were recovered from the surface prior to the grid layout; consequently there is no unit designation. Its length is 7.66 cm (3.02 in), its overall width when opened is about 5.5 cm (2.17 in), and its thickness is approximately 0.40 cm (0.16 in).

Seventy-one unidentified fragments of iron were recovered from the site. Most of these fragments are flat and not distinctive enough to attribute some type of functional name. The plotting of these miscellaneous metal fragments reveals that their distribution was densest in the southern half of the structure with a concentration in unit F7 (Figure 35).

Finally, one iron bolt (artifact number 621) and an unidentifiable, rectangular iron object (artifact number 610) with one corner missing and holes through both ends were recovered. The bolt was found in unit 17, Layer II, and the unidentifiable object came from unit G6, Layer II. Two teeth or studs protrude from the middle of one side of the unidentifiable object, indicating it would have been set into wood or another soft material. It measures 5.59 cm (2.20 in) in length with a width of 2.12 cm (0.83 in) and is 0.24 cm (0.09 in) thick. It was recovered from unit G6, Layer II and its function is unknown on the basis of form.

**Lead.** Seven fragments of lead were identified (artifact numbers 116, 456, 600, 705, 716, 853, and 859) from the assemblage. They were of varying sizes and were recovered from units F8, H3, and H4, Layer I and units B6, E6, F4, and I13, Layer II. Lead had a number of different uses, one of which was to hold the flint in the lock of a flint lock mechanism (Noël Hume 1974:220–221). These fragments may have been used for such a purpose.

**Glass**
This category includes all glass artifacts including beads, bottle glass, and miscellaneous fragments.

**Beads.** Eleven beads were recovered from the excavation. Descriptions of these beads are included in Table 8 and four are illustrated in Figure 36c–f. All beads recovered were drawn, wound, round beads in a variety of colors with two exceptions. Artifact number 880 was made from a layer of translucent red glass over an opaque white core and artifact number 620 (Figure 36d) was made from faceted, translucent, blue-green glass. In addition artifact number 797 (Figure 36f) was two beads that were fused together through an accident in manufacturing.
<table>
<thead>
<tr>
<th>NPS Cat. No.</th>
<th>Provenience Unit</th>
<th>Layer</th>
<th>Dimensions (cm) L x H x bore</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>896</td>
<td>C5</td>
<td>L-I</td>
<td>0.65 x 0.75</td>
<td>translucent olive yellow(^{10})</td>
</tr>
<tr>
<td>460</td>
<td>F4</td>
<td>L-II</td>
<td>0.64 x 0.79</td>
<td>translucent olive yellow</td>
</tr>
<tr>
<td>797(^{11})</td>
<td>D3</td>
<td>L-II</td>
<td>0.70 x 0.74 x 0.02</td>
<td>opaque yellow(^{12})</td>
</tr>
<tr>
<td>768</td>
<td>E7</td>
<td>L-I</td>
<td>0.71 x 0.58</td>
<td>opaque yellow</td>
</tr>
<tr>
<td>845</td>
<td>E7</td>
<td>L-I</td>
<td>0.79 x 0.63</td>
<td>opaque yellow</td>
</tr>
<tr>
<td>880</td>
<td>D5</td>
<td>L-II</td>
<td>1.0 x 0.89</td>
<td>translucent <em>Cornaline d'Aleppo</em></td>
</tr>
<tr>
<td>371</td>
<td>C3</td>
<td>L-I</td>
<td>1.04 x 1.18</td>
<td>translucent bright green</td>
</tr>
<tr>
<td>372</td>
<td>C3</td>
<td>L-I</td>
<td>1.12 x 1.23 x 0.03</td>
<td>translucent bright green</td>
</tr>
<tr>
<td>620</td>
<td>I3</td>
<td>L-II</td>
<td>1.37 x 0.73 x 0.04</td>
<td>translucent faceted blue-green</td>
</tr>
<tr>
<td>904</td>
<td>D6</td>
<td>L-II</td>
<td>0.69 x 0.71</td>
<td>opaque blue</td>
</tr>
</tbody>
</table>

Beads like artifact number 880 are referred to in the literature on beads as a *Cornaline d'Aleppo*. Although a similar type of bead has appeared on sites that pre-date 1800 the white core of this specimen is indicative of the post 1830 examples (Karkins 1982:51-52; 1985:94). The later examples are commonly recovered from sites on O'ahu and Hawai'i (Carter 1979, 1982). Large, faceted, blue beads, like artifact number 620, are popularly called Russian Trade Beads (Sprague 1985:91), and were probably made in Italy. Yellow beads, such as artifact numbers 768, 797, and 845, have been found on O'ahu, Maui and Kaua'i in addition to Hawai'i (Soehren 1965; Carter 1979; 1987). Excavations during the Waimea-Kawaihae-Mudlane road corridor project uncovered many of these beads that had been placed with individual burials (Carter 1982).

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\(^{10}\) Munsel color 2.5YR 6/8  
\(^{11}\) Two beads fused together.  
\(^{12}\) Munsell color 2.5YR 7/8
**Bottle Glass.** One complete bottle (artifact number unknown) and 187 fragments of bottles were collected from the excavation of this structure. In addition to the complete bottle, eleven bottle bases were identified among the fragments. Therefore, the collection represents a minimum of 12 bottles. Table 9 contains a description of the bottle bases, including their proveniences.

Bottle bases provide useful information on dating due to the various manufacturing techniques visible on the surface of these artifacts. Five of the bases (artifact numbers 240, 303, 891, 982, 1080) (Figure 37) recovered showed markings of a glass tipped pontil. This mark is the result of finishing the bottle after it was blown, either free-blown or in a mold. Hand blowing provided the earliest method of making glass containers and continued into the late nineteenth century. The use of molds in forming the molten glass
Table 9.

BOTTLE BASE DESCRIPTIONS
JOHN YOUNG HOMESTEAD (UPPER PORTION)

<table>
<thead>
<tr>
<th>NPS Cat. No.</th>
<th>Provenience Unit</th>
<th>Layer</th>
<th>Glass Tipped</th>
<th>Color</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>240</td>
<td>C9</td>
<td>L-I</td>
<td>yes</td>
<td>aqua</td>
<td>hand blown</td>
</tr>
<tr>
<td>258</td>
<td>H8</td>
<td>L-I</td>
<td>no</td>
<td>clear</td>
<td>hand blown</td>
</tr>
<tr>
<td>303</td>
<td>A2</td>
<td>L-I</td>
<td>yes</td>
<td>clear</td>
<td>blown in mold</td>
</tr>
<tr>
<td>389</td>
<td>G9</td>
<td>L-I</td>
<td>no</td>
<td>clear</td>
<td>blown in mold</td>
</tr>
<tr>
<td>602</td>
<td>E3</td>
<td>L-II</td>
<td>no</td>
<td>olive green</td>
<td>blown in mold</td>
</tr>
<tr>
<td>777</td>
<td>H6</td>
<td>L-II</td>
<td>no</td>
<td>clear</td>
<td>blown in mold</td>
</tr>
<tr>
<td>862</td>
<td>C4</td>
<td>L-III</td>
<td>no</td>
<td>clear</td>
<td>hand blown</td>
</tr>
<tr>
<td>891</td>
<td>A2</td>
<td>L-III</td>
<td>yes</td>
<td>olive green</td>
<td>blown in mold</td>
</tr>
<tr>
<td>895</td>
<td>C4</td>
<td>L-III</td>
<td>no</td>
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<tr>
<td>982</td>
<td>G5</td>
<td>L-III</td>
<td>yes</td>
<td>olive green</td>
<td>hand blown</td>
</tr>
<tr>
<td>1080</td>
<td>Stl</td>
<td>Surf.</td>
<td>yes</td>
<td>olive green</td>
<td>hand blown</td>
</tr>
</tbody>
</table>

into bottles began in 1810 (Lorraine 1968:43). The combination of techniques provides clues to the bottles' age, ca. 1810 - 1840 (Jones 1971:70; Lorraine 1968:43).

Bottle glass color is also a factor in determining the age of glass but to a much lesser degree. Olive green is the natural color of the molten glass and is the most common of the colors of bottles recovered from this excavation. Other colors included aqua, and flint or clear glass. The general age of these bottles and fragments as indicated by their colors is consistent with the finer chronology provided by the bottle manufacturing techniques.

**Flat Glass.** A total of 105 fragments of flat glass were identified (Figure 36b). Flat glass can be interpreted as being either window glass or mirror glass. The fragments recovered were thin, flat, and transparent, except for when a heavy patina made them translucent. Since many of the fragments had patches of mercury backing on them, they are interpreted as being mirror glass. One concentration of flat glass was found to cluster in
the southwestern corner of the structure in units C6, C7, D6, and D7. The flat glass was mixed throughout the three stratigraphic layers identified in the excavation. Figure 39 illustrates the concentration of flat glass near the possible doorway on the southwestern end of the structure.

Miscellaneous glass. The 48 fragments identified in this category are those items that could have been interpreted as being in more than one type of functional category. In this case lamp chimney and tumbler glass could not be distinguished from each other. Both have physical characteristics that prevent identification to a specific functional category. The 48 fragments were curved, some had etching (Figure 36a), and their thickness ranged
Figure 38. Distribution of glass artifacts (all layers) within alpha-numeric grid system.
from 0.10 cm (0.04 in) to 0.16 cm (0.06 in). One fragment (artifact number 475) was a definite rim; it was flared with a polished edge.

*Clay*

This category includes tableware, serving vessels, and a ceramic ball. Four types of ceramics were identified in this collection: earthenware, porcelain, stoneware, and fired clay. A total of 455 sherds were collected and analyzed. Vessel shapes identified included Chinese tea cups, English tea cups, bowls and plates.

In order to interpret the recovered ceramic artifacts Table 13 (see Chapter 6) was compiled. It identifies the ceramics and their manufacturing date for sherds collected during the excavation. Table 10 shows the distribution of the different types of ceramic sherds.

**Earthenware.** Creamware is the name given to earthenware paste vessels that are pale yellow in color and finished with a clear lead glaze (Figures 39, 40, and 41). The lead glaze is often collected around the base and under the rim of vessels. A creamware body and lead glaze are identified by the yellow or green tinted glaze that collects in these spaces. This type of creamware body was perfected in England by Josiah Wedgewood and Thomas Whieldon in the mid-eighteenth century and continued to be produced into the nineteenth century (Noël Hume 1974:124).

Pearlware is a name given to earthenware that has a blue-tinted lead glaze on a white body (Figure 42). The glaze distinguishes pearlware from the creamwares. The pearlware produced by many of the English manufactures was later replaced by "stonechinas" and "Ironstone China" (Noël Hume 1974:131).

Wares termed transferprinted, handpainted, and annular are pearlware finished ceramics named for their decorative motifs. These types of decorations are not specific to pearlware but to many other different ceramic wares as well. The distribution of these types of ceramics is presented in Table 10. The decorated ware from this project included fragments with white, light tan, dark tan, green and grayish-white exterior and interior glazes.
### DISTRIBUTION OF CERAMIC SHERDS

**JOHN YOUNG HOMESTEAD (UPPER PORTION)**

<table>
<thead>
<tr>
<th>Ceramic Type</th>
<th>Number of Sherds per Provenience&lt;sup&gt;13&lt;/sup&gt;</th>
<th>ST. 1-SC</th>
<th>SC</th>
<th>S</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>?</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EARTHENWARE</strong></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beaded edge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plain</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearlware</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plain</td>
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<td></td>
</tr>
<tr>
<td>Annular - banded</td>
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<td></td>
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</tr>
<tr>
<td>Annular - dipped</td>
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<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Whiteware</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Plain</td>
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<td>Decorated (transfer printed ?)</td>
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</tr>
<tr>
<td>Quartz paste/glaze</td>
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</tr>
<tr>
<td>Quartz paste/slip</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>PORCELAIN</strong></td>
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<td></td>
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<td></td>
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<td></td>
<td></td>
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<td>Blue on White</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Painted &amp; overglaze</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cream with red slip</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
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<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<sup>13</sup> Key to provenience abbreviations: ST. 1-SC = Surface collection from Structure 1; SC = Surface collection from John Young Homestead (Upper Portion) in general; S = Surface, Structure 2; I = Layer I, Structure 2; II = Layer II, Structure 2; III = Layer III, Structure 2; ? = No provenience information.
Figure 39. Creamware soup plate, interior.

Figure 40. Creamware soup plate, exterior.
Figure 41. Creamware sherds.

Figure 42. Decorated pearlware.
The coarse-grained earthenware have not been identified. Specialists at the Department of Art of the University of Hawai‘i and at the Honolulu Academy of Art were contacted to determine if the ceramic fragments were of an Asian origin. Individuals at these two institutions could not say definitely that the ceramic fragments were of that origin. Several samples of the two different types of coarse-grained vessels were sent to specialists on the mainland for identification, but we have not received an answer yet. The coarse-grained quartzite tempered vessel, grey in color, has a reddish brown glaze covering the rim and upper portion of the body to the vessels gradually sloping shoulders. Sherds from this vessel are illustrated in Figures 43, 44, and 45. It measures 43 cm (16.9 in) in diameter with an estimated vessel height of 35 cm (13.8 in). The second type of coarse-grained quartzite tempered ware had a red slip on the exterior of the sherds. These sherds could not be reconstructed to the point where the base diameter or vessel height could be determined.

Figure 43. Coarse-grained quartzite tempered rim sherds from crock.
Figure 44. Coarse-grained quartzite tempered base sherds from crock, interior.

Figure 45. Coarse-grained quartzite tempered base sherds from crock, exterior.
Porcelain. Two types of Chinese porcelain, blue on white (also known as Canton ware) and painted and/or enameled overglaze (also known as Chinese Trade Porcelain) (Noël Hume 1974:257-261) were recovered. The blue on white porcelains totaled 80 sherds and Figures 46 and 47 illustrate several decorative types of those wares, all of which are typical of Canton ware motifs (Noël Hume 1974:261-262).

A total of 16 sherds, including some pieces that were painted and enameled, were identified as painted overglaze porcelains. Figure 48 is an example of the painted and enameled overglaze Chinese Tradeware pattern. The heavier lines are enameled overglaze in blue and the leaves of the flower (on the right edge) are enameled overglaze in green. The bands of color at the rim are painted overglaze with a thin black line above and below the reddish-orange band.

The last type of porcelain to be identified was a decorative style known as luster ware. Eight sherds of this type were collected. No distinguishing marks were present on these sherds; consequently the place of origin could not be determined. The luster finish on these porcelain sherds is a bronze color.

Stoneware. The only stoneware recovered included 10 sherds that all join together to form the lower half of a typical stoneware bottle. The fragments included buff colored body sherds and some with a red slip over the exterior surface (Figures 49 and 50). These sherds are typical of the ale or mineral water bottles recovered from sites that post date 1840 (Munsey 1970:138; Noël Hume 1974:79) or possibly rum bottles (Wilson and Wilson 1968:167). The base diameter of the reconstructed portion is 8.5 cm (3.3 in). Subsequent to the breakage of the bottle, one large fragment (artifact numbers 8 and 9, joined) was utilized as a scraping tool as evidenced by characteristic small use flake edge damage.

Ceramic ball. A single, spherical, unglazed, fired clay ball with a diameter of 1.57 cm (0.62 in) (artifact number 236) was recovered. Although its function is undetermined, it could have been used inside a medicine bottle as a shaker for mixing the constituents. Similar ceramic balls were recovered from excavations at Seamen's hospital in Lahaina, Maui, and were tentatively identified as marbles (Cleghorn 1975:24).
Figure 46. Chinese porcelain, blue on white.

Figure 47. Chinese porcelain, blue on white.
Animal

Shell
Three buttons (artifact numbers 698, 795, and 917) (Figure 31a, b, and c) were recovered from units D6 and G4, Layer II, respectively. The buttons ranged from 0.79 cm (0.31 in) to 0.92 cm (0.36 in) in diameter and from 0.13 cm (0.05 in) to 0.24 cm (0.09 in) thick. They were round with one surface slightly convex and four sew through holes.

Bone
One large button (artifact number 509) (Figure 32f) made from mammal bone was recovered from unit I6, Layer II. It was 1.65 cm (0.65 in) in diameter and had a maximum thickness of 0.26 cm (0.10 in). This button was round with a slightly raised rim and a slightly depressed and flat central portion. The back was slightly convex and it had four sew through holes.
Figure 49. Stoneware bottle, exterior.

Figure 50. Stoneware bottle, interior; note fabrication marks.
Tallow
A single small chunk of tallow (no artifact number) was recovered from Layer II. It is 5.0 cm (1.97 in) long, 5.10 cm (2.0 in) wide, and 2.50 cm (0.98 in) thick.

Vegetal

Wood
Coffin Fragments. A large number of sawn plank fragments were identified in Feature D, the burial crypt. Six small pieces (artifact number 1058) were recovered, but many larger pieces were left in place. The thickness of the fragments ranged from 0.80 cm (0.31 in) to 1.20 cm (0.47 in). There was no evidence of adzes or hatchets having been used as woodworking tools.

Other Wood Fragments. Eleven small pieces of wood were recovered from the fill in Feature A. Their maximum length is 5.50 cm (2.17 in) and several were clearly cut across the grain with a sharp knife or saw. They are possibly from the base of a post for Structure 2.

Fabric
A large number of fragments of fabric were recovered from unit 14, Layer II. The fragments were a coarse, heavy, simple over-and-under weave. The warp and weft strands were undifferentiated and had an average thickness of 0.10 cm (0.04 in). The fiber was possibly cotton and the individual strands appear to have been made of rolled fibers, not twisted or braided threads. No identifiable finished article was apparent from these fragments.

Other
A small cobble-sized piece of coal was recovered from Layer II and what appears to be an interior cardboard packing from a modern shotgun shell was recovered from Layer I.

Miscellaneous
A plastic button and two pieces of blasting putty were also recovered from Layer I. The button appears to be from a modern work shirt and the blasting putty is probably from the adjacent quarry site that was worked into the 1960's.
Human Remains

Feature D, burial crypt, held the remains of two individuals, a juvenile and an infant (Figures 29, 30, and 31). Burial 1 was a juvenile in an extended, supine position with the skull upright. It was fairly well articulated with a cover of pulu over the area from the scapula to the distal end of the femur. It was located on the west side of the crypt. Since it was not removed from the crypt and its condition was brittle, only limited measurements could be taken. The left humerus was 13.5 cm (5.3 in) long, the left femur 18.0 cm (7.1 in) and the left tibia 15.4 cm (6.1 in). The tibia could have been incomplete, however, because the distal end was deteriorated. The skull had a maximum width of 15.5 cm (6.1 in) and a maximum breadth of 12.3 cm (4.8 in). The supraorbital ridge measured 7.5 cm (3.0 in). The dentition was indicative of a juvenile of about six years of age (Brothwell 1975: Figure 24). The incisors were still deciduous and the dentition was developed only to the extent of premolars. The upper and lower first molars were just erupting.

Burial 2 was a coffin burial that pushed burial 1 to the side. The coffin was in the southeast portion of the crypt. Numerous nails and pieces of wood were present from the coffin and these have already been discussed in the section on historic artifacts. Like burial 1, burial 2 was overlaid with pulu. The burial was in very fragile condition and no measurements were taken. Based on a mandible fragment with unerupted deciduous incisors, the age of the infant was estimated to be about six months (Brothwell 1965: Figure 24).

Except for the items discussed in the historic artifact section, nothing was recovered from the crypt. After the burials had been exposed, recorded, and photographed the crypt was reclosed.

Plaster

Numerous pieces and fragments of plaster were recovered from both the interior and exterior of Structure 2. As discussed in Chapter 4 eight samples were submitted to Hawaii Marine Research for analysis. The results of the petrographic analysis and compression strength and water absorption tests are presented in Table 4. The samples were found to be calcium carbonate cement with a matrix of calcium oxide (Morgenstein 1978).
Non-Artifactual Remains

This category includes floral and faunal remains that were recovered during the excavations. The remains analyzed included 37 marine shells, one sea urchin spine fragment, the bones of at least 46 individual fish and fragments of turtle shell. These remains are summarized in Table 11.

The marine fauna in the recovered sample are representative of typically Hawaiian sites. It is probable that the amount of consumed marine fauna recovered is not totally representative of the total consumed at this site. The species represented are all either edible or used in food preparation.

The fish identification was provided by Craig Severance (1979) and is summarized in Table 12. His report identifying the fish and discussing the procedure used for identification of the fish remains is on file at the Pacific Area Office, National Park Service. The preservation of bone was very good as expected for such a dry climate. The remains recovered included vertebrae, maxillaries, and premaxillaries (jawbones), hinged dorsal and ventral spines, pharyngeal dental plates, occasional broken skull plates and a few clavicles and preopercula.

Severance concluded that the remains represent a small sample of the fish brought to or consumed at the site. Often small fish were dried and eaten whole, bones included (Titcomb 1972), and this would tend to under represent the total fish consumed at the site.

Portable Remains Discussion

The collection of artifacts and non-artifactual remains provides a baseline assemblage for future analyses of sites dated between 1793 and 1840. This collection included 51 indigenous artifacts and 993 historic artifacts. This site, understandably, does not contain all the possible types of items that could be recovered for this time frame, however, it does provide an important contribution to the archeological record in Hawai'i. It is evident that John Young did not abandon his English heritage as illustrated by the architecture of the structures and the origin of the artifacts recovered from his homestead site. The incorporation of Hawaiian and Western styles of architecture is visible in the
### Table 11

**SUMMARY OF NON-ARTIFACTUAL REMAINS**  
**STRUCTURE 2, JOHN YOUNG HOMESTEAD (UPPER PORTION)**

<table>
<thead>
<tr>
<th>Category</th>
<th>Layer II</th>
<th>Layer III</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. Sq. Present</td>
<td>% Sq. Present</td>
</tr>
<tr>
<td>SHELL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gastropoda</td>
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<td></td>
</tr>
<tr>
<td>Bursa sp.</td>
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<td>2</td>
</tr>
<tr>
<td>Cassis cornuta L.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Cellana spp.</td>
<td>21</td>
<td>42</td>
</tr>
<tr>
<td>Conus spp.</td>
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<td>30</td>
</tr>
<tr>
<td>Cypraea spp.</td>
<td>46</td>
<td>92</td>
</tr>
<tr>
<td>Diadema granifera (Pease)</td>
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<td>20</td>
</tr>
<tr>
<td>Drupa ricina L.</td>
<td>21</td>
<td>42</td>
</tr>
<tr>
<td>Hipponix spp.</td>
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<td>8</td>
</tr>
<tr>
<td>Littorina pintado (Wood)</td>
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<td>10</td>
</tr>
<tr>
<td>Mitra sp.</td>
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<td>12</td>
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<tr>
<td>Morula granulata (Duclos) (?)</td>
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<td>Morula sp.</td>
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<td>Pyramidella sulcata A. Adams</td>
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<td>Chama iostoma Conrad</td>
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<td>Charcoal</td>
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<td>Candlenut (Aleurites moluccana)</td>
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14 Number of excavated grid squares with this item
15 Percent of excavated grid squares with this item
16 Present as artifact only.
17 See Table 12 for summary of identified taxon.
### SUMMARY OF IDENTIFIED FISH REMAINS

**STRUCTURE 2, JOHN YOUNG HOMESTEAD (UPPER PORTION)**

<table>
<thead>
<tr>
<th>Taxon</th>
<th>Hawaiian and Common Names</th>
<th>Minimum # of Individuals</th>
<th>Distinctive Bones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holocentridae</td>
<td>ʻūʻū</td>
<td>2</td>
<td>Maxillary, preoperculum</td>
</tr>
<tr>
<td>Myripristis sp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carangidae</td>
<td>ʻūʻū</td>
<td>2-4</td>
<td>Vertebrae</td>
</tr>
<tr>
<td>Caranx sp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labridae</td>
<td>ʻūʻū</td>
<td>5-6</td>
<td>Premaxillaries, lower pharyngeal dental plates</td>
</tr>
<tr>
<td>Thallasoma sp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scaridae</td>
<td>ʻūʻū</td>
<td>16</td>
<td>Premaxillaries, maxillaries, clavicle, pharyngeal dental plates, scales (?)</td>
</tr>
<tr>
<td>Scarus spp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calotomus spp.</td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Acanthuridae</td>
<td>kala</td>
<td>5-6</td>
<td>Caudal spines</td>
</tr>
<tr>
<td>Naso spp.</td>
<td>tang</td>
<td>7-9</td>
<td>Spines, vertebrae (?)</td>
</tr>
<tr>
<td>Acanthurus spp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scombridae</td>
<td>aku</td>
<td>2-3</td>
<td>Penultimate and ultimate vertebrae</td>
</tr>
<tr>
<td>Katsuwonus sp.</td>
<td>bonito or skipjack</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balistidae</td>
<td>humuhumu</td>
<td>3</td>
<td>Dorsal spine</td>
</tr>
<tr>
<td>Melichthys sp.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Traditional Hawaiian dry laid or stacked stone walls and platforms with 'ili'ili paving that are located adjacent to English inspired whitewashed lime plastered faces on mud mortared stone walls. The mixture of traditional Hawaiian and Western based technology is also evident in the collection of artifacts analyzed.

Indigenous Hawaiian artifacts were recovered next to imported Western goods, illustrating the integration of these two cultures. Everyday tools such as the abraders, files, a hammerstone and an awl were often found to be the preferred tools for tasks even after the introduction of iron counterparts (Campbell 1967:143). The presence of abraders and files of different material would have provided the occupants of the site with different tools.

---

18 Table 12 is taken mainly from Severance (1979:Table 1).
degrees of coarseness necessary to finish different kinds of objects or to perform various sanding tasks. Volcanic glass tools, the "pocketknife" of yesterday, was a valuable tool that was easy to store and to keep sharp. The volcanic glass flakes at the site appear to evidence the manufacture and use of scraping or cutting tools. One of the traditional items to be recovered from the site was the whale tooth ornament or niho palaoa. It may have been included on a necklace with introduced glass beads or suspended from a traditional hair lei. In either case it was a symbol of high or chiefly status and all family members would have been entitled to wear it.

As in most historic sites in Hawaii, the most durable items of metal (bronze or copper alloy) and glass predominate. Historic or imported artifacts include a variety of items from nails to window glass and glass beads to Chinese porcelain. The type and range of the iron artifacts is typical of other sites in Hawaii that are dated throughout the 19th century. Like other sites dating from the late 18th and early 19th century, however, the present site yielded more brass and copper items than do later sites.

Glass items at the site included beads, and bottle and flat glass (from windows and/or mirrors). Some of the beads recovered from this site are similar to those recovered from other post 1835 contexts while others are the first examples of their type to be identified in the archaeological record in Hawaii. The bottle base collection represents a good selection of bottle manufacturing techniques from this early historic period.

Some of the English ceramics are the earliest presently recovered from a Hawaiian archeological context. This is particularly true of the creamware and pearlware pieces. The Chinese blue on white porcelain, often referred to in the literature as Canton ware, is also typical of the late 18th and early 19th century. Although most of the blue on white porcelain was recovered from Layers I and II and most of the creamware were recovered from Layer III, their period of use overlaps.

Artifacts similar to the gun flint, bronze gun parts and the gun flint clamp (represented here by lead fragments) have been identified previously in Hawaiian archaeological sites from different islands. When found individually artifacts identified as gun flints could also have been used as strike-a-lights. The combination of items found as this site strongly suggests, however, that the flint could actually have been originally used as a gun flint.
The non-artifactual material totaled over 168 pieces of midden including fish, dog, pig and turtle. Some of these foods are known to be reserved for the ali'i or used as feast foods. Their presence at John Young's homestead is not surprising as he was considered to be a high chief although he was not Hawaiian. The food remains recovered are strictly traditionally Hawaiian.
Chapter 6

DATING

The documented history of the John Young Homestead was discussed in Chapter 3 and is briefly presented in Figure 51. It will not be discussed further in this chapter except to note that it spans the period from 1793 to the 1840's. The purposes of this chapter are to present dates derived from the recovered artifacts and volcanic glass and to note how those dates correspond with the recorded history of the site.

Artifacts

Dateable artifacts recovered during this project included pottery, beads bottles, a slate writing tablet fragment, and a brass button. The ranges of dates derived from the recovered pottery are presented in Table 13. The ranges of dates derived from all of the recovered artifacts, including volcanic glass, are presented in Figure 52. No further comment is necessary except to note that the ranges of dates determined from the recovered artifacts correspond well with the recorded history of the John Young Homestead.

Volcanic Glass

Fifteen volcanic glass specimens were sent to Hawaii Marine Research for hydration rind age determinations. In addition to the age determinations calculated by Hawaii Marine Research (Morgenstein 1978), age determinations were also calculated for those pieces of glass that probably came from Pu’u Wa‘awa’a using MOHLAB’s equation (Michels 1985). To determine the effective hydration temperature needed to use that equation mean annual temperatures were taken from the Atlas of Hawaii (Department of Geography 1983:64) for Puako. The results of the two age calculations are presented in Table 14.

As can be seen from Table 14 there is a significant difference between the two sets of dates. Hawaii Marine Research’s dates based on average rind thickness range from A.D. 1771 to A.D. 1820, while the dates calculated using MOHLAB’s equation range from A.D. 1708 to A.D. 1769. Based on the recorded history of the John Young Homestead and the dates derived from dateable artifacts recovered during the excavations, the MOHLAB dates are all too early. According to Michels (1985:4) "if there is an error associated with the application of these [MOHLAB’S] hydration constants" one of the likely sources is a
JOHN YOUNG HOMESTEAD DATING

Volcanic Glass Dates
Hawaii Marine Research MOHLAB
Brass Button Slate Writing Tablet Bottles Beads Pottery
EUROPEAN CREAMWARE WITH RED SLIP
CHINESE BLUE ON WHITE PEARLWARE ANNULAR WARE YELLOW/BUFF PEARLWARE ANNULAR WARE BANDED
EUROPEAN LUSTREWARE
CHINESE PAINTED AND OVERGLAZED PEARLWARE TRANSFER PRINTS ENGLISH OVOID WARE HAND PAINTED PEARLWARE ENGLISH OVOID WARE

DATES FROM HISTORICAL RECORDS
1793 YOUNG MOVES TO KAWAHAE
1798 YOUNG STARTS BUILDING FIRST WESTERN-STY LE HOUSE ON UPPER PORTION
1802-1812 YOUNG IS GOVERNOR OF HAWAII
1809 YOUNG BUILDS SECOND COOK HOUSE
1817 MORE STRUCTURES ADDED
1819 KAMEHAMEHA I DIES; FREYCINET EXPEDITION AND DUPERRY MAP
1828 LAURA JUDD'S VISIT
1835 JOHN YOUNG DIES
1840's UPPER PORTION DESERTED (?) AND USED AS CATHOLIC SCHOOL (?)

Figure 51. Overall John Young Homestead dating from historic records, artifacts and volcanic glass.
Table 13.
POTTERY TYPOLOGY AND CHRONOLOGY

### Classification

**Earthenwares**

<table>
<thead>
<tr>
<th>Cat. #</th>
<th>Provenience</th>
<th>Rind Thickness Range</th>
<th>Rind Thickness Average</th>
<th>Pu'u Wa'awa'a</th>
<th>HMR Date A.D.</th>
<th>HMR Range A.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>197</td>
<td>B9  L-I</td>
<td>2.10-2.45</td>
<td>2.24</td>
<td>yes</td>
<td>1788</td>
<td>1770-1800</td>
</tr>
<tr>
<td>205</td>
<td>B5  L-I</td>
<td>2.00-2.35</td>
<td>2.15</td>
<td>no</td>
<td>1795</td>
<td>1770-1800</td>
</tr>
<tr>
<td>227</td>
<td>E7  L-II</td>
<td>1.80-2.10</td>
<td>1.95</td>
<td>yes</td>
<td>1812</td>
<td>1800-1825</td>
</tr>
<tr>
<td>234</td>
<td>H3  L-I</td>
<td>2.20-2.65</td>
<td>2.44</td>
<td>yes</td>
<td>1771</td>
<td>1753-1791</td>
</tr>
<tr>
<td>249</td>
<td>A8  L-I</td>
<td>1.75-2.00</td>
<td>1.86</td>
<td>yes</td>
<td>1820</td>
<td>1808-1829</td>
</tr>
<tr>
<td>250</td>
<td>A8  L-I</td>
<td>2.15-2.45</td>
<td>2.28</td>
<td>no</td>
<td>1784</td>
<td>1770-1795</td>
</tr>
<tr>
<td>399</td>
<td>B2  L-I</td>
<td>2.05-2.35</td>
<td>2.21</td>
<td>no</td>
<td>1790</td>
<td>1778-1804</td>
</tr>
<tr>
<td>418</td>
<td>F4  L-II</td>
<td>1.70-2.05</td>
<td>1.89</td>
<td>yes</td>
<td>1817</td>
<td>1804-1834</td>
</tr>
<tr>
<td>421</td>
<td>C7  L-II</td>
<td>1.90-2.20</td>
<td>2.06</td>
<td>no</td>
<td>1803</td>
<td>1791-1817</td>
</tr>
<tr>
<td>422</td>
<td>K5  L-II</td>
<td>2.15-2.40</td>
<td>2.26</td>
<td>yes</td>
<td>1786</td>
<td>1774-1795</td>
</tr>
<tr>
<td>420</td>
<td>C7  L-II</td>
<td>2.05-2.25</td>
<td>2.13</td>
<td>yes</td>
<td>1797</td>
<td>1787-1804</td>
</tr>
<tr>
<td>424</td>
<td>E2  L-I</td>
<td>7.00-10.00</td>
<td>8.69</td>
<td>no</td>
<td>1239</td>
<td>1128-1383</td>
</tr>
<tr>
<td>449</td>
<td>K5  L-I</td>
<td>2.15-2.40</td>
<td>2.27</td>
<td>yes</td>
<td>1785</td>
<td>1774-1795</td>
</tr>
<tr>
<td>606</td>
<td>A7  L-II</td>
<td>2.05-2.25</td>
<td>2.15</td>
<td>no</td>
<td>1795</td>
<td>1787-1804</td>
</tr>
<tr>
<td>710</td>
<td>B6  L-II</td>
<td>2.10-2.25</td>
<td>2.16</td>
<td>yes</td>
<td>1794</td>
<td>1787-1800</td>
</tr>
</tbody>
</table>

**Unidentified Origin**

- Coarse-grained (quartz rock) paste with glaze
- Coarse-grained paste with red slip

**Porcelains**

- **Chinese**
  - Blue on white
  - Painted and overglaze
- **European**
  - Luster ware

**Stoneware**

- **European**
  - Cream with red slip

### Dates

- **English**
  - Creamware
    - Hand painted
    - Pearlware
      - Transferprints
      - Annular wares
      - Banded
      - Yellow/buff
  - Pearlware
  - Unidentified Origin

- **Porcelains**
  - Chinese
    - BLUE ON WHITE
    - Painted and overglaze
  - European
    - Luster ware

- **Stoneware**
  - European
    - Cream with red slip

**Classification Dates**

- **Earthenwares**
  - English
    - Creamware
      - Hand painted
    - Pearlware
      - Transferprints
      - Annular wares
      - Banded
      - Yellow/buff
  - Unidentified Origin
    - Coarse-grained (quartz rock) paste with glaze
    - Coarse-grained paste with red slip

- **Porcelains**
  - Chinese
    - Blue on white
    - Painted and overglaze
  - European
    - Luster ware

- **Stoneware**
  - European
    - Cream with red slip

Table 14.
VOLCANIC GLASS DATES
JOHN YOUNG HOMESTEAD (UPPER PORTION)

<table>
<thead>
<tr>
<th>NPS Cat. #</th>
<th>Provenience</th>
<th>Rind Thickness Range</th>
<th>Rind Thickness Average</th>
<th>Pu'u Wa'awa'a</th>
<th>HMR Date A.D.</th>
<th>HMR Range A.D.</th>
<th>MOHLAB Date A.D.</th>
<th>MOHLAB Range A.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>197</td>
<td>B9  L-I</td>
<td>2.10-2.45</td>
<td>2.24</td>
<td>yes</td>
<td>1788</td>
<td>1770-1800</td>
<td>1730</td>
<td>1707-1746</td>
</tr>
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<td>205</td>
<td>B5  L-I</td>
<td>2.00-2.35</td>
<td>2.15</td>
<td>no</td>
<td>1795</td>
<td>1778-1808</td>
<td>1740</td>
<td>1718-1757</td>
</tr>
<tr>
<td>227</td>
<td>E7  L-II</td>
<td>1.80-2.10</td>
<td>1.95</td>
<td>yes</td>
<td>1812</td>
<td>1800-1825</td>
<td>1762</td>
<td>1746-1779</td>
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<tr>
<td>234</td>
<td>H3  L-I</td>
<td>2.20-2.65</td>
<td>2.44</td>
<td>yes</td>
<td>1771</td>
<td>1753-1791</td>
<td>1708</td>
<td>1685-1735</td>
</tr>
<tr>
<td>249</td>
<td>A8  L-I</td>
<td>1.75-2.00</td>
<td>1.86</td>
<td>yes</td>
<td>1820</td>
<td>1808-1829</td>
<td>1772</td>
<td>1757-1785</td>
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<tr>
<td>250</td>
<td>A8  L-I</td>
<td>2.15-2.45</td>
<td>2.28</td>
<td>no</td>
<td>1784</td>
<td>1770-1795</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>399</td>
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<td>2.05-2.35</td>
<td>2.21</td>
<td>no</td>
<td>1790</td>
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<td>NA</td>
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<tr>
<td>418</td>
<td>F4  L-II</td>
<td>1.70-2.05</td>
<td>1.89</td>
<td>yes</td>
<td>1817</td>
<td>1804-1834</td>
<td>1769</td>
<td>1751-1790</td>
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<td>1.90-2.20</td>
<td>2.06</td>
<td>no</td>
<td>1803</td>
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<td>420</td>
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<td>2.05-2.25</td>
<td>2.13</td>
<td>yes</td>
<td>1797</td>
<td>1787-1804</td>
<td>1742</td>
<td>1729-1751</td>
</tr>
<tr>
<td>424</td>
<td>E2  L-I</td>
<td>7.00-10.00</td>
<td>8.69</td>
<td>no</td>
<td>1239</td>
<td>1128-1383</td>
<td>NA</td>
<td>NA</td>
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<tr>
<td>449</td>
<td>K5  L-I</td>
<td>2.15-2.40</td>
<td>2.27</td>
<td>yes</td>
<td>1785</td>
<td>1774-1795</td>
<td>1727</td>
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<tr>
<td>606</td>
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<td>1794</td>
<td>1787-1800</td>
<td>1739</td>
<td>1729-1746</td>
</tr>
</tbody>
</table>
"marked difference between temperature at site and that of the weather stations used in calculating the effective hydration temperature."

Based on studies he conducted, Olson (1983:330) concluded that "mean annual air temperatures are inappropriate and should not be considered as effective alteration temperatures." The reason for this is that air temperatures are taken six feet above the surface of the ground. Since volcanic glass samples are found on or below the ground surface, and solar radiation and soil moisture content are important temperature covariables, air temperatures cannot be relied on for determining the effective hydration temperature. According to Olson (1983:330) "more research studies incorporating temperature variation in relation to rates of alteration are required before complete rate formulas can be used with any degree of reliability."

The results from this project appear to support Olson's position in using air temperatures to determine the effective hydration temperature. The hydration rind measurements, as shown on Table 14, do correspond well, however, with Olson's (1983:333) tentative temporal framework "with reference to alteration measurements of Hawaiian volcanic glass (independent of chemical and temperature variables)." According to that framework, hydration rind measurements of 1.0 to 2.5 microns date to the historic period, i.e. post 1778. With the exception of one core, the rind thickness on the samples collected during the excavations at John Young Homestead (Upper Portion) ranged from 1.70 to 2.65 microns and the average rind thickness ranged from 1.86 to 2.44 microns.

The one exception to the range of rind thickness and corresponding dates is artifact number 424. This was a core whose rind thickness ranged from 7.00 to 10.00 microns and averaged 8.69 microns. Its calculated date according to Hawaii Marine Research was A.D. 1239 based on its average rind thickness. We do not have an explanation for this early date.
Chapter 7

SUMMARY AND CONCLUSIONS

The excavation at John Young's Homestead has provided information that could not be reached through any existing documentation. Although Young kept a diary relating some of his activities, the details of his life and home environment remained unknown until this project was completed. The excavation of Structure 2 within the site provided detailed information that is relevant to the interpretation of the site.

Architecture

It was clear from the journal references that after 1793 John Young's house was a prominent land mark on an otherwise barren and rocky coast. What was not clear was how his house was constructed. Numerous historical accounts (see Apple 1978:Appendix D) referred to Young's several houses as being built of stone or white stone. Judd's (1928:36) account, however, which provides the only documentation of what the interior of Young's house looked like, referred to his house as "a dirt adobe house."

Through excavations it was shown that the walls were built of well fitted, unmodified stones (both rough and waterworn) laid in mud mortar. Both the interior and exterior surfaces were faced with hand-applied coral lime plaster. The plaster was found to be calcium carbonate (limestone) cement with a matrix of calcium oxide (see Table 4). This is consistent with plaster made from burned coral and sand, but no evidence of poi or hair was found (cf. Apple 1978:47). The plaster was applied after Layer III (fill) had been put down, but before Layer II (pebble paving) was deposited.

The foundations for the walls appear to have been built upon Layer IV (subsoil base) with Layer III (fill) having been added to level the surface for the paving (Layer II). The foundations varied in width from ca. 60 cm (23.6 in) to 120 cm (47.2 in), and the overall wall heights were estimated to be 1.45 m (4.76 ft) on the north, 1.29 m (4.23 ft) on the south, 1.51 m (4.95 ft) on the east, and 1.26 m (4.13 ft) on the west. There was no evidence for gabled walls on the east or west ends, but the south side could possibly have been gabled.
There were possibly two access openings into the structure, one in the west wall and one in the south wall. There is a post hole (Features F and G) in each of these walls adjacent to the apparent openings. These could possibly have been for support posts for doors, indicating the structure may have had hung doors. Although there were numerous fragments of flat glass present, they are probably mirror glass and do not indicate the presence of a window.

As indicated by five post holes (Features A, B, C, E, and G), the roof ridge of the structure extended east-west along the long axis and was supported by five posts. There was a post in each of the east and west walls, and three were approximately equally spaced down the center of the interior. The central three posts were ca. 12 to 18 cm (4.7 to 7.1 in) in diameter, were stone braced and were set ca. 47 to 65 cm (18.5 to 25.6 in) into Layer III (fill). There was no evidence for other posts set into the walls except for Feature F in the south wall (discussed above). Therefore, it is assumed that the roof plates laid atop the walls and/or were possibly partially buried.

In support of the historical documents the walls of John Young's houses were made of basalt in all sizes available, boulders, cobbles, and some pebbles. None of the walls of Structure 2 were the typical Hawaiian dry laid masonry walls, but instead were constructed using a mud mortar. Furthermore the walls were whitewashed on the interior and exterior with a locally made plaster.

The flooring material of 'ili'ili was typical of Hawaiian methods of finishing a floor. Unlike the Hawaiian method of using mats on an 'ili'ili pavement the flooring in Structure 2 was probably left bare. This is indicated by the mixing of artifacts throughout the pavement layer and concentrations of the same type of artifact within some units.

**Chronology**

According to the Young Diary the upper portion of the John Young Homestead was constructed starting in 1798, and we know Young died in 1835. The ranges of all the recovered artifacts that are dateable overlap with this time frame (see Figure 55). Although there are problems with the volcanic glass dates (see Chapter 6), with the exception of one much earlier date, all of the volcanic glass dates, as determined by Hawaii Marine Research, are consistent with the 1798-1835 time frame.

85
Burial (Feature D)

Two human skeletons, one juvenile and one infant, were found in a stone crypt in Structure 2. The juvenile was buried first and the infant, which was in a coffin, was buried second. It is unclear whether or not the burials took place during or after occupation of the structure. Layer II (pebble paving) covered the top of the crypt, but waterworn pebbles from Layer II were also found in the crypt.

Functional Interpretation

A tentative functional interpretation based on surface evidence of the eight structural features at John Young's Homestead (Upper Portion) was made in Chapter 2 of this report. The excavations of Structure 2 produced additional information relevant to the interpretation of the function of that structure, especially when combined with the historical record. To quote from Young's diary, he states "Have begun four buildings. My house the cook house and storage room the house of the children and tahus and near the small temple a house for storage" (Apple 1978:47).

It is unclear whether Young is describing four or five buildings. His statement "have begun four buildings" could refer to the upper portion of the homestead and the storage house near the small temple could be a fifth building. The four buildings on the upper homestead would then be Young's house, a cook house, a storage room, and a house for the children and tahus [kahus or guardians]. Western-style Structure 1 has been interpreted as Young's house because of its size and the height of its walls. It is the most prominent structure on the property. Apple (1978:46) interpreted the "small temple" as Mailekini heiau. If this is correct, and we believe it is, then the storage house was not one of the structures on the knoll between Makahuna and Makeahua Gulches. That leaves the "cook house and storage room" and the "house for the children and tahus". We believe the cook house and the storage room were two separate structures and Western-style Structure 2 was the storage room.

The excavation of that structure produced a wide variety of objects from midden to glass bottles, ceramic vessels, gun parts and nails. This diversity of objects indicates the area had multiple uses. The presence of gun parts and personal ornaments in addition to the
serving and storage vessels mixed with midden support the interpretation of this structure as being a storage room. At the same time there was no evidence for the structure being used for cooking, supporting our conclusion that Young was describing two buildings when he referred to the "cook house and storage room".

No excavation data exist to help interpret the functions of the other structures and features present at John Young's Homestead (Upper Portion). In addition to Western-style Structures 1 and 2, there is Western-style Structure 3 and Hawaiian-style Features 1 through 5. Although we have recovered no dateable material from any of the structural features, except for Structure 2, all of the features may be contemporaneous except for Hawaiian-style Feature 5. That feature is probably a burial platform that was constructed after the site was abandoned.

From the historical records (Apple 1978; Judd 1928; Young n.d.) available to us we have limited information on what other buildings may have been present on the upper homestead. In addition to Young's house and the storage room, there was a cook house, a house for the children and tahus, a *malu*, and, possibly, Young's wife's house. Hawaiian-style Feature 4 is a low stone mound that may be the remains of an *imu* or earth oven. Perhaps this is what Young was referring to as the cook house. Western-style Structure 3 was build in the same manner as Western-style Structures 1 and 2, i.e. stone walls set in mud mortar and plastered, and could be a residential feature. If so, it may have been the house for the children and tahus. In 1817 Young hired a carpenter to build a *malu* (Young n.d.). As defined by Pukui and Elbert (1961:215) this could be an area that provided shade or shelter and Hawaiian-style Feature 2 could have been such an area. Although we know Young's wife lived in a traditional house apart from Young, it is not clear from the historical record whether this house was at the lower homestead or the upper homestead. If it were at the upper homestead, then Hawaiian-style Feature 1 could be the remains of that house. Although a small area of the inside of one of the walls appears to have been plastered, the materials used in construction and the manner in which the feature was constructed are consistent with traditional Hawaiian building techniques.

The only remaining feature not accounted for is Hawaiian-style Feature 3. We have no information, except for the surface remains, on which to base even a tentative interpretation of its function. The feature is a stone platform that may be either a residential feature or a burial feature.
Except for Western-style Structures 1 and 2, our interpretation of the function of the remaining structural features is based on limited data and except for Structure 2 is based solely on surface remains and historical records. Although the historical records contain good information about John Young’s Homestead, they are frustratingly lacking in detail when it comes to being able to interpret specific physical remains. Without additional excavations, the functional interpretation of most of the physical remains at the John Young Homestead will have to remain tentative at best.

**Overall Interpretation Potential**

The excavations have broadened the base from which interpretive information can be formed. A more accurate retelling of the life of John Young is now possible as a result of the findings presented in this report. Although there is documentation on John Young’s chiefly status the specific objects that reflect his status were unknown.

The historical documents do not tell of the food on John Young’s plate or the type of plates he used. Historical documents tell of different types of objects found or expected to be recovered from a particular site from a specific temporal period but in many cases they do not tell how the objects were used by the people at the site. As a result of this excavation, the analysis, and interpretation of the findings, information on the specifics of his life have been revealed. Some of the specific objects that directly relate to Young’s chiefly status were recovered. In addition to the European gun parts and Hawaiian *niho palaoa*, the food remains are also indicative of a person of status. The pig, dog, and turtle remains were reserved for the chiefly class, of which John Young was a member.

The tableware that he used was primarily English in origin with the exception of the Chinese blue on white pieces. The ceramics were no longer manufactured by 1830 with the exception of the yellow earthenware, the luster ware and the stoneware. The significance of these items at this site again reflect status but are primarily what was available from the visitors who stopped in the Islands. There were fragments of thin walled glass that were interpreted as possible fragments of drinking glasses. Observations made by a Russian visitor to the islands between 1817 and 1818 noted similar objects in use by the Hawaiian chiefs (Golovnin 1979:220).
After John Young's death little is known of what transpired at the site. The analysis of the artifacts does not assist in the interpretation of the structure after his death. Approximately 28 ceramic sherds and possibly Feature D (burial crypt) were attributed to the post-1835 use of this structure. The ceramic sherds from a post-1835 context are the yellow-buff annular-dipped ware and the stoneware. The lusterware could also be from that period.

The excavations that were centered around Structure 2 gave no indication that Structure 2 was used by the Catholic church. Again the artifacts do not reflect an occupation after about 1835 or 1840. The one stoneware bottle is similar to others that have been recovered at post 1850’s sites. Items of this type are usually not recovered in great numbers so finding just a single bottle is not uncommon.

The symbiotic relationship between history and archeology is illustrated by a comparison of the historical documentation and the interpretation of the artifacts from Structure 2. Historical documents have provided a name and character sketch of John Young through the words of a missionary woman and ship captains. This written information allows for more confidence in the interpretation of the objects that were recovered.

**Future Project Goals**

As discussed in Chapter 1 specific field objectives outlined in the original scope of work included: (a) excavation and stabilization of Western-style Structure 2; (b) excavation and stabilization of Western-style Structure 3; (c) stabilization of Hawaiian-style Feature 1; and (d) test excavation and stabilization of Hawaiian-style Feature 4. This scope was sharply modified early during the fieldwork, and all of the revised project objectives, as outlined in the Chapter 1, were met. These specific objectives all centered on the excavation of Western-style Structure 2.

At that time (1978) it was also envisioned that a more extensive research design would be developed and funding would be sought to conduct additional excavations along the lines proposed in the original scope of work. The National Park Service's position has changed since then and future project goals must be more in line with National Park Service policy. Therefore, only limited additional excavations are proposed.
The confidence in which to interpret and learn from this site has been broadened by the excavation and completion of the final report. A more complete picture of the individual, John Young, has emerged as seen in this report by the combination of historical documents, controlled excavations, and artifact analysis. What history and interpretative information has unfolded will provide the Park visitor with details of Young's life that reflect his chiefly status and integrated Western-Hawaiian lifestyle. That integrated lifestyle cannot be fully understood, however, without investigating at least one of the Hawaiian-style features on the homestead. The information from the excavation of one of those features together with the information from the excavation of Structure 2 would provide a more complete interpretive picture. Therefore, future project goals should include the excavation of at least one of the Hawaiian-style features.

Since the Hawaiian-style features are structurally very different from the Western structures many questions can be generated to provide a focus for any future work at the site. Questions that relate to the interface between Hawaiian and Western attitudes of use of space and material goods could answer many questions about the personal relationship Young had with his wife, Ka'oana'eha. Some of these questions would be: Are there qualitative and quantitative differences in the material goods recovered from Structure 2 and the Hawaiian-style feature (either or both 1 and 2)? Is there a difference in the spatial distribution of artifacts between the structures? Are cultural, Hawaiian vs. Western, differences reflected in the assemblages from the excavated features?

It is beyond the scope of this report to elaborate further on a specific research design or specific research strategies for future investigations at this site. Suffice it to say the research and interpretive potential of this site have only been partially explored. Future investigations must be carefully planned and executed to maximize the recovery of data and to minimize the impacts of such investigations on the site.
GLOSSARY OF HAWAIIAN TERMS

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

'āʻā Rough slow moving lava.

ahupua'a A land division usually extending from the uplands to the sea.

'ai kapu To eat under taboo.

'ai noa To eat without taboos.

aliʻi Chief, chiefess, king, queen, noble; royal, kingly.

heiau Pre-Christian place of worship; some heiau were elaborately constructed stone platforms, others simple earth terraces.

ʻiliʻili Pebble. (Refers to pebble sized rocks that are used to pave the surface of a platform or terrace.)

imu Underground oven.

kapu Taboo, prohibition; special privilege or exemption from ordinary taboo; sacredness; prohibited, forbidden; sacred, holy, consecrated.

lei Garland, wreath; any ornament worn around the head or about the neck.

malu Shade, shelter, protection, shaded, peaceful, quiet; under taboo; reserved held apart; taboo.

niho Tooth.

niho palaoa Whale tooth, whale-tooth pendant, a symbol of royalty.

pahoehoe Smooth unbroken type of lava, contrasting with 'a'ā.

pili A grass (Heteropogon contortus) known in many warm regions, formerly used for thatching houses in Hawai‘i.

pipipi General name for small mollusks, including Nerita picea and Nerita neglecta.

poi The Hawaiian staff of life, made from cooked taro corms, or rarely breadfruit, pounded and thinned with water.

pulu A soft, gloss, yellow wool on the base of tree-fern leaf stalks. It was used to stuff mattresses and pillows and at one time was exported to California. Hawaiians stuffed bodies of their dead with pulu after removing vital organs.
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Appendix

BACKFILLING AND STABILIZATION OF STRUCTURE 2

At the conclusion of the excavations Structure 2 was backfilled and stabilized. The burial crypt was recovered, black plastic was laid over the exposed surfaces and against the interior wall surfaces, and excavation trenches and pits were filled with stones. The 'ili'ili (waterworn pebbles) paving was relaid and dirt fill was laid up against the interior and exterior of the walls on top of the paving. Finally, stones were placed on top of the dirt fill. The details of this process are illustrated in Figures 52 to 59.

Figure 52. Backfilling and stabilization; crew filling excavated area on the exterior of the north wall with stones; note black plastic sheeting placed prior to filling; view to the east.
Figure 53. Backfilling and stabilization; crew filling trenches on exterior of east wall with stones; view to the north.

Figure 54. Backfilling and stabilization; interior area; pits filled with stones and burial crypt recovered; black plastic laid against interior wall surfaces and held in place with stones; view to the northwest.
Figure 55. Backfilling and stabilization; entire interior area covered with black plastic sheeting; view to the northwest.

Figure 56. Backfilling and stabilization; waterworn pebble paving being relaid in interior of structure; view to the northwest.
Figure 57. Backfilling and stabilization; crew placing stones on top of dirt fill that was laid up against interior and exterior wall faces above paving; view to the northeast.

Figure 58. Backfilling and stabilization; overview; stabilization nearly complete, but edge of black plastic sheeting still visible; view to the northwest.
Figure 59. Backfilling and stabilization; overview; stabilization complete; view to the northwest.