

FORT VANCOUVER EXCAVATIONS - I

by

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and

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PREFACE

Fort Vancouver represents the founding of civilization in the Pacific Northwest. From 1824 to 1860 this establishment of the Hudson's Bay Company provided the primary thrust of European culture in an undeveloped wilderness. Built as a trading post, it also served as administrative headquarters for the Company's Columbia Department until 1849, and as an active commercial establishment until 1860. During this time, the extensive agriculture, lumbering, and trans-Pacific trade that continue to characterize the modern economy of the Pacific Northwest were inaugurated at Fort Vancouver.

There are actually two sites for Fort Vancouver within what is now the city of Vancouver, Washington. The first was built during the winter of 1824-25 on a high terrace overlooking the Columbia River (Fig. 1). This area has long been covered by urban Vancouver and remains of this first fort have never been found. The Fort was moved and rebuilt during the winter of 1829-30 on the bottomlands slightly less than a mile west of the original site (Fig. 1). This second site, which dates from 1829 to 1860, was the larger and more important fort. It is the subject of both past and present archeological investigations.

Through the instigation of interested citizens, the second Fort was authorized for preservation by Act of Congress dated 19 June 1948, and became part of the National Park System in 1954 as Fort Vancouver National Monument. An additional Act of Congress in 1961 enlarged the original monument size and changed the name to Fort Vancouver National Historic Site.

During its brief history as part of the National Park System, the Fort has become the object of national and intense local interest. Establishment, past archeological excavation, and historical reconstruction of the Fort have shown that these interests have been focused to good purposes. As a major historic site within a large metropolitan area, Fort Vancouver offers a splendid opportunity for the presentation and interpretation of past human events to the American public.

The National Park Service is presently planning to reconstruct Fort Vancouver as it appeared at its height, about 1845. In addition to the detailed historical documentation compiled by Dr. John A. Hussey, authentic reconstruction requires extensive archeological research. The proposals for these investigations have been outlined in the Archeological Research Management Plan of September 1969 for Fort Vancouver National Historic Site. This plan is now being implemented and its results form this series of reports.

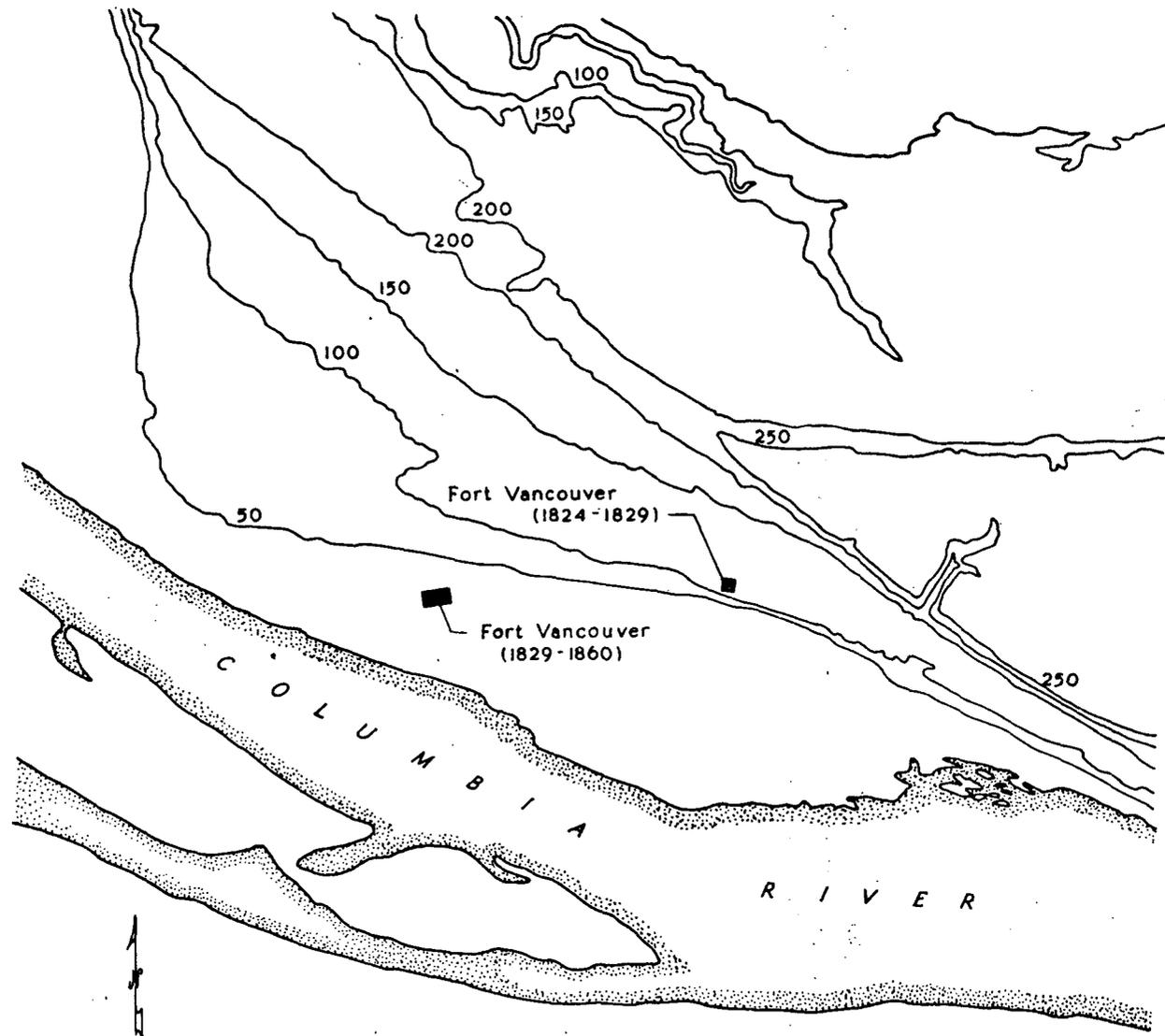


Fig. 1 - Geographic location of the early (1824-1829) and late (1829-1860) sites of Fort Vancouver (adapted from the U.S.G.S. 7 1/2 minute series, Vancouver, Orchards, Mount Tabor, Portland quadrangle maps for Washington and Oregon).

The present archeological project involves the cooperation of many people. The staff of Fort Vancouver National Historic Site has been most helpful in more ways than can be listed here. Much of our former logistical and administrative support came from the Office of Archeological Investigations, Western Service Center, National Park Service. A special acknowledgment is due Paul J. F. Schumacher who got the project underway and guided it through its early stages. Maps and photographs of this report are products of the technical staff of the Midwest Archeological Center, National Park Service. They are also responsible for stabilization of leather and fabric items recovered during present investigations. The unsigned line drawings and graphs of this report were prepared by Lester A. Ross and Charles H. Hibbs.

Forest Products Laboratory of the U.S. Forest Service has graciously identified wood samples for us. Dr. Roderick Sprague, University of Idaho, stabilizes metal specimens for us and has supplied valuable bibliographic information. Our counterpart to the north, the Canadian National Historic Sites Service, has been most helpful in supplying comparative data on Hudson's Bay Company archeological remains from lower Fort Garry and in providing copies of their published reports.

I - INTRODUCTION

This report, the first of a series detailing the findings of the current archeological project, describes the excavations carried out in the winter of 1970-71. These investigations dealt with an area largely inside the northeast corner of the 1845 Stockade -- specifically, the final Bakery used at Fort Vancouver, a probable Wash House, and adjacent areas.

The Fort Vancouver Archeological Project, begun in late 1970, proposes to carry out extensive investigations over a five-year period. The specific goal of the investigation is to provide factual, technical data for reconstruction of the Fort. This means not only finding structural remains, but also providing information, when possible, regarding the actual appearance and functions of the individual buildings. This difficult assignment is necessary to ensure as authentic a reconstruction as possible for the benefit of the American public. At the same time much information of past events and daily life at the Fort is being gained by examination of the debris associated with various buildings. Remains of tools, household items, trade goods, and even foodstuffs are widely scattered about. All of these, and more, constitute physical evidence of Hudson's Bay Company activities at Fort Vancouver and in other parts of the world as well.

The present archeological project is the culmination of several years of past investigations by the National Park Service. Even before its establishment as a National Historic Site, Fort Vancouver was being excavated. Beginning in 1947, Louis Caywood conducted exploratory excavations to locate the site of the Fort and its major buildings. Four seasons of work between 1947 and 1952 completed this task and provided a sizable body of additional data (Caywood 1955). In 1961 Paul J. F. Schumacher, then NPS Regional Archeologist, made extensive exploratory tests of the Hudson's Bay Company barn complex located northeast of the Fort proper (Schumacher 1961). Reconstruction of the Fort began in 1966 with emplacement of the north wall and northeast corner of the Stockade. Excavation of the Stockade line by John Combes and Edward Larrabee preceded Stockade construction and added new archeological information to the growing body of data (Combes 1966; Larrabee 1966). Kanaka Village, a small residential community west and outside the Fort, was extensively tested in 1968 and 1969. This was a contemporary settlement of Fort employees of various cultural backgrounds. Excavations of Kanaka Village were partly exploratory and partly directed toward an acculturation study (Larrabee and Kardas 1968; Kardas 1970, 1971). Where applicable, results of past excavations will be incorporated within the present series of reports.

In addition to the goals outlined previously, we hope to interpret

the remains of Fort Vancouver in terms of cultural processes that illustrate daily life at the Fort. The subject matter here is a changing group of European and European-influenced peoples possessing a highly adaptive and relatively sophisticated technology that was bodily transplanted into a virtually alien cultural scene. The possibilities for cultural and social problems are evident. We hope to generate specific hypotheses of Fort activities in context of known and anticipated data throughout the investigations. As information accumulates, these hypotheses will be tested by interpreting the physical remains of the Fort. While the basic goals of the project center about the retrieval of structural data, we believe that a combination of documentation and extensive archeological remains presents an excellent opportunity to test ideas regarding past human events at Fort Vancouver.

This series of reports is preliminary in form and scope. Until the full body of data is available, we are interpreting the Fort on a piecemeal basis. In doing so, we rely heavily upon the structural chronology of Dr. John A. Hussey (1957) and the impressive documentation he has assembled. We have also drawn on historic graphic illustrations of the Fort. These consist of various maps, artists' renderings, and a few rare photos. All have been used previously by Hussey (1957) and Caywood (1955) in their reports. It is not our purpose to supplant or measurably alter previous findings; rather, we seek to add the technological and social dimensions to their histories of Fort Vancouver.

Nothing of Fort Vancouver has remained above ground since 1866 when a large fire consumed the collapsed and vandalized remnants. The Fort site was then incorporated into the military reservation of adjacent Vancouver Barracks. Over the years the U.S. Army utilized the site for a variety of purposes including artillery and rifle ranges, polo grounds, agricultural land, and general dump grounds. In 1918, an extensive lumber mill was built over the Fort, intruding the remains of railroad spurs and massive concrete footings into the Hudson's Bay deposits. The site was again used in the early 1940's as a marshalling yard for heavy military equipment. After World War II and the partial breakup of the military reservation, portions of the Fort were leveled and graded for the adjacent municipal airport. The history of river flooding in the area is not fully known to us but evidence of inundation is present in the site.

Problems of both past and present investigations have been complicated by the physical nature of the Fort. As a major post and administrative center of Hudson's Bay activities, Fort Vancouver grew in size and underwent many physical changes, including enlargement of the Stockade, changing building functions, addition of new buildings, and destruction of others. The structural situation was in constant flux and several major construction periods between 1829 and 1860 have been historically

documented (Hussey 1957). Thus, when we refer to a bakery or a storehouse, for instance, we attempt to be temporally specific as to which bakery or storehouse is meant.

The objectives of the current investigations, as outlined above, are entirely different from those of previous projects and we have accordingly adopted a completely new strategy of excavation. Rather than outlining and digging known structural positions, we are completely exposing the original living surfaces of Fort Vancouver. As shown by excavation maps, almost every square foot of those areas of the Fort where reconstruction is planned is being excavated. This is a mining technique, if you will, that insures complete exposure of structural remnants, as well as heretofore unknown interstructural areas, and a virtually complete retrieval of cultural materials. Of course this type of mining is conducted within rigid spatial controls that require comprehensive horizontal and vertical proveniences for all recovered data. Frequently, excavations are taken below the original Fort surfaces in order to recover certain information or clarify certain stratigraphic relationships. This is necessary to distinguish cultural and temporal affiliations of archeological remains. It must be remembered that there is a known historical and technological overlap in the occupations of the Hudson's Bay Company and the U.S. Army. In order to satisfactorily separate HBC remains from those of the U.S. Army, we are forced to record and deal with all exposed archeological features. Not by design, but by necessity, we must deal with a portion of Vancouver Barracks archeology.

Field techniques used in the present investigations are relatively simple. A horizontal grid oriented with the magnetic, cardinal directions is superimposed on the site and tied to established legal points. The grid is divided into ten-foot square excavation units in normal operations but it can be subdivided or enlarged within any workable dimensions. Occasionally, rectangular units of arbitrary size are projected into the grid to expedite certain excavations. During the early months of the project, the soil in the excavation units was removed in arbitrary half-foot levels. Later it was found that the upper deposits of the site were so thoroughly mixed as to render useless any attempt at uniform removal. Thereafter, all deposits above the Hudson's Bay deposits were removed as a single vertical unit and arbitrarily labeled the Vancouver Barracks Level. The underlying Hudson's Bay deposits continued to be removed in half-foot layers. For the most part, excavation units are dug until culturally sterile gravels are reached. It should not be assumed that these levels are uniform throughout the site; the contact zone between Hudson's Bay Company and Vancouver Barracks deposits varies widely, as one could expect. Moreover, there is no assurance that this contact zone represents the original surface in all areas. However, vertical positions of structural remains as well as artifact positions and frequency trends indicate that this is approximately

true for most areas.

Field recording is largely redundant in order to insure complete retrieval and availability of information. The usual excavation Journal is kept and records a plethora of objective and subjective observations. Overlapping with this is a series of standard forms used for graphically recording archeological features. A series of excavation maps prepared with instruments supplements the journal and forms. Field measurements are in tenths and hundredths of feet, rather than the usual metric system, since our standard American instruments are so calibrated. Photographs of critical or outstanding features are composed for informational value rather than artistic merit. All cultural materials removed from the site are segregated by horizontal and vertical proveniences that are retained through cataloging and analyses. Materials not removed, mainly structural features, are left in situ to be covered with impermeable sheet plastic and backfilled. Laboratory techniques are discussed in Appendix I of this report.

Since this is a lengthy project involving extensive excavations, we have chosen to report our findings in arbitrary units of progress. We hope to keep approximately current with reports and simplify what will be a massive final report. In this report structural remains are discussed by Hoffman and the artifactual evidence is presented by Ross. Preliminary interpretation and summaries are combined efforts.

II - ARCHEOLOGICAL EVIDENCE OF STRUCTURES

Several reasons prompted the selection of the northeast corner for the beginning of excavations in the Fort. This area is known to have been highly disrupted by past Army activities and was thus considered to be a good training ground for an inexperienced crew. Also, the area includes the location of the 1841-44 Bakery which is presently scheduled to be one of the first buildings reconstructed.

Three maps are used in this discussion of the northeast area. The plat map (Fig. 2) shows the relative location of all excavation units. The excavation map (Fig. 3) illustrates all archeological features recorded in the area (labeled F107, F108, etc.) as well as excavation controls and certain disturbances. The feature map (Fig. 4) shows only features relevant to the Hudson's Bay Company occupation.

According to Hussey's chronology, the northeast Bakery was the final such structure built in the Fort. Constructed sometime between 1841 and 1845, it stood until 1860 (Hussey 1957:148, 186). Evidently it was built at the same time as the final eastern wall of the Stockade which stood until 1860-66. The nearby Wash House apparently was a short-lived structure. It existed by 1841 at the latest and may have gone out of use by 1846, although some sort of wash house, if not the northeast one, was used during the 1850's (Hussey 1957:146-148).

Excavation began in a series of arbitrarily sized units placed over the locations of the Bakery, Wash House and adjacent areas. These excavation units were assigned feature numbers for ease of recording. As shown by the plat map (Fig. 2), F105 was a rectangular unit located between the Bakery and Wash House, F106 was a square unit located over the Bakery, F112 was a rectangular unit immediately south of F105, and F153 was a rectangular unit in the extreme northeast corner of the reconstructed Stockade. Use of these arbitrary units was later found to be unsatisfactory for analytical reasons. With a single exception, they were subsequently discarded for the more precise system of gridded excavation units.

One of the first items revealed in the northeast corner was a large, circular, concrete footing with internal cross footings. These were the remains of a slash burner from the 1918-19 lumber mill built by the Army. A digression to describe the destruction of this burner is necessary to explain the condition of Hudson's Bay remains found in the area.

A contemporary photo of the slash burner shows an unroofed concrete structure with a buttressed wall at least 15.0 feet high (113th Squadron [1919?]:40). Sometime during or after 1919 the burner was destroyed, we believe, by setting off a series of small charges on the interior

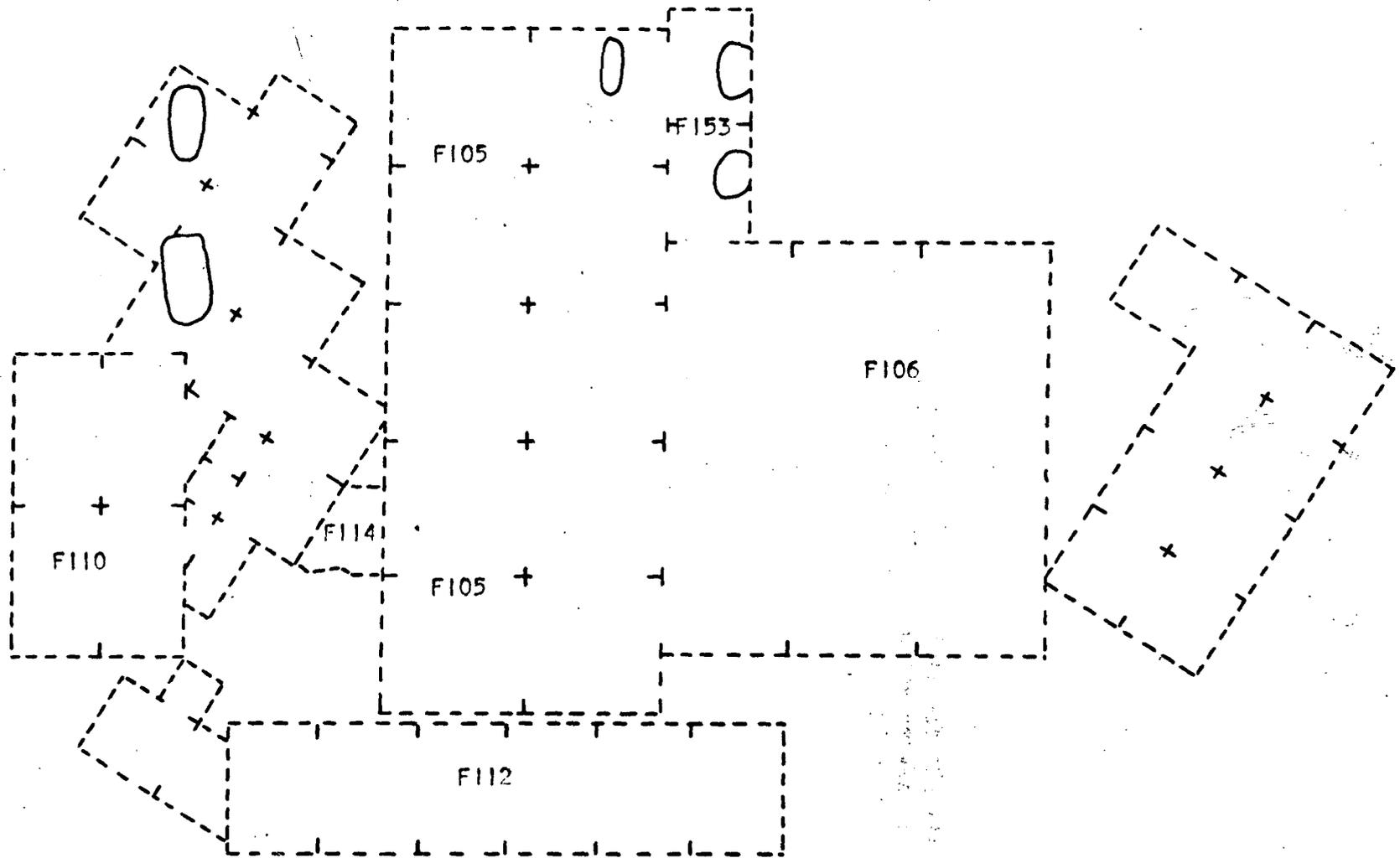


Fig. 2 - Plat of arbitrary excavation units projected into the excavation grid for the Bakery-Wash House area.

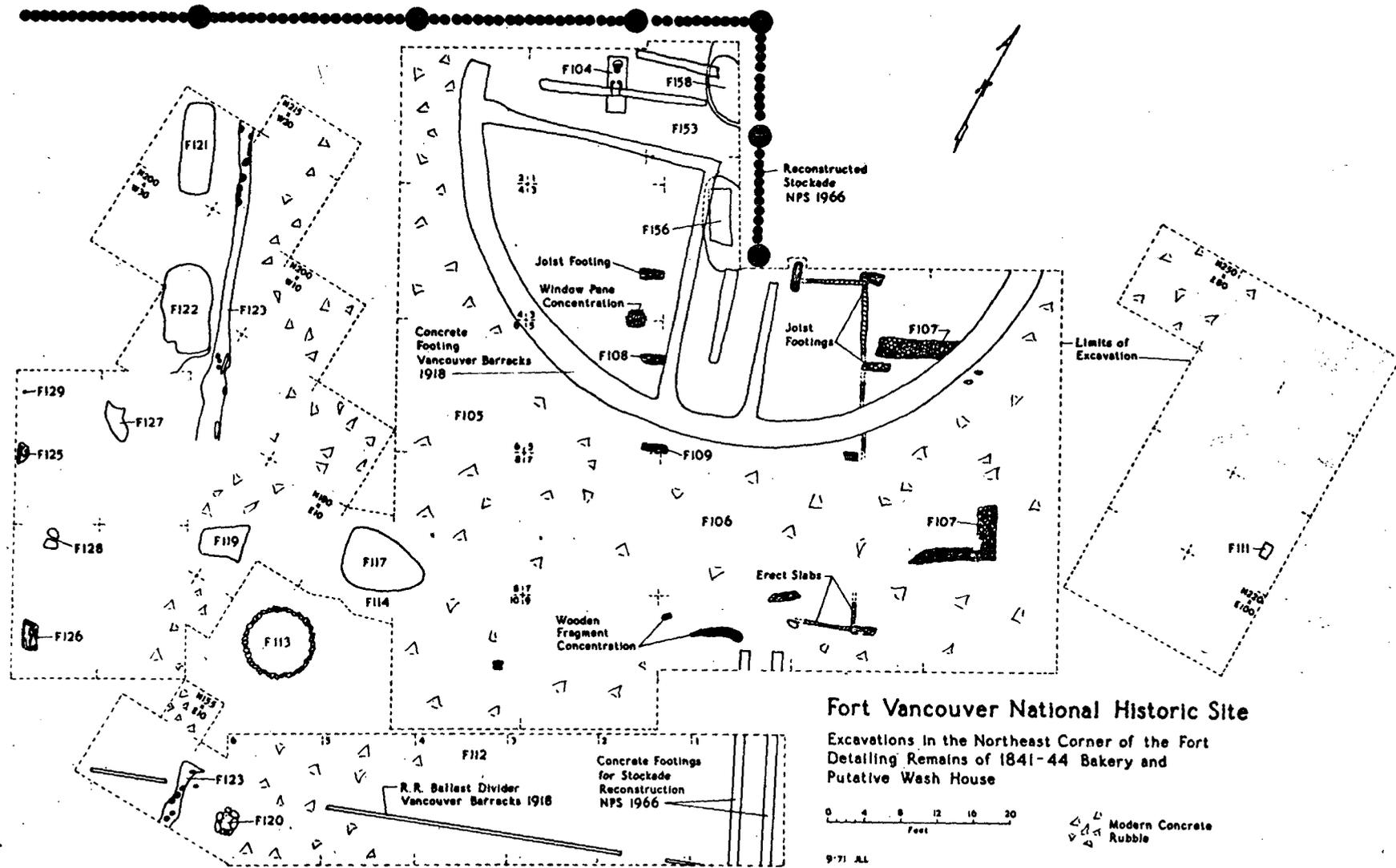


Fig. 3 - Excavation map of the 1841-44 Bakery and Wash House areas showing all archeological features.

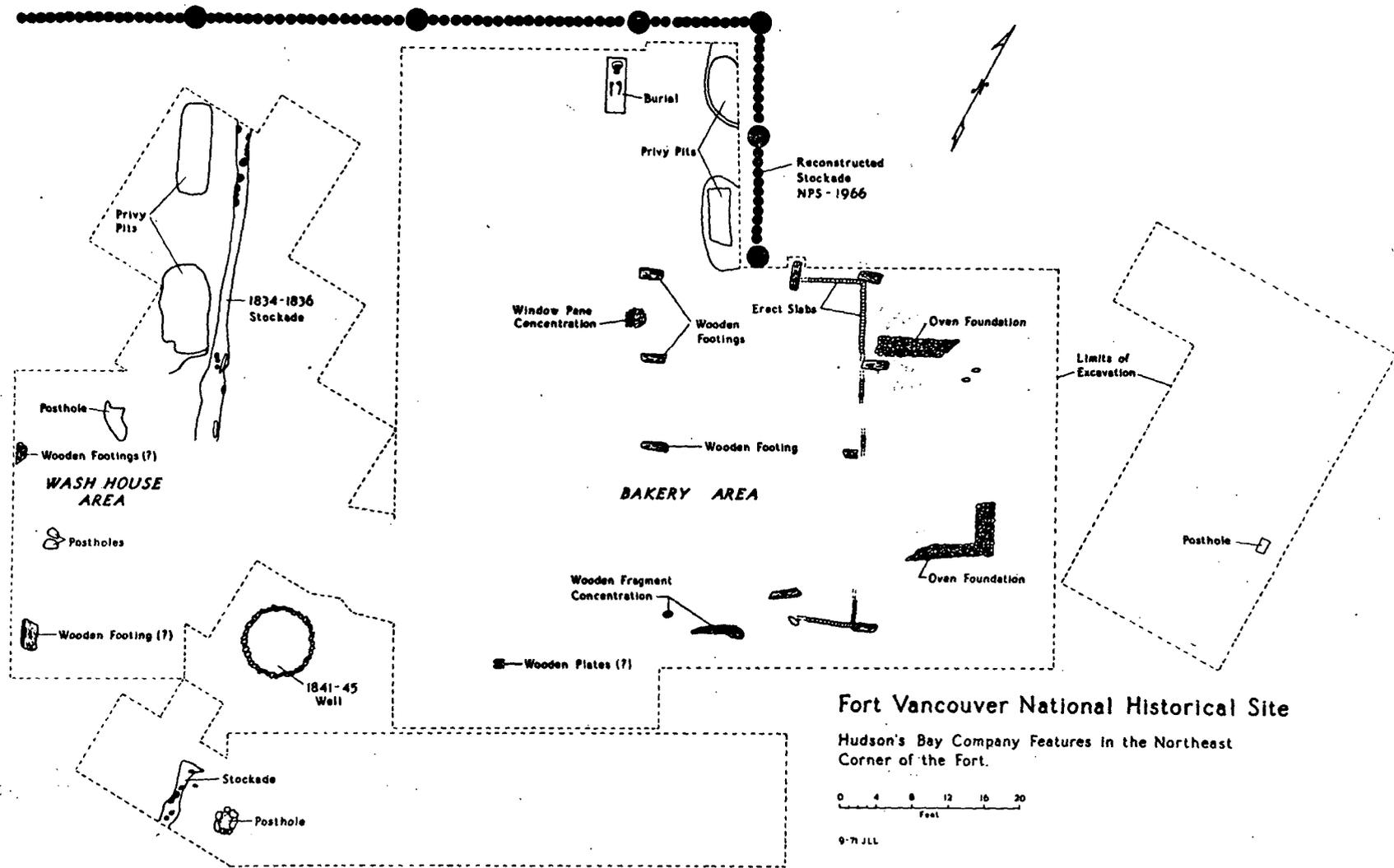


Fig. 4 - Feature map of the 1841-44 Bakery and Wash House areas showing only Hudson's Bay Company remains

of the structure. This left concrete chunks and tie steel scattered in a circular pattern outside of the footings, but not inside. During our excavations near the burner, we found concrete and steel debris embedded in the ground from the present surface down through Army and Hudson's Bay deposits, well into culturally sterile gravels (Fig. 5a). The result of this blast was to effectively destroy portions of pre-existing structural remains, obscure cultural stratigraphy, and thoroughly mix the artifacts of Fort Vancouver with those of Vancouver Barracks.

The first Hudson's Bay features found were 3 wooden footings marking the position of the northern section of the Bakery's west wall. These had been previously located by Caywood (1955:19). Aligned generally north-south, the wooden footings varied between 2.4 and 2.9 feet long, 0.9 to 1.1 feet wide, and about 0.25 foot thick. They were spaced at intervals of 9.5 to 10.0 feet to support an inferred sill, about 38.5 feet long, that formed the base of the west wall. South and slightly east of this line of footings a concentration of wooden fragments was noted in the same elevation. This may be the fourth footing reported by Caywood (1955:19), but it is badly out of line. Other wooden footings marking the northeast and southeast corners of the main Bakery building were located in a previously unexcavated area (Fig. 3). These were of the same general size and shape as those of the west wall, and located in the same general elevation. Remnants of 2 similar footings were located south of the northeast corner at distances of exactly 10.0 and 20.0 feet, center to center. Between the northwest and northeast corners, a north-south oriented footing of the north wall was found. It lay 8.0 feet west of the northeast corner, center to center. At a distance of about 10.0 feet northwest of the southeast corner, an ex situ footing remnant was found completely out of alignment and 0.51 to 1.40 feet below the depth of the southeast corner footing.

An anomalous feature of the Bakery foundations was a line of small, erect wooden slabs or puncheons which connected the northeast and southeast corners and extended some distance west of each corner (Fig. 4). Measuring about 0.25 foot wide and high, each slab was cut and set to directly abut the next. Where extant, the slab line formed a tight enclosure (Fig. 5b).

Remains of the Bakery ovens consisted of 2 separated segments of masonry foundation adjacent to the east wall of the main structure. These remnants of the foundation were from 1.6 to 2.0 feet in width and were composed of rounded cobbles averaging about 0.7 foot in diameter. They comprised a single course and were without sub-footings. Lime mortar, possibly made of Hawaiian coral, was present on top and in between the cobbles but not underneath (Fig. 6a). No brick was found in situ, but brick fragments were scattered throughout the Bakery area.

- Fig. 5 - Eastern and northwestern portion of Bakery.
- a Opening east side of Bakery area. Note footings of slash burner at left and resultant concrete rubble. View is northeast (FOVA neg. 069.51-70/16).
 - b Northwest corner of main Bakery building showing wooden footings left and right of 5.0 feet scale and puncheon lines below and to right of scale. View is north (FOVA neg. 069.51-71/13).

- Fig. 6 - Bakery oven foundation and northeastern Privy Pits.
- a Southern segment of Bakery oven foundation. Note intrusive concrete rubble. View is north (FOVA neg. 069.51-71/5).
 - b Excavating Privy Pits in northeast corner of 1841-44 Stockade. Scale is 5.0 feet; view is north (FOVA neg. 069.51-71/88).

Archeological evidence of the Bakery indicates that it was a rectangular structure about 25.0 by 40.0 feet which was positioned squarely across the contemporary east wall of the Stockade. While no evidence for type of floor or wall construction turned up, presumably the wooden footings uncovered in the excavations supported sills for post-in-sill construction. The remains of the oven area were attached to the east wall. The ovens were made of brick, as will be discussed in a later section of this report. Contrary to the present Archeological Base Map for Fort Vancouver (U.S. Department of Interior 1955), there is no evidence of Stockade pickets inside or below the Bakery.

Archeological evidence provides little for describing the actual appearance of the Bakery. Contemporary sketches show the building to barely exceed the height of the abutting Stockade. They also show the ovens to have either one or two chimneys and to have been covered by a wooden shed. We infer an entry to the Bakery through its west wall as a matter of simple expediency. A concentration of window pane fragments along the west wall (Fig. 4) as well as scattered fragments inside the structure indicate the presence of (framed?) windows in the west wall. However, the evidence provides no clue as to the number and positions of these windows.

Considering the massive disruption of the Bakery position, we feel most fortunate in gaining what little information was present.

Excavations were also made east of the ovens, outside the Bakery, to test the hypothesis that the ovens were fired and cleaned from this side (Fig. 3). No evidence was found to validate or negate this hypothesis. The sole feature located was the remains of a large wooden post cut to a rectangular shape 1.0 by 1.5 feet with a remnant length of 1.4 feet. This post is shown in Figure 4 as a Hudson's Bay feature, an assignment we now believe to be in error. Shape and dimensions of the post remnant are similar to some (but not all) utility poles known to have been used on the Fort site by the Army in 1918-19 (113th Squadron [1919?]:39-42).

Closely associated in time and space with the Bakery are remains of 2 Privies located in the extreme northeast corner of the 1841-44 Stockade (Fig. 4). The Privies were noted as 2 oblong pits below the cross footings of the 1918 slash burner (Fig. 6b). Being inside the burner, they were saved from the bombardment of concrete rubble (Fig. 3). The southern pit, our Feature 156 on the excavation map, had been previously dug by Caywood (1955:Fig. 4) who described it as a board-lined toilet pit. After Caywood's investigations, the northeast corner of the final Stockade was reconstructed thereby disturbing both features. We found the bottom of the southern pit to measure 2.5 feet wide by 5.5 to 6.5 feet long with a depth of 4.05 feet, measurements much smaller than those previously reported (Caywood 1955:Fig. 4). Little was left of the board lining. We did find a line of erect wooden

slabs, each about 0.3 by 0.5 foot, at the base of the southern pit against its north wall. A large number of artifacts and human feces was also removed (Appendix II).

The northern Privy Pit, F158 on the excavation map, had not been previously dug and was also badly disturbed by Stockade reconstruction. As a result, the basal dimensions of the pit, 3.0 feet wide and 7.3 feet long, are only approximations of the original dimensions. However, the pit depth of 4.95 feet seems credible as it was determined from relatively undisturbed portions of the west wall. No evidence of a wooden lining was found in the north pit. A large amount of ceramic and glass material was recovered (Table 19). Although fragmented, most of the ceramics represented complete or nearly complete pieces that were found in stacked positions. This phenomenon was noted in other areas of the Fort by Caywood (1955:52), who suggested deliberate dumping of ceramics in Privies when the Hudson's Bay Company left the Fort in 1860. Our findings in the northeast corner strengthen his suggestion.

Because of massive disturbance, no archeological evidence of foundations or superstructures is present for the Privies. However, the actual appearance of the Privies is known from a rare photograph from the files of the Institution of Royal Engineers Library (reproduced in Smith 1964:38). Taken in 1860, the photo shows the southeast elevation of the Chief Factor's House (to be discussed in a future report), as well as certain details in the background east of the house. Discernible in the photo are two privies built against the eastern wall of the Stockade at the latter's northeast corner, the identical position of the excavated pits (Fig. 7). Each structure is made of puncheons and poles and while no scale is available, they appear to be about 6.0 feet high, 8.0 feet wide, and 6.0 feet deep. They are higher on the west end, having flat roofs slanted down towards the Stockade. North and south walls are vertical puncheons trimmed at the tops to accommodate the slanted roofs. West or front walls are made of horizontally laid poles about half the diameters of the puncheons. The poles appear to be set into the corner puncheons. The back or east walls are not visible and may actually have been the Stockade.

The large size of the excavated pits is quickly explained by the fact that the Privies were "two-holers." The more completely shown privy of the photo has 2 doors, each about 5.0 feet high, in its west wall. Above each door is a small, square airhole cut through the horizontal poles. Spaces between the door tops and airhole bottoms are marked by short board rain deflectors angled slightly downwards. No other openings are visible.

Presence of 2 "two-holers" in this location may indicate a high activity area of the Fort and continuity of an established structural plan through several construction periods in the Fort's history. This will be discussed further.

Fig. 7 - Chief Factor's House showing location of northeastern Privy Pits.

- a Southwest elevation of Chief Factor's House as seen in 1860. "Two-holer" privies are to right of guns and behind white picket fence. Photo courtesy of Institution of Royal Engineers, Brampton Barracks (FOVA neg. 069.55-72/20).
- b Close view of privies in above photo. Note pole and puncheon construction, and height of privies in relation to the Stockade (FOVA neg. 069.55-71/121).

Another interesting find in the Stockade's northeastern corner was a human burial (Figs. 3, 4). The area above the burial was highly disturbed by trenches from previous archeological endeavors and from preparations for Stockade reconstruction. Fortunately, the burial lay below the 1918 concrete footings at a depth of 3.7 feet below present surface. Unfortunately, air-hammering to remove the concrete during 1966 reconstruction crushed what little was left of the human remains. Only fragments of facial bones, a left femur, and a left tibia remained. These were contained in a coffin 2.0 feet wide by 5.9 feet long with a remnant depth of 0.57 to 0.70 foot. The coffin was a simple open box of wooden boards joined with square cut metal nails; there was no lid. Burial associations consisted of leather moccasin fragments, several "Calico China" buttons, and a kaolin pipe spur. Bits of green fabric adhered to the coffin interior at what would have been the lower abdominal area. Gold colored fragments were adhering to the moccasin soles, and a few bits of leather were found near the left hip area. These materials and their significance are discussed in a further section of this report.

The fragmentary human remains have yet to be analyzed by a physical anthropologist. We doubt that there is sufficient skeletal material to positively identify the age or sex, but on the basis of rounded frontal orbits, massive mastoid processes, and closed cranial sutures, it is probable that this individual was an adult male.

The open area between the west wall of the Bakery and the Wash House was virtually devoid of any remains. This was due to massive disturbances by concrete rubble. We did manage to locate 2 segments of the eastern wall of the 1834-36 Stockade, which stood until the 1841-44 construction period (Figs. 3, 4), and privy pits associated with the earlier Stockade. This part of the Stockade had been explored in 1952; Caywood (1955:Fig. 4) shows this portion of the Stockade on his maps and lists dimensions of the associated Privy Pits. Our exposure of this area indicated that the Stockade remains had deteriorated badly since previous excavation. For purposes of clarity, we have elected to redescribe this area.

The northern segment indicated on Figures 3 and 4 was about 35.0 feet long within our excavation limits. Here the Stockade pickets were set into a trench 1.0 to 2.8 feet wide and 1.80 to 3.85 feet below present surface. We attach little credibility to these depth measurements since they are based on truncated surfaces and slumped walls. Fourteen picket butts, clustered into 2 groups, were located in situ. They ranged from 0.4 to 1.0 foot in diameter. Horizontal wooden pieces found with one group appeared to be collapsed portions of butts from previous excavations (Fig. 8a).

The southern segment was 7.5 feet long within our excavation limits and comprised a trench 0.9 to 2.5 feet wide. The top of the trench

Fig. 8 - 1834-36 Stockade trench and Army trash box.
a Northern exposure of 1834-36 Stockade trench during excavation. Associated Privy Pit (F122) at left of trench. View is north (FOVA neg. 069.51-71/66).
b Army trash box (foreground) intruded into 1834-36 Stockade. Workman stands in Stockade trench. View is north from west side of 1845 Well (FOVA neg. 069.51-71/188).

lay 2.1 feet below present surface and extended to a depth of 4.4 feet below the present surface. While the lower limit of the Stockade trench seems credible here, the upper limit is not, since the Hudson's Bay surface is truncated in this area by a 1918 railroad bed. Six picket butts were found and they showed no specific interval or grouping. They ranged from 0.5 to 0.7 foot in diameter and were mainly composed of wood dust. A single, large, rock-braced posthole (F120 on the excavation map) was found immediately east and outside of the southern exposure within the HBC deposits. The sheer size of the hole, 2.0 feet in diameter and 2.8 feet deep below the rocks, plus its strict vertical alignment, make it difficult to interpret as a repair prop for the Stockade. At the present, all we can say about this posthole is that it is definitely part of the Hudson's Bay Company occupation.

It should be noted that no evidence of the 1834-36 Stockade was found between those segments exposed, contrary to the present Archeological Base Map. For reasons to be discussed, the area between our exposures was totally destroyed by Vancouver Barracks activity.

The Privy Pits were located at the interior of the 1834-36 Stockade (Figs. 3, 4). As mentioned, these had been previously exposed (Caywood 1955:Fig. 4). Pit dimensions from our exposures generally agreed with those reported by Caywood, allowing for slumpage during his excavation. Again, a large amount of material, including human feces, was removed from the pits (Appendix II). Sizes of the pits indicate "two-holers," although no archeological evidence of foundations or superstructures was found during any investigation.

The presence of 2 "two-holers" in the northeast corner of the Fort seems to be a pattern that carried through from the 1834-36 Stockade line to the 1841-44 construction period. Again, a rather rigid structural plan possibly centering on high activity areas is indicated.

Directly south of the Bakery remains, an arbitrary excavation unit was opened. Labeled F112 on the excavation map (Fig. 3), this unit exposed only modern, non-Hudson's Bay features. Recent concrete footings prepared for Stockade reconstruction were the chief features. West of these, disjointed remains of a single, slender timber were found in a general east-west alignment. Since this and similar features traverse large areas of the Fort, a short digression is necessary to explain their presence.

During the use of the Fort site as a lumber mill in 1918, several railroad spurs were built by the Army. A rather precise means of laying ballast was used. Heavy gravel and crushed rock were laid and packed to the exact width of the railbed. At the outer edge of the bed, sand was laid for an indeterminate width. The sand and gravel portions of the railbed were divided by planed planks, about 0.3 to 0.4 foot thick, which were set on their edges. These ballast dividers were stabilized

by vertically set 2 x 4 inch timbers placed at regular intervals and attached to the planks with round, iron spikes.

The slender timber found in F112 was the remains of one such ballast divider, as evidenced by the number of upright 2 x 4's and round spikes found associated with it. Also, standard railroad tie spikes were frequently found in close association with the divider. Occasionally, portions of the original bed were found with the slender timber neatly dividing the gravel and sand portions of the ballast. These remains of the railroad bed are a good example of recent intrusions in the site which present problems that are continually dealt with during excavations in the northern areas of the Fort.

The 1845 Well is located opposite the southwest corner of the Bakery remains (Fig. 4). Labeled F113 on the excavation map (Fig. 3), this feature is rightly pointed out to Fort visitors as the only surviving original structure of Fort Vancouver. Clearing of this particular well and excavation of its collar were done during the early explorations of the Fort remains (Caywood 1955:22). We made no attempt to excavate the Well further; neither did we dare dig close to the lining for fear of collapsing the upper shaft. However, our minimal exposures around the Well raise certain questions regarding previous interpretations of the Well's construction.

Caywood (1955:22) inferred construction of the Well as follows. A square hole nearly 17.0 feet on a side was sunk to the desired water level, something in excess of 26.0 feet deep. A circular shaft lining of large, rounded rocks was then begun at the bottom of the excavation and built upwards. As the lining progressed upwards, the space between the circular wall and the square excavation was backfilled with clean gravel. The process was continued until the surface was reached. This inferred construction method is apparently based on Caywood's observations of a rectangular gravel fill which was first noted at 4.0 feet below the modern surface that could be differentiated from surrounding gravels.

Our excavations failed to reveal the gravel fill reported to surround the Well. While our excavations were not carried to a full 4.0 feet below surface around the Well's entire perimeter, they were sufficiently wide and deep to expose the reported gravel fill on the north, west, and southwest sides (Fig. 3). What we found here was the same concrete rubble noted in the Bakery area. Moreover, in situ evidence of Vancouver Barracks intrusions were found at depths of less than 4.0 feet and below. These intrusions would have destroyed any evidence of a gravel backfill on the north side of the Well to a depth of 6.8 feet. The intrusions are described below. Immediately northwest of the shaft, and well within the reported rectangular backfilled area, a buried trash box of Army origin was found extending from 4.4 to 6.8 feet below present surface and resting on sterile gravels. Labeled F119 on the

excavation map (Fig. 3), the feature was a wooden box made of planks and wire nails. The box measured about 6.6 by 5.0 feet in plan and varied from 0.7 to 2.4 feet in thickness. It was largely filled with a mortar or plaster that evidently derived from building demolition, for abundant traces of calcimine paint were noted. A few Hudson's Bay materials were found in close association with the trash box (Appendix II) but the bulk of identifiable items in and around the box were more recent (i.e., wire nails, an electric line insulator, and an electrical circuit breaker).

The hole dug for burial of the trash box was found in section and photographed. This hole extended from a post-1919 surface down through Hudson's Bay deposits and well into sterile gravels. Part of the hole had been backfilled with angular, crushed rock that was completely different from the flood plain gravels. This crushed rock appeared to be the same as that used in the 1918 railroad ballast and, as shown by subsequent excavation, was also thinly scattered about other areas that had been disturbed by Army activities (Fig. 8b).

In following the Army disturbance east of the trash box, we opened an arbitrary excavation unit labeled F114 directly north of the Well. This unit was also within the reported 17.0 feet square gravel backfilled area. This revealed an oval patch of mortar or plaster measuring 9.3 x 6.9 feet that rested within sterile gravels at about 3.15 feet below surface. The patch was a deliberate "spill out" of unused mortar less than 0.05 foot thick. As shown on the excavation map, the spill out had been poured into an area cleared of concrete rubble. Again, Vancouver Barracks activity is clearly indicated.

One may speculate that the mortar spill and buried trash box represent "dog duty" or the work of a prisoner detail by the peace-time Army. The point is that these obvious intrusions destroyed any possible evidence of a gravel backfill around the north side of the Well to a depth of at least 6.8 feet. Displacement of concrete rubble from the WWI slash burner indicates a post-1919 date for the intrusions, and the presence of electrical equipment clearly separates at least one feature from the Hudson's Bay occupation. Bearing in mind that both features rested within sterile gravels, we are forced to conclude that the backfill reported for the Well either does not exist, or at least was not excavated, along the north side of the Well. The occurrence of concrete rubble at the west and southwest sides of the Well further weakens the case for a deliberate gravel backfill.

We believe that previous investigations around the Well encountered a patch of the angular, crushed rock previously mentioned, and that this rock was interpreted as Hudson's Bay deposit. Had excavation been carried further horizontally or vertically, the actual situation would have been recognized. Also recognized would have been the fact that the concrete rubble and post-1919 trash box also destroyed the remains

of the 1834-36 Stockade line immediately northwest of the Well (Fig. 3).

The final excavations to be discussed in this report were directed to exposing the remains of the 1841 Wash House. An arbitrary excavation unit 35.0 by 20.0 feet was projected on the grid system over the presumed site of the structure. This area was excavated to depths of 2.0 to 2.4 feet. A typical section of the archeological deposits, noted along the west wall of the excavation and away from the concrete rubble, showed Vancouver Barracks deposits extending from the 1971 surface to 0.85 feet below. Under this was a suspiciously level, and therefore probably truncated, Hudson's Bay layer which extended from 0.85 to 1.55 feet deep. The HBC deposit rested on culturally sterile gravels. Hudson's Bay materials were recovered from both upper layers.

Structural remains were sparse. Two possible footing remains were isolated along the west wall of the excavation unit. Labeled F125 and F126 on the excavation map (Fig. 3), these features were located 17.7 feet apart. The more northern piece, F125, was a rotted and flaked slab, 2.3 by 1.5 feet in size, and no more than 0.5 foot thick. The southern piece, F126, was a concentration of rotted wood splinters that formed a pattern 4.0 feet long, 2.5 feet wide, and about 0.15 foot thick. Bases of both features lay at 1.5 feet below the present surface within the Hudson's Bay layer and above sterile gravels.

A large posthole labeled F127 was found in the northern sector of the unit extending from 0.6 to 3.8 feet below present surface. This appeared to have been dug out, possibly to retrieve the post, leaving a depression 3.9 by 2.2 feet at its orifice (Fig. 3). At the time of excavation, this posthole was considered to be part of the Hudson's Bay occupation on the basis of the artifacts found in association with it (Fig. 4). Subsequent discovery of a similar hole some distance west (to be discussed in a future report) now casts doubt on this assignment. We now believe F127 to be one of a series of large postholes representing a power or utility line known to exist in this area during 1918. A photograph depicting construction of the slash burner (113th Squadron [1919?]:39) shows what we believe to be this utility pole located in the same position in relation to the burner as we have mapped it. Inclusion of Hudson's Bay materials probably occurred during the removal of the post or pole:

Two smaller postholes, grouped as F128 on the excavation map, were found along the west wall of the unit (Fig. 3). The northernmost hole was 1.6 feet deep and tapered, whereas the southern hole was straight-sided and 1.3 feet deep. Orifices of both were first noted at 1.85 feet below surface of 1971, the base of the Hudson's Bay layer in this sector. The oval orifices of the holes, 0.7 by 1.25 and 0.95 by 1.40 feet, plus their varying depths and sections make them difficult to interpret. While no cultural materials were found in the holes, we have tentatively assigned them to the Hudson's Bay

occupation on the basis of their vertical position (Fig. 4).

Evidence of past archeological projects were found near the Wash House. A small vertical peg about 0.1 foot in diameter was recovered in the western corner of the putative Wash House area and labeled F129 (Fig. 3). Additional excavation west of the Wash House (to be discussed in a future report) revealed more vertical pegs set at intervals of 5.0, 10.0, and 50.0 feet in relation to F129. All of these were grid pegs from past archeological investigations.

Structural evidence for the 1841 Wash House is most sparse and not overly credible. However, the frequency and distribution of Hudson's Bay artifacts in this area lends credence to the proposition that some sort of structure did once exist on or near this spot. The proposition will be further discussed under preliminary interpretations. A summary of major features discussed and their archeological components is shown in Table I.

Table I - Summary of Hudson's Bay Company features in the northeast corner.

Area	Components
Bakery	Three corner footings, six wall footings Fragments of possible corner footing Three sides of small puncheon alignment Two sections of oven foundation Concentration of window pane fragments
1841-1844 Stockade Corner	Two Privy Pits Human Burial
1834-1836 Stockade Corner	Two sections of the east wall Two Privy Pits
1845 Well	
Large posthole	
Wash House	Two possible wall footings Two adjacent postholes

III - ARTIFACT DESCRIPTIONS

A total of 10,571 artifacts was recovered within and around the 1841-44 Bakery, its adjacent well, and the Wash House. A quantitative distribution of these artifacts appears as Table 2, and the spatial distribution according to excavation units appears as Appendix II. Catalog numbers cited in the text (e.g. FOVA 458) refer to the Field Catalog (Appendix I), and reference numbers (e.g. CPI, E1, E2, etc.) are assigned to complete or partially complete specimens which are generally composed of multiple fragments from more than one provenience unit.

Artifact descriptions in this report have been made with the following purposes in mind:

1. To provide our staff, and other interested researchers, with internally consistent verbal descriptions of the specimens thus far recovered.
2. To record, in a relatively permanent fashion for future reference, the attribute data thus far acquired.
3. To report attribute populations thus far observed.
4. To propose additional methods of analysis for specifying possible attribute and artifact populations which can be useful for functional and/or distributional interpretations.

Ceramic Ware Fragments

A total of 2847 specimens was analyzed. In Appendix II, there are 2842 specimens cataloged, and the addition of the 5 specimens is due to breakage during storage. Ceramic wares have been classified on the basis of the criteria for ceramic identification as defined by Paul Rado (1969). The major criteria for each ceramic subcategory are presented in Table 3, and definitions of the subcategories present in the area covered by this report are given below. In addition to classifying ceramic specimens into subcategories, they are also classified according to type and/or color of glaze, type and/or color of decoration, type of pattern, shape of ware, and manufacturer.

Common Pottery

Common pottery is defined as ceramic items of impure clays which are common to the locality where the item is made. Objects of common pottery are thrown or molded, usually decorated in the clay state by slip trailing, and first fired to about 900° C. The glaze is usually a lead glaze, often applied by dipping, and less often by spraying or brushing. The ware is finally fired to about 1000-1100° C, with the body and glaze maturing at the same temperature. Paste color of a fired ware will range from red to brown (Rado 1969:156-158).

Eighteen specimens were recovered, including 9 fragments belonging to a single cup (CPI). All 18 specimens have a lustre decoration.

Table 2 - Quantitative distribution of artifacts by descriptive category.

Descriptive Category	Subtotal	Total
Ceramic Ware Fragments		2847
Common Pottery	18	
CPI Lustreware Cup		
Earthenware	2433	
E1 Serving Platter		
E2 Cup		
E3 Small Handleless Teacup		
E4 Washbasin		
E5 Pitcher		
E6 Cup		
E7 Saucer		
E8 Saucer		
E9 Saucer		
E10 Small Plate		
E11 Small Plate		
E12 Deep Bowl		
E13 Saucer		
E14 Saucer		
Stoneware	323	
Vitreous China	73	
Ceramic Personal Items		386
Earthenware		
Kaolin Tobacco Pipes	379	
Marble	1	
Vitreous China		
"Small China" Buttons	5	
"Calico" Buttons		
"Piecrust" Button		
Marble	1	

Table 2 (Cont'd.).

Descriptive Category	Subtotal	Total
Glass Fragments Bottles, Tumblers, and Stemmed Glassware B1 Bottle B2 Bottle B3 Bottle T1 Tumbler Window Glass Mirror Glass Beads Rods and Strips	1276 515 32 166 15	2004
Metal Hardware Items Household and Personal Items Weaponry Unidentifiable	3091 45 38 358	3532
Construction Material Brick Mortar Plaster Tile Electrical Insulators Paint Chips	1458 184 53 26 13 12	1746
Stone Slate Tablets Slate Pencils Native American Items Circular Sandstone Sharpening Stone	11 5 3 1	20
Leather		10
Cloth		3
Bone		2
Plastic		2
Rubber		7
Miscellaneous Items		12
TOTAL		10,571

Table 3 - Classification of ceramics (after Rado 1969:Table 1).

Subcategory	Raw Materials	Firing Temperature (°C)		Color	Porosity
		First Fire Biscuit	Glazing Fire		
Common Pottery	Clay (impure)	900	1000-1100	Brown-red	Porous
Majolica	Clay (impure), sand, and fluxes	900	1000-1100	Brown with a white opaque glaze	Porous
Earthenware	Ball clay, China clay, feldspathic minerals, flint or other silica minerals	1050-1150	950-1050	Off-white to white	Porous
Stoneware	Clay (naturally fluxed), or clay, fluxes, and silica minerals	1100-1300	1000-1100	Gray, buff, etc., the glazing fire may be omitted if it is salt glazed during the first fire	Non-porous
Vitreous China	Ball clay, China clay, feldspathic minerals, and quartz	1100-1250	950-1100	Off-white, slightly translucent	Non-porous
Soft Porcelain	China clay, feldspar, and quartz	900-1000	1250-1350	Off-white to white, translucent	Non-porous
Hard Porcelain	China clay, feldspar, and quartz	900-1000	1400	Bluish-white and translucent	Non-porous
Bone China	China clay, cornish stone, and bone ash	1250	1100	White and translucent	Non-porous

- CPI Lustreware Cup -- partially complete (9 fragments)
FOVA Field Catalog Numbers: FOVA 3714, 3739, 3808.
Provenience: F158; 1966 Construction Pit (Privy Pit).
Illustrations: Figs. 9a and 20g.
Dimensions: 3 1/2" (Dia., minus handle) x 3" (H).
Manufacturing Marks: None; "marked lustreware is extremely rare" (Godden 1966:270).
Pattern Name: Unknown.
Pattern Colors: 1) Outside: background glaze is a bluish-purple (2.5 PB 2/6) which has been covered by a "copper" lustre design.
2) Inside: white (N 8.5/) glaze with a metallic reddish-purple (2.5 RP 3/10) rim.
Comments: The metallic reddish-purple color and "copper" lustre are created by a gold wash applied over the glaze. Thus, a gold wash over a dark glaze produces a "copper" lustre, and when it is over a white glaze it produces a purple lustre (Godden 1966:xxiv).

Earthenware

In Europe, earthenware has been divided into clay, lime, and feldspathic earthenware. Feldspathic earthenware is regarded, by the English, as the most common and important of the three; it is reported that the major development of feldspathic earthenware occurred in Staffordshire during the 18th and 19th Centuries. Feldspathic earthenware is much stronger than clay or lime earthenware, and it is fired at 1050-1150° C for the biscuit, or first firing, and 900-1050° C for glaze, or final firing. When fired, earthenware is colored off-white to white, is opaque, and is porous. Being porous, it tends to absorb moisture which attacks the glass in the body, thus expanding the clays and placing tension on the glaze causing it to craze (Rado 1969:160-162).

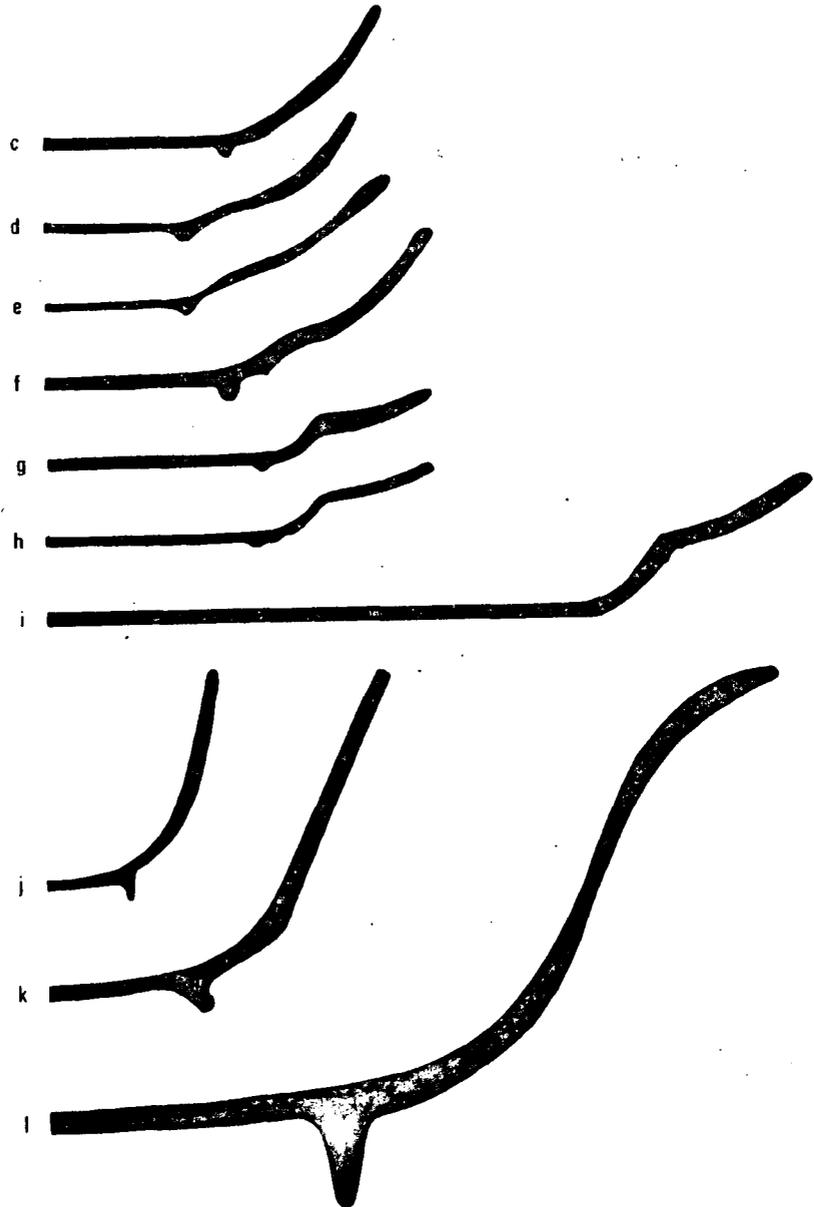
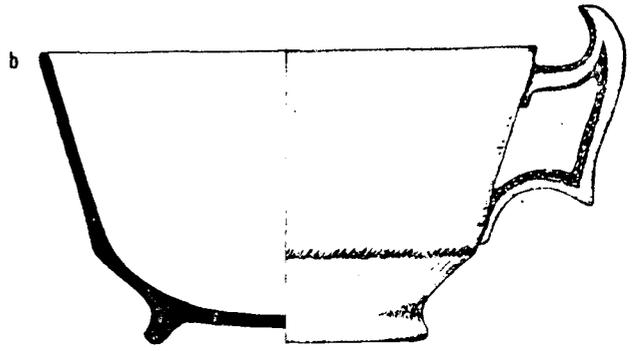
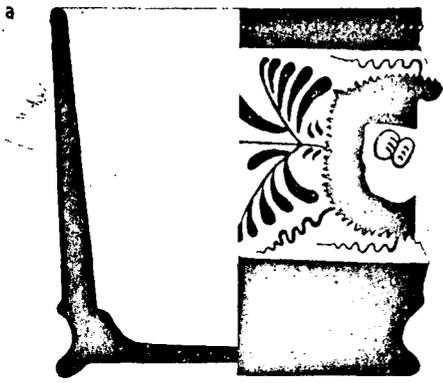
White Body Earthenware

This was the most common group of earthenware with a total of 2356 specimens, and as a group there are specimens of both creamware and pearlware. The most common form of decoration is transfer printing, and of these there were 1648 fragments recovered. Three complete and ten partially complete transfer printed pearlware items were reconstructed and are described below. There were no transfer printed creamware fragments observed.

- EI Serving Platter -- complete (3 fragments)
FOVA Field Catalog Number: FOVA 3709.
Provenience: F158 (Privy Pit).
Illustrations: Figs. 9i and 10b.
Dimensions: 14 3/4" (L) x 11 1/4" (W).
Manufacturing Marks: 1) "Copeland & Garrett, Late Spode"

Fig. 9 - Sectional views of ceramic vessels.

- a Lustreware cup (CP1)
- b "Geranium" cup (E2)
- c "Geranium" saucer (E7)
- d Hand-painted saucer (E14)
- e Saucer (E9) similar to "Blue Rose"
- f "Semi-China" saucer (E13)
- g "Continental" small plate (E11)
- h "Chatsworth" small plate (E10)
- i "Chatsworth" serving platter (E1)
- j "May" teacup (E3)
- k "Davenport" deep bowl (E12)
- l "Warwick" washbasin (E14)



5 cm.
2 in.

Fig. 10 - Ceramic wares.
a "Copeland & Garrett, New Blanche"
washbasin in the "Warwick" pattern (E4)
b "Copeland & Garrett, Late Spode" serving
platter in the "Chatsworth" pattern (E1)

(blue transfer wreath design),

2) "Copeland & Garrett, New Fayence, 19"

(impressed circle design),

3) "8" (blue transfer).

Pattern Name: "Chatsworth" (as determined from the FOVA comparative ceramic collection).

Pattern Color: Blue (7.5 PB 3/10).

Comments: Manufactured between 1833-1847 (Godden 1963:173).

E2 Cup -- complete (6 fragments)

FOVA Field Catalog Number: FOVA 3712.

Provenience: F158 (Privy Pit).

Illustrations: Figs. 9b and 11d).

Dimensions: 5 5/8" (L) x 4 7/8" (W) x 3" (H).

Manufacturing Mark: "Copeland & Garrett" (brown transfer garter design).

Pattern Name: "Geranium" (Williams 1949:175).

Pattern Color: Blue (5 PB 3/8).

Comments: Manufactured between 1833-1847 (Godden 1964:173).

E3 Small Handleless Teacup -- complete (7 fragments)

FOVA Field Catalog Numbers: FOVA 3708, 3801.

Provenience: F158; 1966 Construction Pit (Privy Pit).

Illustrations: Figs. 9j, 12b, and 12c.

Dimensions: 3 3/8" (Dia.) x 2 1/4" (H).

Manufacturing Marks: "Copeland, Late Spode" (blue transfer, no design).

Pattern Name: "May" (as determined from the FOVA comparative ceramic collection).

Pattern Color: Blue (5 PB 2/6).

Comments: Manufactured in 1847 or later (Godden 1964:171).

E4 Washbasin -- partially complete (15 fragments)

FOVA Field Catalog Numbers: FOVA 3708, 3795.

Provenience: F158; 1966 Construction Pit (Privy Pit).

Illustrations: Figs. 9 l and 10a.

Dimensions: 13 3/4" (Dia.) x 5 1/8" (H).

Manufacturing Marks: 1) "Copeland & Garrett, New Blanche" (red transfer, circle and crown design).

2) "C.....ett,he, 4"

(impressed).

3) "Δ" (black transfer).

4) "6." (impressed).

Pattern Name: "Warwick" (as determined from the Fova comparative ceramic collection; also see Williams 1949:176 for a similar pattern called "Warwick Vase").

Pattern Color: Red (5 R 2/6).

Comments: Manufactured between 1833-1847 (Godden 1964:173).

Fig. II - Ceramic wares.

- a "Copeland & Garrett, Late Spode" saucer similar to the "Blue Rose" pattern (E9)
- b Hand-painted saucer (E14)
- c "Copeland & Garrett, New Blanche" saucer in the "Geranium" pattern (E7)
- d "Copeland & Garrett" cup in the "Geranium" pattern (E2)

Fig. 12 - Ceramic wares.

- a "Copeland & Garrett, New Blanche" pitcher in the "Blue Italian" pattern (E5)
- b, c "Copeland, Late Spode" handleless teacups in the "May" pattern (E3)

- E5 Pitcher -- partially complete (18 fragments).
FOVA Field Catalog Numbers: FOVA 3561, 3708, 3738, 3740, 3794, 3806.
Provenience: F153, N, 2.5-3.0'; P158; 1966 Construction Pit (Privy Pit).
Illustrations: Fig. 12a.
Dimensions: 6 1/8" (Dia., minus handle) x 5 3/4" (H, minus handle).
Manufacturing Marks: 1) "Copeland & Garrett, New Blanche" (blue transfer, circle and crown design).
2) "G" (blue transfer).
Pattern Name: "Blue Italian" (Williams 1949:132).
Pattern Color: Blue (5 PB 2/6).
Comments: Manufactured between 1833-1847 (Godden 1964:173).
- E6 Saucer -- partially complete (14 fragments)
FOVA Field Catalog Numbers: FOVA 3713, 3794.
Provenience: F158; 1966 Construction Pit (Privy Pit).
Dimensions: 5" (Dia., minus handle) x 2 5/8" (H, minus handle).
Comments: Same as E2.
- E7 Saucer -- partially complete (10 fragments)
FOVA Field Catalog Number: FOVA 3797.
Provenience: 1966 Construction Pit (Privy Pit).
Illustrations: Figs. 9c and 11c.
Dimensions: 6 1/2" (Dia.) x 1 1/2" (H).
Manufacturing Marks: 1) "Copeland & Garrett, New Blanche" (blue transfer, circle and crown design).
2) "Copeland & Garrett, New Blanche, 30" (Impressed, circle and crown design).
3) "B" (blue transfer).
Pattern Name: "Geranium" (Williams 1949:175).
Pattern Color: Blue (5 PB 3/8).
Comments: Manufactured between 1833-1847 (Godden 1964:173).
- E8 Saucer -- partially complete (9 fragments)
FOVA Field Catalog Number: FOVA 3798.
Provenience: 1966 Construction Pit (Privy Pit).
Comments: Same as E7, without the blue "B".
- E9 Saucer -- partially complete (14 fragments)
FOVA Field Catalog Number: FOVA 3711.
Provenience: F158 (Privy Pit).
Illustrations: Figs. 9e and 11a.
Dimensions: 7" (Dia.) x 1 1/2" (H).
Manufacturing Marks: 1) "Copeland & Garrett, Late Spode" (red transfer, circle design).
2) "....land & ...rett,e" (Impressed, no design).

3) "X" (red transfer).

Pattern Name: Similar to "Blue Rose" (Williams 1949:197).

Pattern Color: Red (2.5 RP 2/4).

Comments: Manufactured between 1833-1847 (Godden 1964:173).

E10 Small Plate -- partially complete (6 fragments)

FOVA Field Catalog Numbers: FOVA 3710, 3794.

Provenience: F158; 1966 Construction Pit (Privy Pit).

Illustrations: Figs. 9h and 13d.

Dimensions: 7 5/8" (Dia.) x 7/8" (H).

Manufacturing Marks: 1) "Copeland & Garrett, New Blanche" (blue transfer, circle and crown design).

2) "Copeland & Garrett, New Blanche, .." (Impressed, circle and crown design).

3) "Δ" (blue transfer).

Pattern Name: "Chatsworth" (as determined from the FOVA comparative ceramic collection).

Pattern Color: Blue (5 PB 2/6).

Comments: Manufactured between 1833-1847 (Godden 1964:173).

E11 Small Plate -- partially complete (5 fragments)

FOVA Field Catalog Numbers: FOVA 3738, 3799.

Provenience: F158; 1966 Construction Pit (Privy Pit).

Illustrations: Figs. 9g and 13b.

Dimensions: 7 5/8" (Dia.) x 7/8" (H).

Manufacturing Marks: 1) "Copeland, Late Spode" (brown transfer, no design).

2) "Copel..." (impression, no design).

3) British Registration Mark (brown

transfer).

4) "I" (black transfer).

Pattern Name: "Continental" (as determined from the FOVA comparative ceramic collection).

Pattern Color: Brown (2.5 YR 3/4).

Comments: Date on the British Registration Mark is October 21, 1845 (following Godden 1964:527), but actual manufacture must be 1847 or later (Godden 1961:49 and 1964:171).

E12 Deep Bowl -- partially complete (4 fragments)

FOVA Field Catalog Number: FOVA 3796.

Provenience: 1966 Construction Pit (Privy Pit).

Illustrations: Figs. 9k and 13c.

Dimensions: ca. 6 1/2" (Dia.) x 3 1/4" (H).

Manufacturing Marks: 1) "Davenport,n Vase" (green transfer, vase and scroll design).

2) "Davenport,  " (Impressed).

Pattern Name: "....n Vase".

Pattern Color: Green (2.5 BG 3/6).

Fig. 13 - Ceramic wares.

- a Saucer of "Semi-China", possibly by "Meigh" (E13)
- b "Copeland & Garrett, Late Spode" small plate in the "Continental" pattern (E11)
- c "Davenport" deep bowl in the "...n Vase" pattern (E12)
- d "Copeland & Garrett, New Blanche" small plate in the "Chatsworth" pattern (E10)

Comments: Manufactured in 1844 (following Godden 1964:189, Mark 1181a).

E13 Saucer -- partially complete (11 fragments)

FOVA Field Catalog Numbers: FOVA 3708, 3800.

Provenience: F158; 1966 Construction Pit (Privy Pit).

Illustrations: Figs. 9f and 13a.

Dimensions: 7 3/8" (Dia.) x 1 5/8" (H).

Manufacturing Marks: 1) "Semi-China" (blue transfer, octagonal-rectangular border design).

2) "Ψ" (blue transfer).

Pattern Name: Unknown, but called "Bamboo" in the FOVA comparative ceramic collection.

Pattern Color: Blue (7.5 PB 2/10).

Comments: A similar manufacturing mark was used by Job Meigh & Sons, Charles Meigh, and Charles Meigh & Son (Godden 1964: 428, Mark #2618).

In addition to these complete and partially complete specimens, 8 incomplete pieces were reconstructed; but due to their fragmentary nature they do not warrant complete descriptions. Rather, they shall be listed and given a brief description:

Washbasins. Thirty-two fragments of at least 2 shallow washbasins with a purplish-red (7.5 RP 2/6) transfer printed pattern. This is a unique pattern for Fort Vancouver and no similar examples have been found in the FOVA comparative ceramic collection. One fragment has an impressed "Davenport" anchor mark with the numerals "44", but no pattern name has been identified. Fragments are cataloged as FOVA 3708 and 3803 (F158 and the 1966 Construction Pit). Manufactured in 1844 (following Godden 1964:189, Mark 1181a).

Child's Mug. Two fragments of a mug with a purple (10 P 2/4) transfer printed pattern bearing the word "Archery". A similar cup in the FOVA comparative ceramic collection has the words "The Peg Tops" and is marked "Davenport".

Tureen Lid. Three fragments of a soup tureen lid with a blue (5 PB 2/6) transfer printed pattern called "Camilla". These fragments are cataloged as FOVA 3794 and 3809 (the 1966 Construction Pit). On the underside, there is a blue "Copeland & Garrett, New Blanche" transfer printed mark (circle and crown design). Manufactured between 1833-1847 (Godden 1964:173).

Chamber Pot Rim and Handle. Five fragments of a chamber pot rim and handle with a reddish-purple (2.5 RP 2/4) transfer printed pattern. No similar examples have been found in the FOVA comparative ceramic collection, and no manufacturing marks were observed. These fragments

are cataloged as FOVA 3794 and 3805 (the 1966 Construction Pit).

Jug. Seven fragments of an incomplete jug with a blue (5 PB 3/6) transfer printed pattern called "Tower". This undoubtedly was manufactured by "Copeland & Garrett" but no manufacturing marks were observed. These fragments are cataloged as FOVA 3708 and 3794 (F158 and the 1966 Construction Pit).

Cup. Eleven fragments of a cup with a blue (5 PB 3/8) transfer printed pattern called "Geranium". Identical to E2 and E6, except that this specimen has a blue "Copeland & Garrett, Late Spode" manufacturing mark (circle design). Also, there is a blue transfer printed "F". Fragments are cataloged as FOVA 3738, 3802, and 3805 (F158 and the 1966 Construction Pit). Manufactured between 1833-1847 (Godden 1964:173).

Saucer. Eight fragments of an incomplete saucer identical to E7. Fragments are cataloged as FOVA 3708 and 3798 (F158 and the 1966 Construction Pit).

Not included in the above descriptions are 753 fragments of transfer printed pearlware which have been identified as to manufacturer, pattern name, and pattern color (see Appendix VI). The patterns currently identified as belonging to either the Spode (S), Copeland & Garrett (C&G) and/or Copeland (C) potteries include:

- "Acorn" (C)
- "Aesops Fables" (C&G, C)
- "Alba" (C&G)
- "Aster" (C&G, C)
- "B 772" (C&G, C)
- "B 773" (C&G, C)
- "Beverly" (C&G)
- "Blue Italian" (S, C&G)
- "British Flowers" (C&G, C)
- "Broseley" (S, C)
- "Broth" (C&G)
- "Camilla" (C&G, C)
- "Chatsworth" (C&G, C)
- "Chinese" (C&G)
- "Geranium" (S, C&G)
- "Hop" (C)
- "Italian Church" (S, C&G)
- "May" (C&G, C)
- "Pagoda" (C&G)
- "Pekin" (C&G)
- "Portland Vase" (C&G)
- "Queen Mary" (C&G, C)
- "Rose" (S, C&G)
- "Rose & Sprigs" (C)

"Seasons" (C&G, C)
 "Tower" (S, C&G)
 "Union Wreath" (S, C&G)
 "Warwick" (S, C&G)

In addition, fragments were identified of one pattern ("...n Vase") by Davenport, one pattern ("Fairly Villas") by John Maddock, and three patterns ("Blue Willow", "Peacock", and "Royal Gem") by unknown manufacturers.

Thirty-four fragments of white body earthenware (other than those described previously) have printed manufacturing marks. Of these, 25 are "Copeland & Garrett" or "Copeland" marks, one is a "Davenport" mark, one is a fragment of an "Ambrosial Shaving Cream" lid (similar, but not identical, to the specimen in Caywood 1955:Plate XX), 2 fragments are from a "Genuine Bears Grease" hair dressing lid, and 5 fragments are currently unidentified. The "Genuine Bears Grease" fragments are single color printed in blue, and a photograph of an identical lid appears in Clarke (1960:268, first lid in the second row). Clarke (1960:287) identifies this lid as being "Imported by John Gosnell & Co., successors to Price & Gosnell, 12 Three Kings Court, Lombard St., London."

Sixty-three hand-painted white body earthenware specimens were recovered, but only one partially complete object could be reconstructed (E14). Of the remaining 61 specimens, 30 are fragments of "banded or annular pearlware," but no ware shapes have been distinguished. No manufacturing marks were found on any hand-painted fragments.

E14 Saucer -- partially complete (2 fragments)

FOVA Field Catalog Number: FOVA 3794.

Provenience: 1966 Construction Pit (Privy Pit).

Illustrations: Figs. 9d and 11b.

Dimensions: 6" (Dia.) x 1 1/4" (H).

Manufacturing Marks: None (a similar item in the FOVA comparative ceramic collection has a "Davenport" mark).

Pattern Name: Unknown.

Pattern Colors: Leaves are green (7.5 YG 3/4); stems are black (N 1/); and flowers are red (10 RP 3/8) and blue (6.25 PB 3/12).

Four fragments of white body earthenware with embossed decoration were found, but no fragments was complete enough to be stylistically described. No manufacturing marks were observed on any specimen.

A total of 641 fragments of undecorated, white body earthenware were recovered, and these are presumably the undecorated portions of the above wares.

Yellow Glazed Earthenware. Forty-six fragments of yellow glazed earthenware were recovered, but there were no partially complete or complete objects. Most fragments appear to be from rectangular snuff bottles, but a second unidentified ware is also represented. Sixteen fragments have a "mocha" decoration, but again, it was not possible to identify any ware shapes nor were there any manufacturing marks observed.

Brown Glazed Earthenware. Thirty-one specimens with a brownish glaze were recovered, but there were no complete or partially complete objects, and no manufacturing marks were observed.

Stoneware

Composition of stoneware, like common pottery, is normally associated with the locality where the ware is made. Particular characteristics of stoneware arise not so much from the manufacturing techniques used, but rather from the qualities associated with the clay deposit. Stoneware clays are usually rich in fluxes and, provided the temperature of firing is high enough, these fluxes cause the body to be vitrified and thus non-porous. Lead glazes can be applied and matured at 1000-1100° C after a high temperature firing of the body, or leadless glazes can be applied to a biscuit body fired at a low temperature and matured together with the body. Stoneware is the only ceramic which can carry a salt glaze, and this is produced by gases created with the introduction of specific salts in the final firing. Finished wares have a brown to gray paste color which is extremely hard and non-porous (Rado 1969:Table 1, 163-166).

Read's India Pale Ale Bottle Fragments. Ninety-six fragments were recovered, but no complete or partially complete bottles were found. Six specimens have portions of the impressed manufacturing mark: "Read's India Pale Ale". Colors for the exterior and interior glazes are variable, and at least 6 different colors or "types" of bottles have been recognized (see Table 4).

Table 4 - Classification of Read's India Pale Ale Bottles on the basis of exterior, interior, and paste color.

Exterior Colors	Interior Colors	Paste Color	f
5 Y 6/4 - 7.5 Y 6/4	5 Y 2/1 - N 1.0/	10 YR 7/1	9
5 Y 6/4 - 7.5 Y 6/4	5 YR 2/2	10 YR 7/1	13
5 Y 6/4	10 YR 3/2 - 10 YR 3/4	10 YR 7/1	11
2.4 Y 5/6 - 5 Y 5/6	5 YR 2/2	10 YR 7/1	6
2.5 Y 5/6 - 5 Y 5/6	7.5 YR 3/4 - 10 YR 3/2	10 YR 7/1	39
5 Y 5/6	5 YR 2/1	10 YR 8/2	12
TOTAL			90

Chinese Ginger Jar and Lid Fragments. One hundred six fragments of "Chinese Ginger" jars and lids (see Caywood 1955:57) were recovered. Eighty-six of the fragments have a hand-painted blue decoration (2.5 PB 2/6), but no complete or partially complete wares could be reconstructed. No manufacturing marks were observed.

Assorted Ale Bottle Fragments. Fifty-six fragments of unidentified ale bottles were recovered, but no complete or partially complete bottles could be reconstructed. No manufacturing marks were observed. Colors for the exterior slip-glazed and interior unglazed surfaces are extremely variable, but range between a cream and a brown color.

Wide Mouth Jar Lid Fragments. Two fragments of a lid for a wide mouth jar were recovered, and they are similar to Specimen #428 from the FOVA Museum Vault. This specimen has a "Chinese" molded mark on its base, but it has not been identified.

Unidentified Fragments. The remaining 63 fragments of stoneware have not been identified, and no manufacturing marks were observed.

Vitreous China

Vitreous china is an off-white to white ceramic which is translucent only if thin walled. It is almost free of open or interconnected pores due to its composition and high first firing temperature of 1100-1250° C. Glazes are similar to or harder than those for earthenware, and they mature at about 950-1100° C (Rado 1969:Table 1, 167-169).

Seventy-three specimens were recovered, and they have been classified on the basis of paste color and decoration (see Table 5).

Table 5 - Descriptive classification of vitreous china by paste color and type of decoration.

Type of Decoration	Color of Paste		Total
	N 9/	N 9.5/	
Hand-painted, Multiple Colors	10	4	14
Hand-painted, Blue		41	41
Embossed		5	5
Undecorated		13	13
TOTAL	10	63	73

Hand-painted Vitreous China. Ten specimens with a white (N9/) paste are from one saucer, but only one-fourth of the saucer was recovered. This saucer has a light bluish-green (10 BG 8/1) underglaze, with the pattern consisting of a hand-painted overglaze floral design. Colors included bluish-green (2.5 BG 5/6), green (10 GY 6/6), cream (5 Y 9/1), and pink (5 RP 6/8). In addition, the rim was colored a yellowish-brown (10 YR 3/8). No manufacturing marks were present. The remaining 4 polychrome specimens were too small for description.

Hand-painted, Blue Vitreous China. Forty-one fragments of blue vitreous china with a hand-painted blue underglaze design were recovered, and represent what Caywood classified as "Chinese porcelain" (1955:56-57). The patterns are hand-painted scenes in blue (5 PB 5/6, 5 PB 4/6, and 5 PB 2/2), and represent what is commonly called "Chinese export ware" (Noël Hume 1969:261-262, Fig. 83). No complete wares were recovered, and no specimen had a manufacturing mark.

Embossed and Undecorated Vitreous China. The 18 specimens within these groups are too fragmented to be stylistically described.

Ceramic Personal Items

Earthenware

Kaolin Tobacco Pipes. A total of 379 specimens was recovered, but no complete pipes were recovered. However, a number of specimens exhibit manufacturing marks which occur on bowl and spur fragments. Marks occurring on the backs of bowls included two styles with the words "Ford Stepney" (Figs. 14b and 14c), one with "Ford Mileend London" (Fig. 14d), and one style with the initials "TD" (Fig. 14e). On the spurs of the "Ford" pipes are found the initials "F" and "I" with the initial "F" on the right (i.e. the smoker's right) and the initial "I" on the left side of the spur. The words "Mileend", "Stepney", and "London" refer to a geographic location, Mileend being the parish of Mile End within the metropolitan borough of Stepney in East London, England (Bartholomew 1914:470, 661). Thusfar, the meaning of "Ford", "F", "I", and "TD" remain unknown.

In addition to the marked specimens, there are 2 specimens with embossed decorations which are sometimes referred to as fluted. The manufacturer of these specimens is unknown.

Measurements of 332 specimens for diameter of stem holes (Fig. 15) demonstrates that the average diameter of stem holes is 1.51 mm. (i.e. slightly less than 4/64 inch).

Marble. One undecorated, earthenware marble (FOVA 1129) was recovered with a diameter of 19.5 mm. (49/64 inch).

Fig. 14 - Details of glass bottles, ceramic pipes, and a Hudson's Bay Company lead seal.

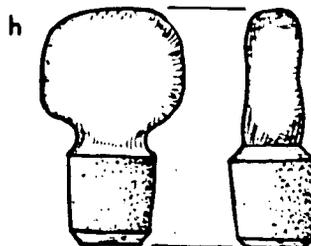
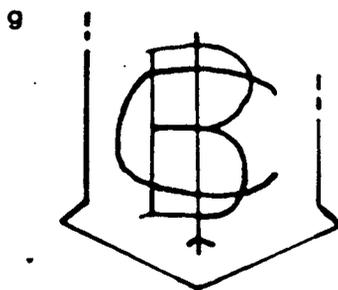
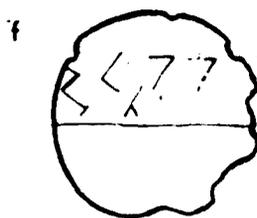
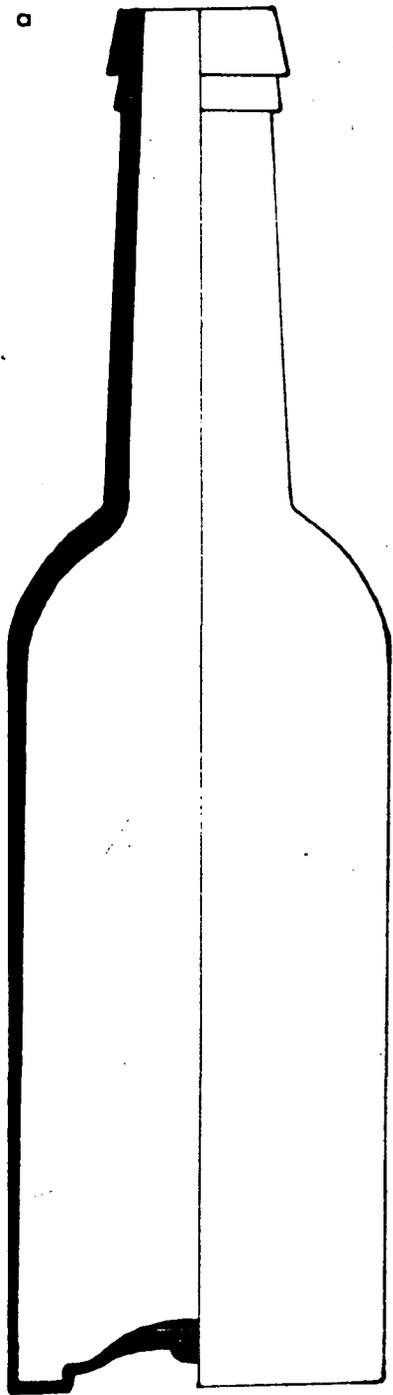
a Blown-in-mold bottle with laid-on rim (B2)

b - e Stamped marks on kaolin tobacco pipes

f Scratched marks on reverse of a Hudson's Bay Company lead seal (FOVA 1132)

g Detail of molded mark from a glass bottle base (FOVA 577)

h Glass bottle stopper (FOVA 878)



5 cm.
2 in.

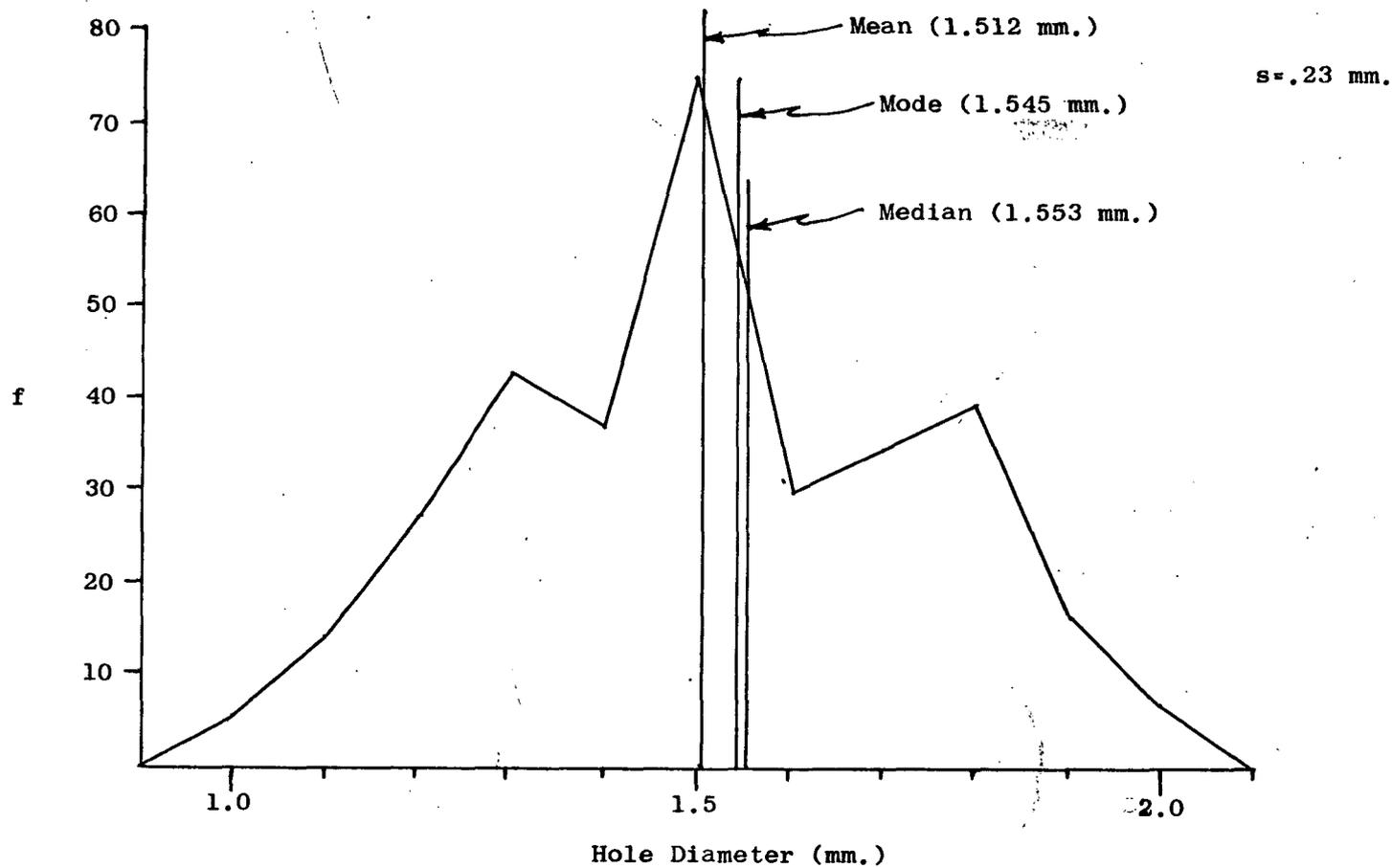


Fig. 15 - Frequency Distribution of Kaolin Tobacco Pipe Hole Diameters (N=332).

Vitreous China

"Small China" Buttons. Five white, "small China" buttons were recovered and are described below:

"Calico" Buttons -- complete (4 specimens)

FOVA Field Catalog Number: FOVA 2330.

Provenience: F104 (Burial).

Illustration: Fig. 20a.

Dimensions: 3/8" (Dia.).

Pattern Description: Transfer printed clusters of green (5 G 3/6) dots.

Number of Holes: 4.

"Piecrust" Button -- complete (1 specimen)

FOVA Field Catalog Number: FOVA 1078.

Provenience: F110, SW, 1.5-2.0'.

Dimensions: 3/8" (Dia.).

Pattern Description: Embossed lines radiating from the center.

Number of Holes: 4.

Marble. One white and blue, hand-painted china marble (FOVA 718) was recovered with a diameter of 18.5 mm. (47/64 inch).

Glass Items

A total of 2004 specimens of glass was recovered which has been divided into 5 descriptive categories (Table 2).

Bottles, Tumblers, and Stemmed Glassware

Included within these categories is all curved glass which cannot possibly fit another category such as beads, insulators, etc. A total of 1276 specimens was recovered from which 4 complete or partially complete objects were reconstructed.

Bottles. One complete and two partially complete bottles were recovered.

B1 Bottle -- complete

FOVA Field Catalog Number: FOVA 2466.

Provenience: N170 W5, 1.0-1.5'.

Manufacturing Marks: 1) Printed on a paper and foil label are the words "Lucky Lager", "Vancouver, Wash.", and "Net Contents One Quart."

2) Impressed on the bottle base are

"20 @ 49" and "2245-CX".

Color: Amber.

Comments: This bottle is presumed to have been deposited during the late 1940's or early 1950's by Caywood's crew.

- B2 Bottle -- partially complete (5 fragments)
FOVA Field Catalog Numbers: FOVA 3720, 3815.
Provenience: F158; 1966 Construction Pit (Privy Pit),
Illustrations: Figs. 14a and 16b.
Dimensions: 7 3/8" (H) x 2" (Dia.).
Manufacturing Marks: None.
Color: Clear with a bluish-green tint.
Comments: Handblown in a mold with a laid-on rim attached after molding.
- B3 Bottle -- partially complete (2 fragments)
FOVA Field Catalog Numbers: FOVA 3721, 3816.
Provenience: F158; 1966 Construction Pit (Privy Pit).
Dimensions: 7 1/2" (H) x 2" (Dia.).
Comments: Identical to B2.

There are 22 specimens which have manufacturing marks, but only 4 marks are complete enough to be recognizable, and they all occur on bottle bases.

The first mark (FOVA 713) is shown in Fig. 15c and consists of the words "axlehners Bitterquelle" and "Hunyadi Janos". Julian Toulouse (1970:62) states that Hunyadi Janos is the brand name for Saxlehner's Bitterquelle (Bitter Spring), an Austrian mineral water. Hunyadi Janos also represents the Hungarian name of "John Huniades or Joannes Corvinus, a Hungarian general and national hero (1387?-1456); leader against the Mohammedans and bulwark against their threatened overwhelming of western civilization." (Funk 1926:1198.)

The second mark (FOVA 577) shown in Fig. 14g, contains the letters "C" and "B" in a monogram within a shield border. No other information is available.

The third mark (FOVA 1208) is "20-50" and "H" embossed on amber glass. This probably represents the base of a modern beer bottle.

The fourth and last mark occurs on 2 bottle bases (FOVA 990 and 1254), and consists of the letter "B". No other information is available.

Other types of bottles for which fragments are present include wine, rum, stock, bitters, and soft drink bottles. No complete or partially complete specimens were recovered.

One complete stock bottle stopper (FOVA 878) was recovered and appears as Fig. 14h. It does not fit any stock bottle mouth fragments thus far recovered.

Tumblers. Of the tumbler fragments, only one partially complete round

Fig. 16 - Miscellaneous artifacts.

a Reverse of Hudson's Bay Company lead seal showing scratched marks (FOVA 1132)

b Blown-in-mold bottle with laid-on rim (B2)

c Base of "Hunyadi Janos" mineral water bottle (FOVA 713)

d Glass drinking rumbler (T1)

based tumbler has been reconstructed, but there are 2 additional round bases, one 10-sided base, and one 14-sided base. No manufacturing marks are present.

TI Tumbler -- partially complete (6 fragments)
FOVA Field Catalog Numbers: FOVA 3722, 3723.
Provenience: F158 (Privy Pit).
Illustration: Fig. 16d.
Dimensions: 3 3/4" (H) x 3 1/8" (Dia., at rim).

Stemmed Glassware. Two fragments of stemmed glassware were recovered, but they are too fragmentary for description.

The remaining fragments of curved glass are too small for meaningful description.

Window Glass

Window glass is described as any flat glass which does not have a metallic coating (i.e. is not mirror glass). There were 515 specimens of window glass recovered, and the only attribute measured was thickness. Thickness measurements varied from 0.8 to 3.3 mm. (ca. 2/64 - 8/64 Inch) with a mean of 1.56 mm. and a standard deviation of 0.48 mm. (see Fig. 17). Thickness measurements show a positive skewness, and on the basis of these measurements, there appears to be more than one population of window glass. However, before these populations can be defined, analyses of the attributes of density and spatial locations should be undertaken. Relying on the attribute of thickness alone would cause problems since individual specimens have been measured which vary in thickness as much as 0.7 mm. These were not included in the above statistical analysis.

Mirror Glass

Mirror glass is defined as any flat glass with a metallic coating on one side, and 32 specimens were recovered. As with window glass, the attribute of glass thickness was measured. Measurements varied from 1.3 to 3.0 mm. (ca. 3/64 - 7/64 inch). The frequency distribution of individual measurements appears as Fig. 17, but because the sample was so small, no statistics were computed.

Beads

A total of 166 beads was recovered, and they have been described according to color, size of bead, size of hole, type of reflection, and number of facets (see Appendix VII). At this time, no description of bead shape was made because of the subjective nature of this attribute, but once populations of beads are defined on the basis of the above attributes, then an attempt will be made to define bead shape in a

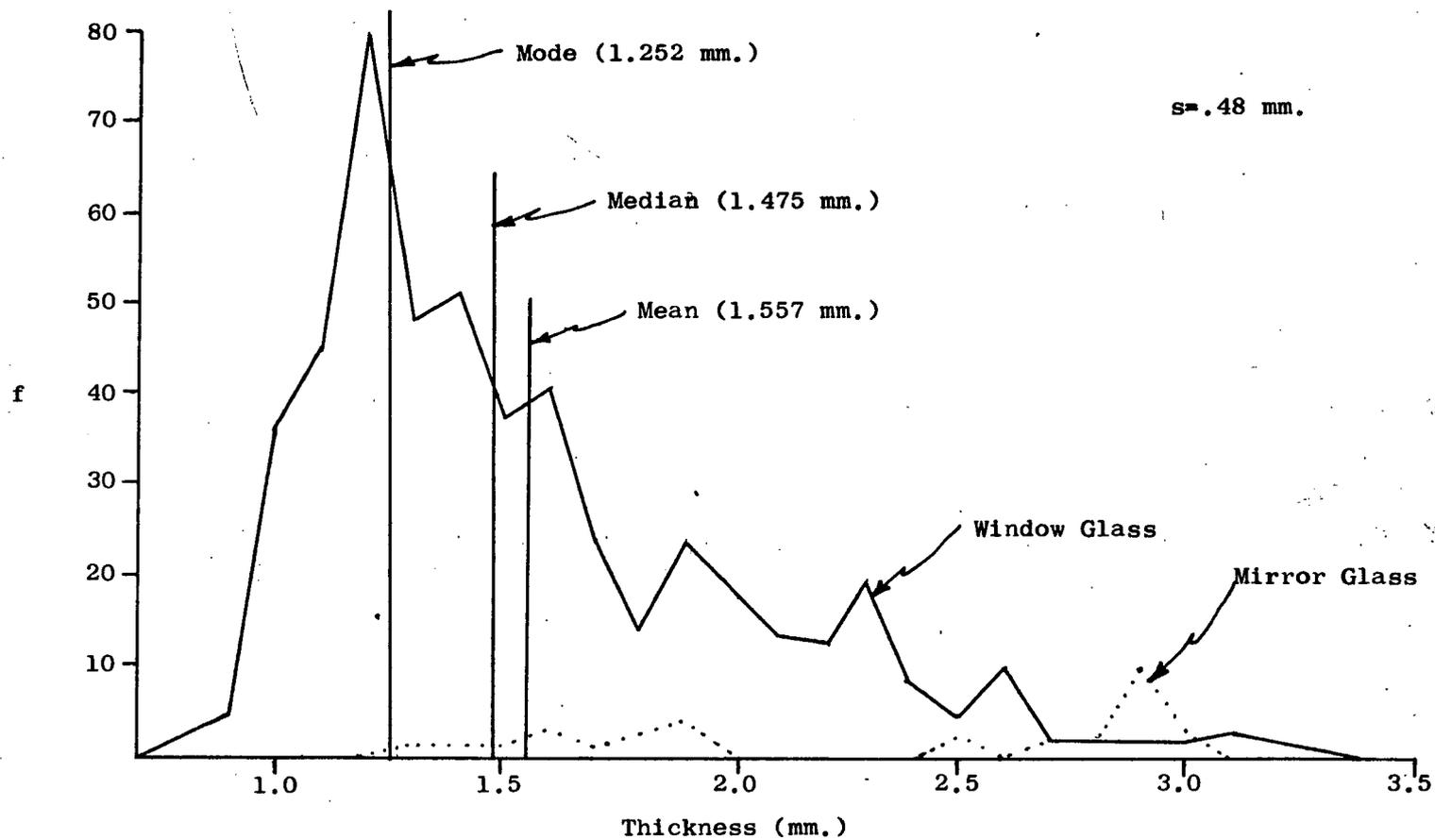


Fig. 17 - Frequency Distribution of Window Glass (N=513) and Mirror Glass (N=32) Thickness.

descriptive meaningful fashion. For the purpose of visual recognition, reference is made to the classification system for glass beads as developed by Kenneth and Martha Kidd (1970). A copy of their identification chart for tube beads will serve as a visual reference for our tube beads (Fig. 18), and a comparison between the beads recovered and Kidds' identification numbers is presented as Table 6. Types of beads recovered included hot tumbled and ground tube beads, wound beads, and one hot tumbled pressed or molded bead. One tube bead (FOVA 1230), whose primary color is white (N 8.0/), has four stripes running parallel to the long axis (Fig. 20c). The color of these stripes is gray (N 3.0/).

The pressed or molded bead (FOVA 1230) has 48 facets, 2 drilled holes, and may represent a 20th Century bead.

Glass Rods and Strips

Fifteen unique specimens of glass, in the shape of rods and strips, were recovered from one Privy Pit (F158); and they have been described on the basis of color, reflection, size, and shape (Table 7). One clear strip (FOVA 3726) has 5 ridges running lengthwise (Fig. 19e). No specimen is complete, if such a term can be applied; rather, each is broken at both ends (Fig. 19a-1).

Presently, there is no functional explanation for these specimens, but their colors are similar to some bead colors. This may or may not be a significant relationship.

Metal

A total of 3532 metal specimens was recovered and the identified specimens have been divided into 3 major functional categories: hardware items, household and personal items, and weaponry. Within each of these categories, the specimens are identified by descriptive labels (Table 8). Only those objects requiring further description will be discussed below.

Hardware Items

Square Nails. A total of 1726 square nails was recovered of which 351 were complete. Measurements of each complete nail were made for nail length, shank width and thickness (defined according to taper), and head width and thickness. In addition, descriptions were made of the head shape, and each nail was identified as either machine-cut or forged.

On the basis of shank width and thickness measurements, machine-cut nails can be quantitatively distinguished from forged nails, and

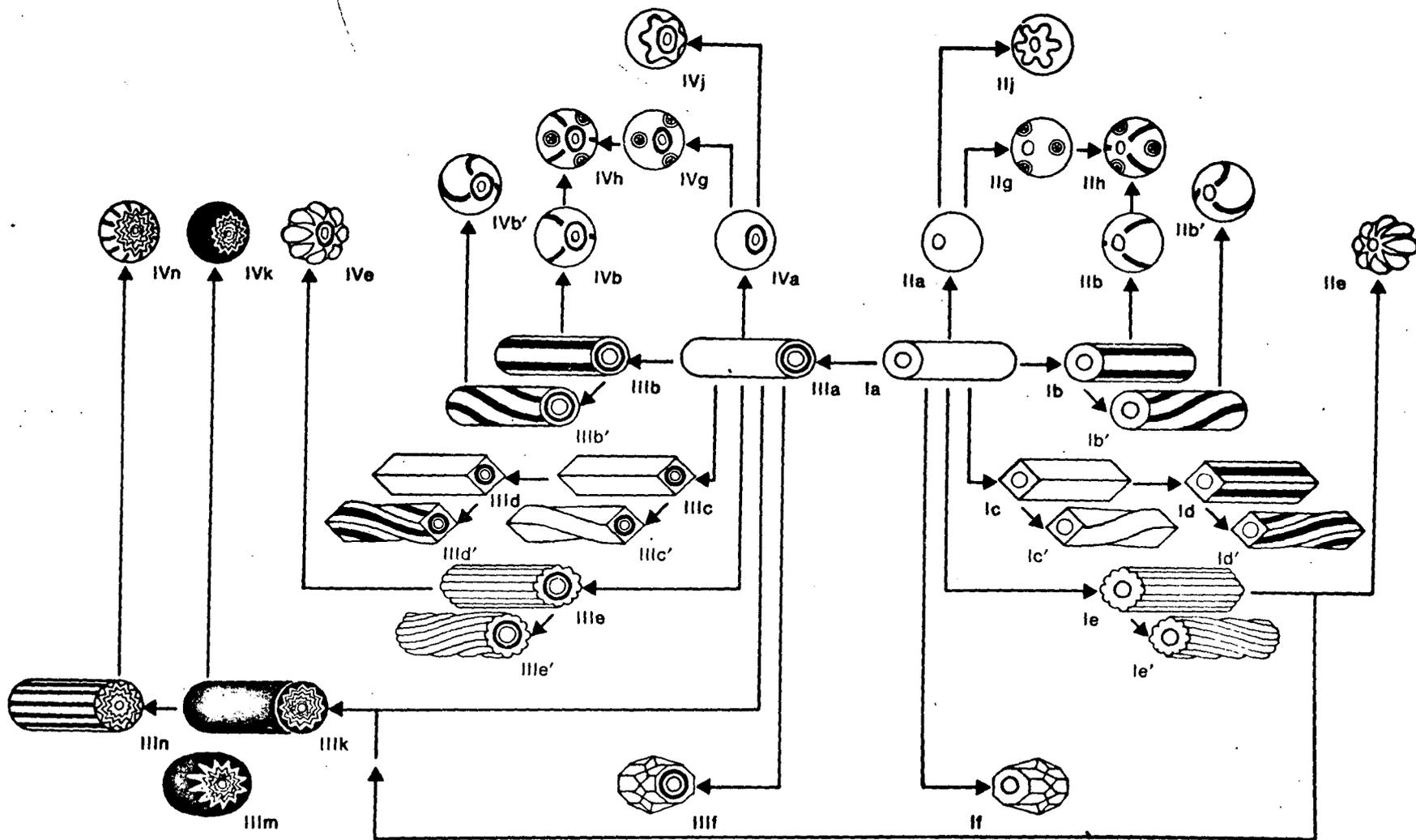


Fig. 18 - Identification chart for tube beads (Kidd & Kidd 1970:Fig. 3).

Table 6 - Comparison of beads recovered at Fort Vancouver with Kidds' (1970) identification numbers.

Kidds' Identification Number	Color		Stripes		Reflection	Number of Facets	Total
	Primary	Secondary	#	Color			
IIa	N 9.5/				Opaque		78
	N 9/				Opaque		24
	N 8.5/				Opaque		2
	2.5 Y 8/2				Opaque		8
	2.5 Y 8/4				Opaque		2
	2.5 Y 9/2				Opaque		29
	5 Y 8.5/1				Opaque		1
	5 Y 9/4				Opaque		1
	2.5 PB 3/10				Translucent		2
	5 B 4/8				Translucent		1
	5 B 6/6				Opaque		1
	10 B 3/8				Opaque		1
	10 BG 3/4				Translucent		1
IIb	N 8/		4	N 3/	Opaque		1
III f	Clear*	Whitish*			Clear & Translucent	18	1
	7.5 PB 3/10	7.5 PB 7/6			Translucent	18 or 20	3
IVa	6.25 R 3/12	N 9/			Opaque		6
WIIb (Wound Beads)	5 B 5/8				Opaque		1
	7.5 B 5/8				Opaque		1
WIIc (Wound Bead)	10 R 2/6				Translucent		1
(-) (Pressed Bead)	Whitish*	2.5 YR 5/14			Translucent	48	1
TOTAL							166

* Color cannot be determined with the Munsell Color System.

(-) This pressed or molded bead is not classifiable within Kidds' system. The hole in this bead is formed by 2 separately drilled holes which join at ca. 130° angle in the center.

Table 7 - Description and measurements of glass rods and strips.

FOVA Catalog Number	Shape	Dimensions (mm.)			Color	Reflection
		Width	Thick.	Dia.		
3725	Rod			2.26	7.5 PB Max	Translucent
3725	Rod			1.10	7.5 PB 8/4	Translucent
3725	Rod			1.40	N 8.5/	Translucent
3725	Rod			1.68	N 8.5/	Translucent
3726	Strip	9.10	1.50		Clear	Clear
3726	Strip	6.16	1.00		7.5 PB 3/12	Translucent
3726	Strip	6.10	1.70		10 BG 5/6	Translucent
3726	Strip	7.32	1.04		10 BG 5/6	Translucent
3726	Strip	5.68	1.16		N 9/	Translucent
3726	Strip	4.86	1.22		N 8.5/	Translucent
3726	Strip	6.80	1.08		N 9/	Translucent
3726	Strip	6.74	1.10		N 9/	Translucent
3726	Strip	7.70	1.24		N 9/	Translucent
3726	Strip	10.24	1.64		N 8.5/	Translucent
3819	Strip	5.12	1.08		N 9/	Translucent

Fig. 19 - Glass rods and strips.

a - d Glass rods of undetermined functions (FOVA 3725)

e Ridged strip of clear glass (FOVA 3725)

f - l Glass strips of undetermined functions (FOVA 3726, 3819)

Fig. 20 - Miscellaneous artifacts.

- a Vitreous china button of the "Calico" pattern (FOVA 2330)
- b Vitreous china button of the "Piecrust" pattern (FOVA 1078)
- c Gray on white glass bead (FOVA 1230)
- d Slate pencil (FOVA 3729)
- e Hudson's Bay Company trade finger ring with stamped metal body and green set (FOVA 1023)
- f Native American stone projectile point (FOVA 1231)
- g Lustreware cup (CPI)

Table 8 - Quantitative distribution of all metal specimens by descriptive category.

Descriptive Category	Subtotal	Total
Hardware Items		3091
Square Nails	1726	
Wire Nails	887	
Wire	200	
Straps	168	
Iron Stock	27	
Washers	10	
Bolts	7	
Screws	7	
Staples	7	
Hooks	6	
Pipe	5	
Bolt Washers	4	
Nuts	4	
Muleshoes	4	
Files	3	
Lock Plates	3	
Trap Parts	3	
Shutter Latch Nails	3	
Tie Rods	2	
Nut Caps	2	
Keyhole Plate	1	
Tire Stem	1	
Tire Grommet	1	
Pintle	1	
Piton for Logs	1	
C-clamp	1	
Open Wrench	1	
Hinge Pin	1	
Wedge	1	
Roofing Hatchet	1	
Cotter Pin	1	
Hacksaw Blade	1	
Rivet	1	

Table 8 (cont'd.)

Descriptive Category	Subtotal	Total
Household and Personal Items		45
Containers or Cans	28	
Buttons and Snaps	6	
Utensils	4	
Thimble	1	
Needle	1	
Belt Buckle	1	
HBC Trade Ring	1	
Bicycle Bell	1	
Coin (1966 Canadian Penny)	1	
Hudson's Bay Lead Seal	1	
Weaponry		38
Cartridges	27	
Cartridge Clips (30-06)	5	
Bullets and Ball	3	
Powder Flask	1	
Artillery Primer	1	
Smoke Grenade	1	
Unidentified Metal		358
TOTAL		3532

Fig. 21 shows the 2 population distributions of cut and forged nails as plotted against the ratio for thickness/width. Further, when individual ratios are plotted against nail length, we find that machine-cut nails cluster around 2 penny sizes -- 8d and 10d. However, as far as we can determine, forged nails do not cluster about any penny size. Forged nails of 8d and 10d size are scarce, and it may be that these sizes are regularly filled by machine-cut nails. Machine-cut nails rarely exceed 40d (12.8 cm.), but forged nails have been found as long as 19.0 cm. These would undoubtedly be classified as spikes.

As our sample increases, it will be possible to statistically test the above hypothesis as well as define valid nail populations utilizing the attributes of head size and shape. Our anticipated results should show associations between nail styles and construction methods (i.e., framing, roofing, sheathing, etc.).

Household and Personal Items

Containers or Cans. Twenty-eight can fragments were recovered including one tobacco can, one k-ration can, and one shoe polish can containing polish. No manufacturing marks were present.

Buttons and Snaps. Four buttons were recovered including 2 undecorated flat, loop shank, non-ferrous buttons (FOVA 904 and 1234), and 2 fabric-covered, composite dome, ferrous buttons (FOVA 1234 and 1526). No manufacturing marks could be distinguished.

Two snap parts were also recovered, but no manufacturing marks were present.

Utensils. Two fragments of forks were recovered including one 2-pronged fork (FOVA 684) and one 3-pronged fork (FOVA 1437). The 2-pronged specimen is missing one tine and its handle. Also recovered were one utensil mid-section (FOVA 1386) and one knife blade (FOVA 3706).

Hudson's Bay Company Trade Ring. One partially complete Hudson's Bay Company trade ring (FOVA 1023) with a stamped non-ferrous body and a green glass inset was recovered (Fig. 20e).

Hudson's Bay Company Lead Seal. This seal (FOVA 1132) contains a small portion of the Hudson's Bay Company crest impressed on one side with hand scratched marks on its opposite side (Figs. 14f and 16a). The hand scratched marks are complete, except where noted by dashed lines, but their meaning is unclear.

Weaponry

Cartridges. Twenty-seven cartridge cases were recovered including

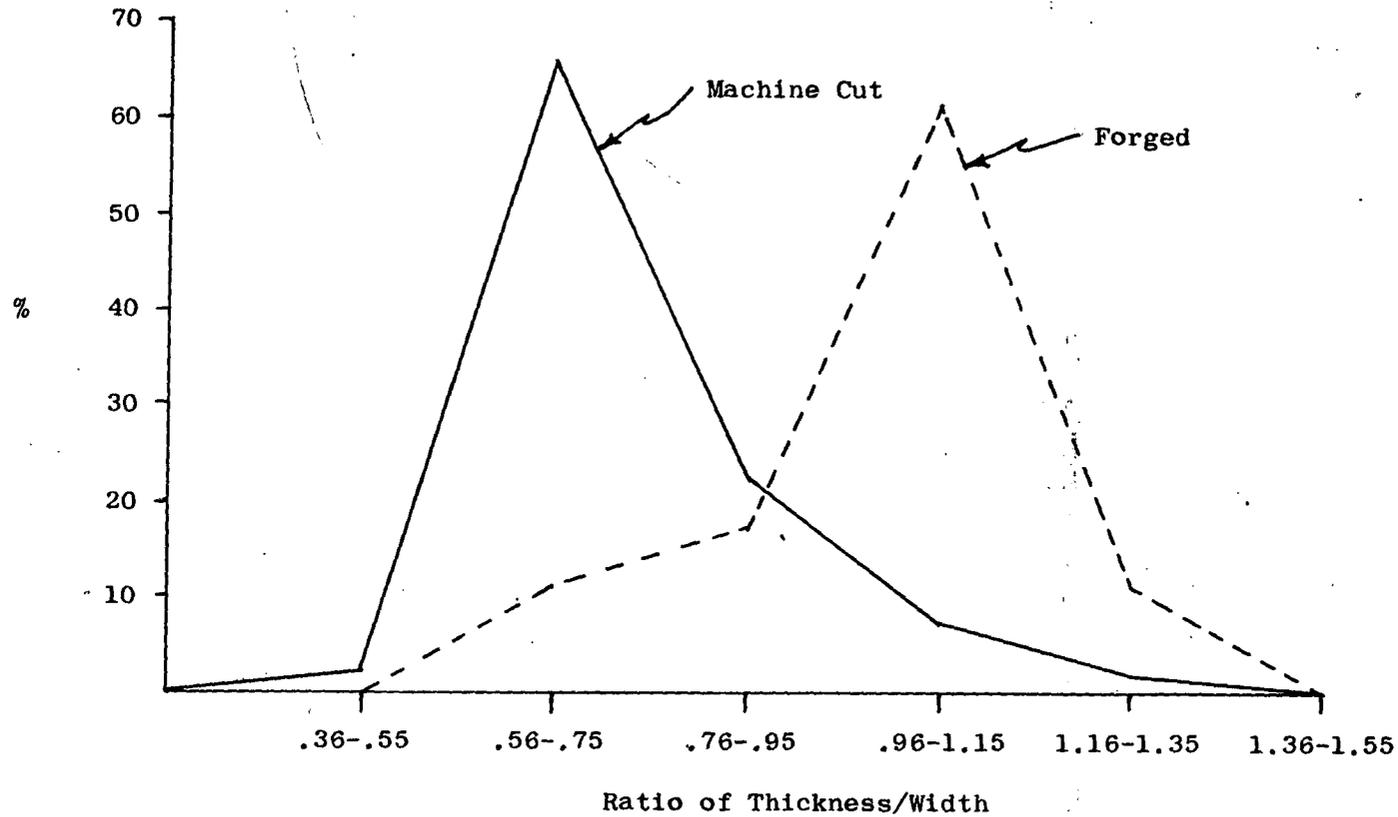


Fig. 21 - Percentage Distribution of Machine Cut and Forged Nails as Plotted Against the Shank Thickness/Width Ratio.

45-70 Government, 30 Krag-rimmed, and 30-06 Springfield cartridges, all standard U.S. Army issue. Headstamps of the 45-70's indicate manufacture at Frankfort Arsenal between May 1883 and March 1889. Partially obliterated stamps may be of earlier dates. A single 30 Krag-rimmed case was stamped Frankfort Arsenal, March 1900. The 30-06 Springfield cartridge cases are mainly from Frankfort Arsenal, but Union Metallic Cartridge and United States Cartridge companies are also represented. Headstamped dates range from November 1904 to April 1917.

Bullets and Balls. Two bullets were recovered including one 58 Springfield "Minie" ball (FOVA 1374) and one 45 caliber Colt Automatic Pistol bullet (FOVA 2433). One lead ball (FOVA 2671) measuring 14.3 mm. (36/64 inch) in diameter was also recovered.

Powder Flask. Half of a brass, embossed powder flask (FOVA 847) was recovered which is decorated with a "Shell and Bush" pattern (see Riling 1953:290, #359). No manufacturing mark was observed.

Construction Material

A total of 1746 specimens of construction material was analyzed including bricks, mortar, plaster, tile, electrical insulators, and paint chips (Table 2). In Appendix II, there are 1738 items cataloged, and the discrepancy of 8 specimens reflects the breakage of some bricks during storage. Only brick will be discussed below, since the other categories are relatively nondescript.

Brick

A total of 1458 brick specimens was analyzed and this represents the addition of 8 more specimens than originally cataloged due to breakage. The brick analyzed has been grouped into 9 descriptive classes on the basis of composition and relative hardness (Tables 9 and 10). In addition, the variations of matrix and surface color for each class has been described (Table 11). Only one class of brick (Class #6) exhibited manufacturing marks consisting of the impressed letter "W" (or "M") and "N". On the basis of color and thickness measurements, Class #6 can be subdivided into 2 groups, but only one specimen was recovered which fits the second group. Both groups have impressed letters.

No complete bricks were recovered, and the only measurement which could be taken in any quantity was thickness. Fig. 22 shows the frequency distribution for thickness of the 3 major classes, and as can be seen, there are at least 4 different sizes of brick. The 4 thicknesses correspond to 1 3/4", 2", 2 1/4", and 2 1/2". The 1 3/4" and 2 1/4" brick comprise Class #1, 2" brick comprises Class #7,

Table 9 - Descriptive classes of brick based upon composition and relative hardness.

			Relative Hardness	
			Soft	Hard
Composition	Silt	Pebbles Present	Class #1	Class #2
		Pebbles Absent	Class #3	Class #4
	Sand	Pebbles Present	Class #5	Class #6
		Pebbles Absent	Class #7	Class #8
	Gravel		Class #9	

Table 10 - Frequency distribution of brick by individual class.

Class	Quantity	Percentage
#1	655	44.9%
#2	5	0.3%
#3	70	4.8%
#4	8	0.6%
#5	41	2.8%
#6	456	31.3%
#7	179	12.3%
#8	19	1.3%
#9	25	1.7%
TOTAL	1458	100.0%

Table II - Color variation of matrix and surface for each brick class.

Class	Matrix Colors	Surface Colors (if different than matrix colors)	Other Classes with Same Colors
#1	10 R 4/8 10 R 4/10 2.5 YR 4/8 2.5 YR 4/10 2.5 YR 5/10		2, 4, 5, 7, 8
#2	5 R 5/1 7.5 R 4/4 10 R 4/8 10 R 5/8 10 R 5/10 2.5 YR 4/6 5 YR 3/1		1, 4, 5, 7, 8 5, 7
#3	5 YR 6/6		
#4	10 R 4/6 10 R 4/8 10 R 5/6		7 1, 2, 5, 7, 8
#5	10 R 4/8 10 R 5/8		1, 2, 4, 7, 8 2, 7

Table II (Cont'd.)

Class	Matrix Colors	Surface Colors (if different than matrix colors)	Other Classes with Same Colors
#6	7.5 R 4/4	10 YR 7/6 2.5 Y 8/4	
	7.5 R 4/6		
	7.5 R 5/6	2.5 Y 8/4	
	10 R 4/2	10 YR 7/6	
	10 R 4/4	10 YR 7/6 2.5 Y 7/6	
	10 R 4/6	2.5 YR 6/6 5 YR 6/6 10 YR 7/6 2.5 Y 7/4 5 Y 7/4 5 Y 8/4	
	10 R 5/6	10 YR 7/6	
	2.5 YR 4/4	5 YR 7/6	
	2.5 YR 4/6	10 YR 8/4 2.5 Y 8.5/4	
	2.5 YR 5/6		
	10 YR 7/6	2.5 Y 7/6	
	10 YR 9/2		
	#7	10 R 4/6	
10 R 4/8			
10 R 5/8			
2.5 YR 5/8			
#8	10 R 3/6		1, 2, 4, 5, 7
	10 R 3/6		
#9	2.5 YR 7/6		
	2.5 YR 6/8		
	5 YR 7/4		
	5 YR 7/8		
	7.5 YR 7/6		

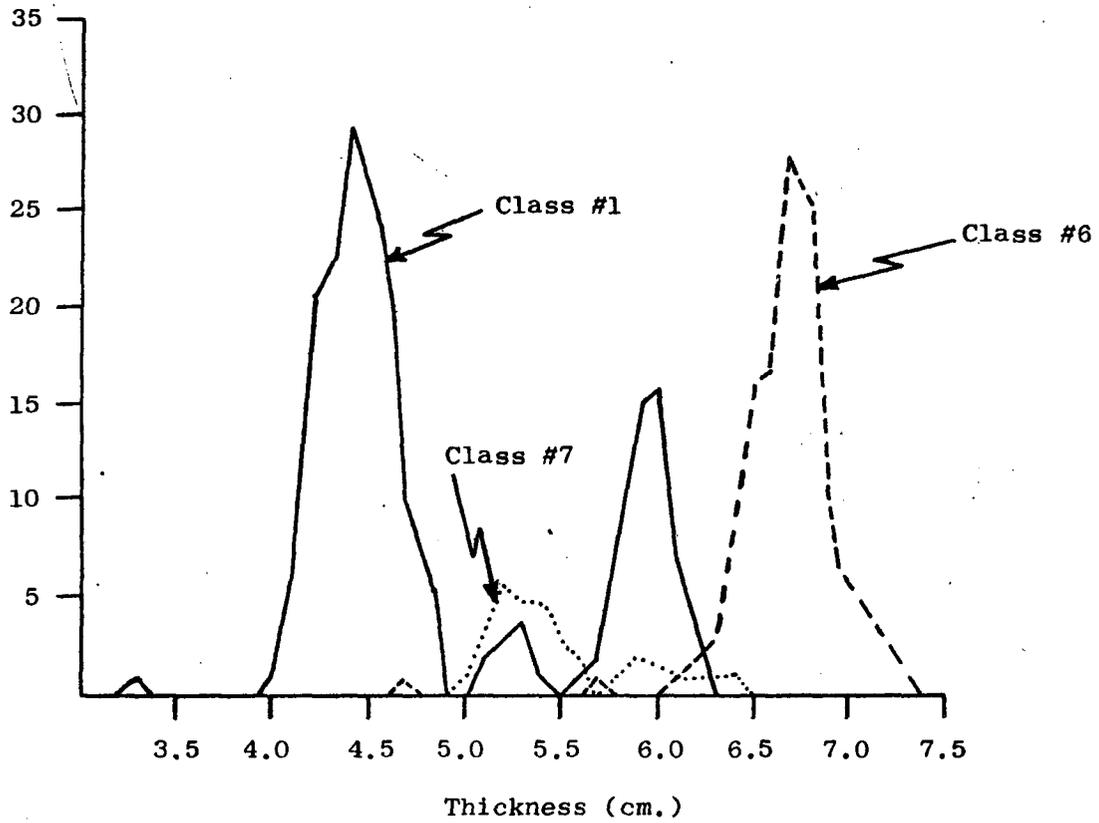


Fig. 22 - Frequency Distribution of Thickness for the Three Major Brick Classes.

and 2 1/2" brick comprises Class #6. Correlations of thickness to width measurements show that 1 3/4" brick is either 3 3/4" or 4 1/2" wide; 2" brick comes in either 2", 3 1/4", or 4" widths; and 2 1/2" brick is 4 to 4 1/4" wide.

Class #6 brick was also recovered by Louis Caywood, and some of his specimens were complete. Average measurements of the complete specimens were 9" x 4" x 2 1/2" (Caywood 1955:58); but specimens currently housed in the FOVA museum vault measure 8 1/2" x 4" x 2 1/2". According to Nathaniel Lloyd, English brick dimensions were regulated by statute. In 1776, Statute 17 of King George III stated that brick dimensions would be 8 1/2" x 4" x 2 1/2" for every part of England (Lloyd 1925:12). Thus, Class #6 brick is quite probably English brick which was transported as ballast in Hudson's Bay Company ships.

The remaining classes of brick are predominantly of a red or orange color. Caywood felt that this type of brick was "undoubtedly manufactured locally." (1955:58.) If Caywood had any historic evidence for this statement, it has not been published. From the historic information obtained, the only references to local brickmaking include:

1. "The Hudson's Bay Company were the first to make brick in Vancouver, some time before 1846. Their yard was located on the low land west of the city, not far from the present railroad passenger station. Frank DuPuis told me that he often saw the old pits as he went that way to the old Petran place to play. This was a soft mud yard, as were all the early yards here and in the Portland area." (Hidden 1930:131.)

2. On the 9th of June, 1841, "...we started for the Yam Hills, which divide the valleys of the Willamette and Faulitz...We passed one or two brick-kilns, and finally reached the new residence of George Gay, one of the most remote on this side of the river...His dwelling was to all appearance a good shanty..." (Wilkes 1845:356-357.)

3. "...a company from Baltimore are now building a brickyard." (Anonymous quotation in the St. Louis Reveille /taken from the Platte Argus and originally from a letter from Multnomah City/ 1844:405.)

As far as can be determined, there are no other published references to a Hudson's Bay Company brickyard associated with Fort Vancouver, and the only locality where bricks appeared to have been made locally was in the Willamette Valley. As for the reference to a brickyard being built in 1844, it would appear that this account may be inaccurate in light of the following historic accounts of brick buildings in the Willamette Valley from 1842-1853:

1. "...the brick house built by George Gay in 1842 - the first in Oregon - on the line between Yamhill and Polk Counties." (Anonymous 1918:174-175.)

2. In 1833 George Gay "...homesteaded a section of land lying two miles southwest of Wheatland ferry and about ten miles north of Salem on the old Dayton-Salem river road. Mr. Gay at once built a small house upon his homestead and it was not until a number of

years later that he began the construction of the 'brick house,' which to this day it is called among Wheatland ferry pioneers. The clay for the house was tromped barefooted and the bricks were molded and burned on the homestead. In 1843 the house was ready for the family...In 1872 the farm was sold to Mrs. Alice Booth...Her son, Israel, and her grandson, Tom Collister, farmed the homestead for more than 54 years...and it is still known as the Booth-Collister farm." (Madsen 1930.)

3. "In 1843 George Gay built the first brick house in Oregon." (Holman 1910:14.)

4. In Oregon City in 1844 workers were "...engaged at Abernethy's mill on the island, and on his new store, the first brick business house in the settlement." (Dye 1911:656-657.)

5. "Abernethy must have been successful in his business, as the records show that he had a brick store building in 1847..." (Bibler 1943:252.)

6. "I found one brick building here in this place used by Abernethy, Clark & Co. as a general merchandise store. I am told that this is the only brick building in the whole territory of Oregon. I talked with quite a number of persons who wanted brick flues built in their dwelling, but said there was no brick to be had in this country." (Conyers 1906:508, entry for Sept. 25, 1852.)

7. In Portland "wooden buildings continued to be the rule until 1853, when W.S. Ladd erected a small building for store purposes on Front Street." (Gaston, Vol. 1, 1911:238.)

8. A list by Edward Failing of brick buildings erected in 1853 in Portland includes:

"W.S. Ladd, 103 Front Street, between Stark and Washington;
D.C. Coleman, southeast corner Front and Oak (cost \$9,500);
Lucien Snow, Front Street, between Pine and Oak;
F.B. Miles & Co., southwest corner Front and Pine (cost \$13,500)." (Gaston, Vol. 1, 1911:238-239.)

9. The address for the brick building built by W.S. Ladd is noted by Jean Brownell (n.d.) as being in error. The address of 103 Front Street (as given in Edward Failing's list) "...should read 105 Front. The Ladd building address before 1878 was 73 Front, and the early newspaper ads (Oct. 1853) give the address as 42 Front."

Thus, it was not until 1853 that relatively large quantities of brick became available in the Willamette Valley; prior to that time, only 2 brick buildings had been constructed and they were built in the early 1840's. Sources for the brick used in those buildings of the 1840's have not been located, and the George Gay house is the only structure with remains still in existence. The Abernethy, Clark & Co. store was washed away in the flood of December 1861 (O'Mera 1943: 144).

Attempt to identify the specific sources of the red and orange brick recovered from Fort Vancouver have been unsuccessful. However, one hypothetical source which bears further historic attention is the

private brickyard, or brickyards, located within the Willamette Valley which supplied bricks for George Gay's house and possibly the Abernethy, Clark & Co. store.

Stone

A total of 20 stone artifacts was recovered (see Table 2).

Slate Tablets. Of the 11 specimens of slate tablets, only 2 retained a portion of an edge. The edges of these specimens are beveled and their thickness is 3.3 mm. (8/64 inch).

Slate Pencils. Of the 5 specimens of slate pencils, there is one complete pencil (FOVA 3729). It measures 12.2 cm. (ca. 4 3/4 inches) long and varies from 3.5 to 5.6 mm. in thickness (Fig. 20d). On 2 opposite surfaces, near the butt, there are marks which form the letter "A". These marks have been incised with a sharp instrument and were made after the pencil was completed.

Native American Artifacts. The 3 specimens within this category include a projectile point (FOVA 1231), a pecked and grooved stone or maul (FOVA 1418), and a worked flake (FOVA 1041). For an illustration of the projectile point, see Fig. 20f.

Sandstone Sharpening Wheel. One fragment of a circular sharpening stone (FOVA 916) was recovered, but no identifying marks could be found.

Leather

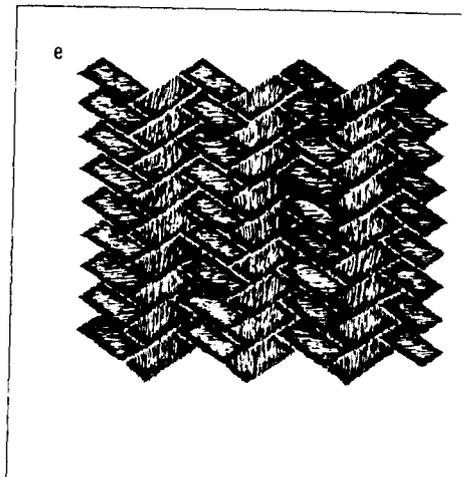
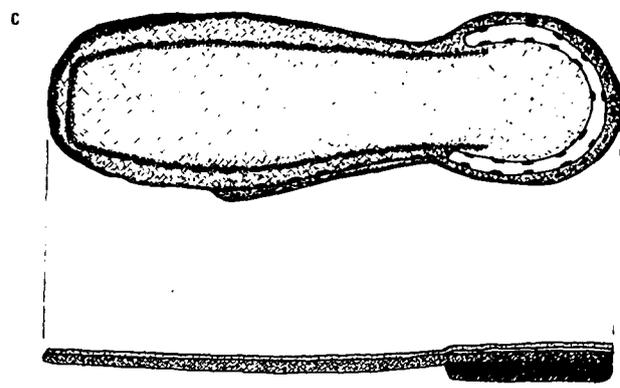
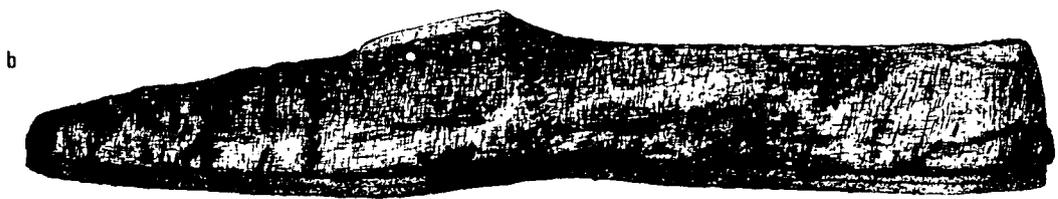
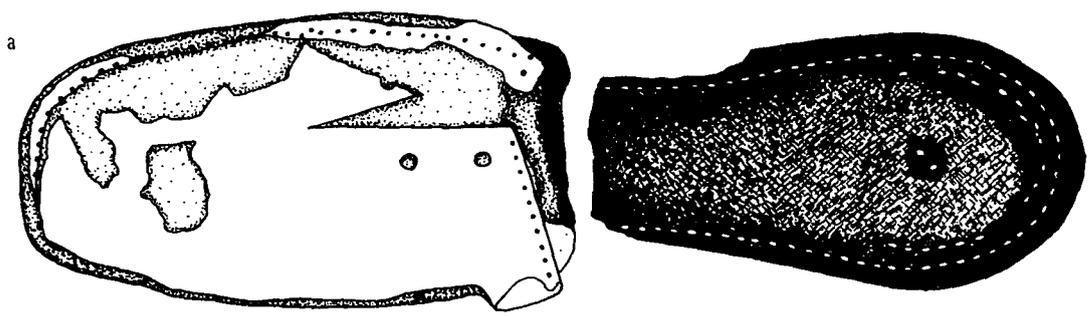
Ten fragments of leather were recovered of which 8 were shoe fragments (FOVA 2335) from the burial (F104). One was a modern glove with a plastic button inscribed "Meyers made NY" and the remaining fragment was part of a child's shoe sole (FOVA 3730).

The shoe from the Burial has been reconstructed as a handmade, hard sole moccasin (Figs. 23a, b, d). The upper consists of 2 pieces of soft, thin leather which have been sewn together along the sides (Fig. 23b). The instep has been cut to allow the leather to spread and 4 holes, 2 on either side of the cut, were punched to hold a shoestring. The sole construction consists of an outsole, a midsole, the overlapping upper, and an insole (Fig. 23d). These pieces were all handstitched with the stitches showing through the bottom. Apparently, no tacks, screws, or nails were utilized. The overall length of the complete shoe is ca. 9 1/2 inches.

The child's shoe is a single sole with an overall length of ca. 5 1/4 inches. Construction consists of an outsole, an insole, a portion of the upper between the outsole and insole in the heel,

Fig. 23 - Shoes and fabric.

- a, d Plan and sectional views of laced moccasin fragments from the Burial
- b Reconstructed view of the laced moccasin from the Burial
- c Two views of a child's shoe
- e Weave detail of cloth found with the Burial



5 cm.
2 in.

and a two-piece low heel (Fig. 23c). The sole exhibits a unique stitching in that the stitches do not go completely through the outsole; rather, the outsole has had 2 parallel cuts placed along the stitchline and the stitches pass from one cut through the outsole and out the parallel cut without passing through the bottom of the outsole.

Cloth

The 3 fragments of cloth were from the Burial (F104). These fragments, were cleaned by Susan D'Amato (Midwest Archeological Center), and at least 2 types of fabric can be described (see letter from D'Amato to Hoffman, 1-26-72).

One fragment is a yellowish-brown lightweight wool with an S-twist and a twill weave (Fig. 23e). One large fragment of this fabric has at least one wide and 2 narrow stripes which run parallel to one another. This fabric was found between the coffin and shoes, and possibly represents a shroud or blanket wrapped around the body.

The second fabric is a bluish-green heavy cotton with an S-twist and plain weave. No large fragments were found, and the original cloth article cannot be distinguished.

Bone

The only bone artifacts recovered were 2 fragments of a bone tooth-brush handle (FOVA 961).

Plastic

The 2 plastic specimens recovered were one present-day toy soldier (FOVA 406) and one unidentified item.

Rubber

The 7 items of rubber recovered were 6 fragments of rubber gaskets and one present-day boot heel.

Miscellaneous Items

The 12 items included within this category are 2 blue marking crayons, 1 baseball fragment, 1 poker chip fragment, and 8 unidentified fragments.

IV - PRELIMINARY INTERPRETATIONS

In this section we shall put together the structural and non-structural evidence of Hudson's Bay Company activities in the Bakery and Wash House areas. Our discussion will lean heavily on archeological reconstruction of the pertinent buildings. As noted, our interpretations are preliminary only, since more complete interpretations of human activities at Fort Vancouver await the more complete gathering of data.

In assessing the evidence, we are distinguishing between cultural materials found in situ and those that are not. This is an important consideration when investigating a highly disturbed living area such as Fort Vancouver. Materials found in situ present few problems; they are real and subject only to a limited range of interpretation. Materials found ex situ constitute a greater magnitude of analytical and interpretive problems. In order to present a credible picture of past events and processes at Fort Vancouver, we are forced to deal with ex situ materials on their own basis; that is, we must interpret their presence in relation to all other materials.

For the above purposes, we have computed a series of artifact distribution maps of the Bakery and Wash House areas (Figs. 24-29) for orientation. The distribution maps show the relative frequency of selected artifact densities within the discrete excavation units.

Artifacts selected are those most common to the site, and in the case of construction materials, most significant to the problems of structural interpretation. Artifact density is computed as the frequency of that artifact's occurrence per cubic foot per excavation unit. Expressed as f/ft^3 , this means of computation is necessary for valid comparisons of artifact frequencies among excavation units of unequal volume.

We must caution that interpretations made with the aid of these distribution maps are to be regarded as hypothetical and somewhat general since localized events, perhaps unknown to us at this time, may have affected the observed artifact densities. In future work at Fort Vancouver we hope that more credible distributions will be generated by use of trend-surface analyses such as those presently employed by geographers and geologists (e.g. Krumbein and Graybill 1965:319-355; Haggett 1965:269-276; Clarke 1968:480-490; Lustig 1969).

Bakery

The in situ structural evidence of the 1841-44 Bakery consists of wooden footings describing a rectangular area about 38.5 to 40.0 feet north-south and 25.0 to 26.5 feet east-west. Attached to the east side of this rectangle are oven foundations that cover a rectangular area in excess of 25.0 feet north-south and more than 15.0 feet east-west. There is clear evidence that the footings of the main Bakery area were placed at 10.0-foot intervals to support inferred

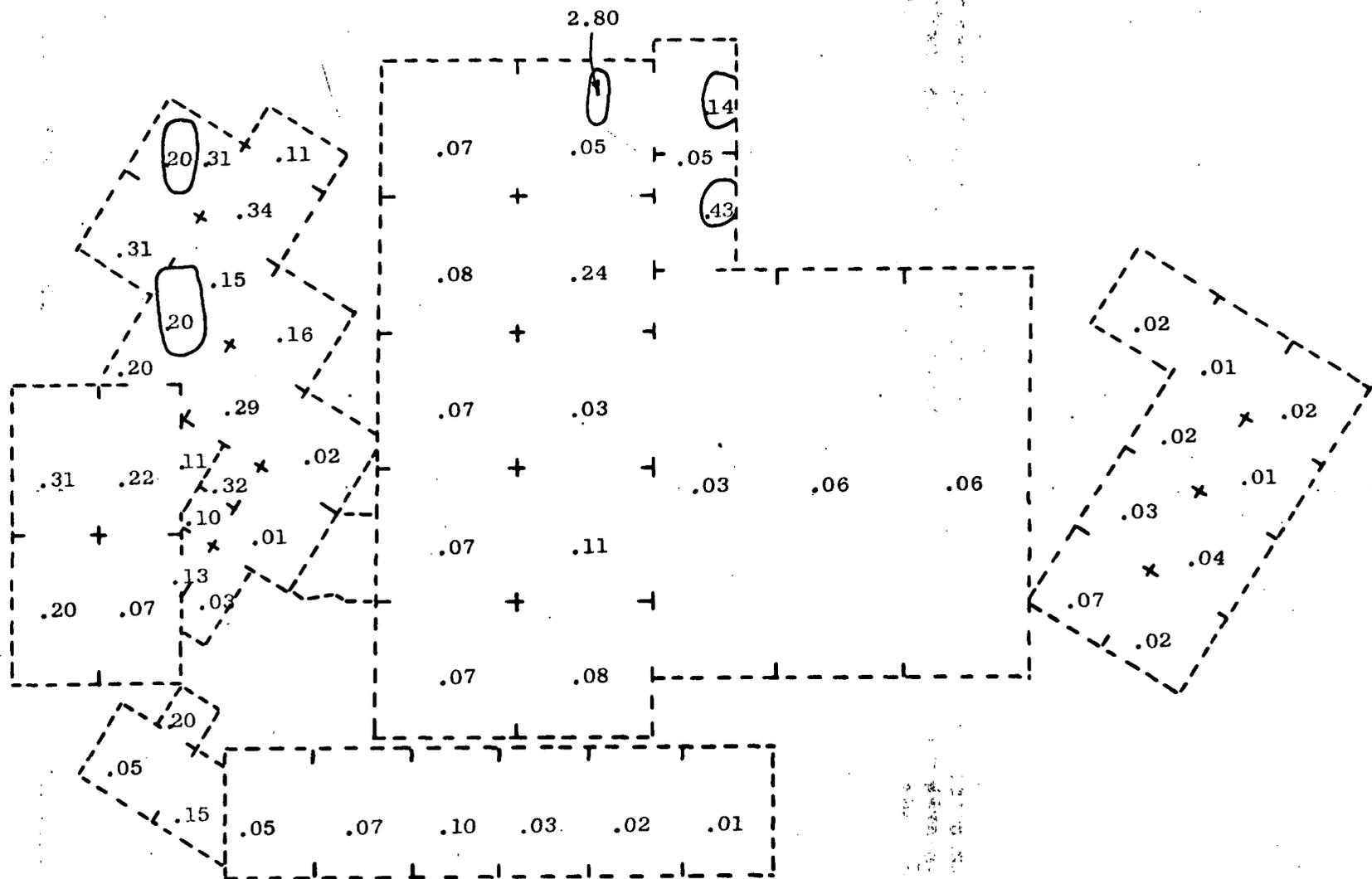


Fig. 24 - Relative Frequency of Square Nails In Bakery and Wash House Areas (F/FT³).

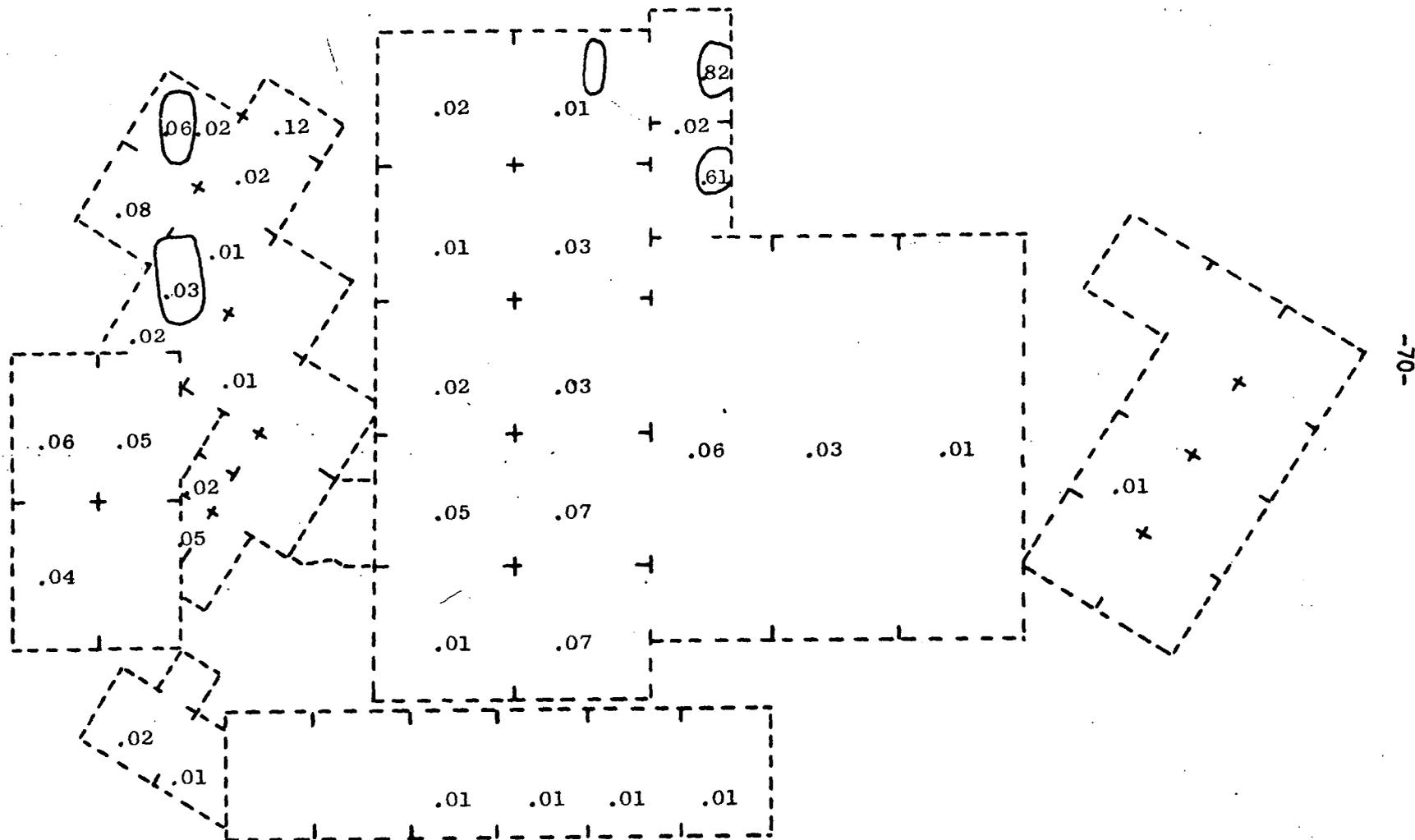
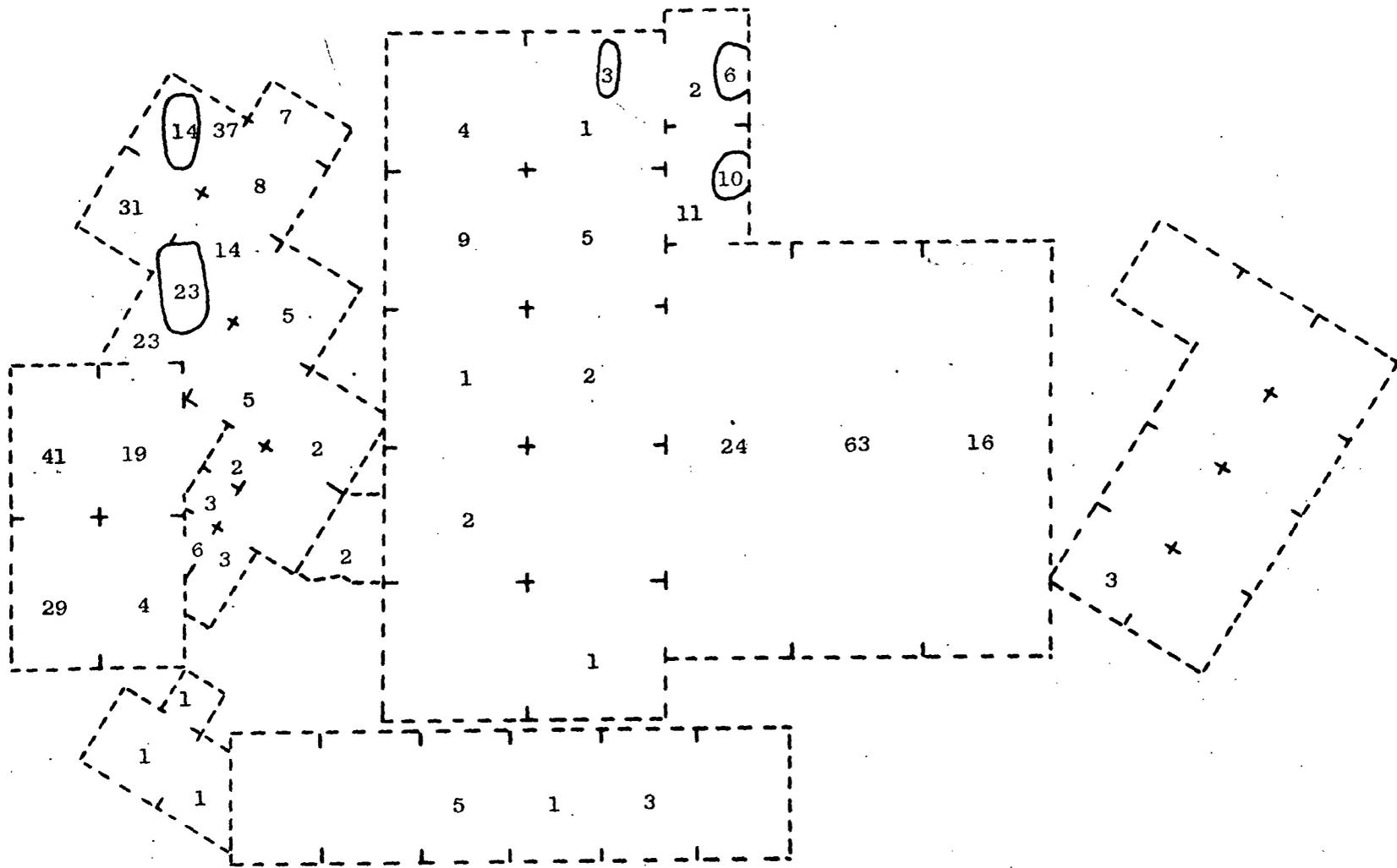


Fig. 25 - Relative Frequency of Window Glass Fragments In Bakery and Wash House Areas (F/FT³).



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Fig. 27 - Absolute Frequency of Class #6 Brick in Bakery and Wash House Areas.

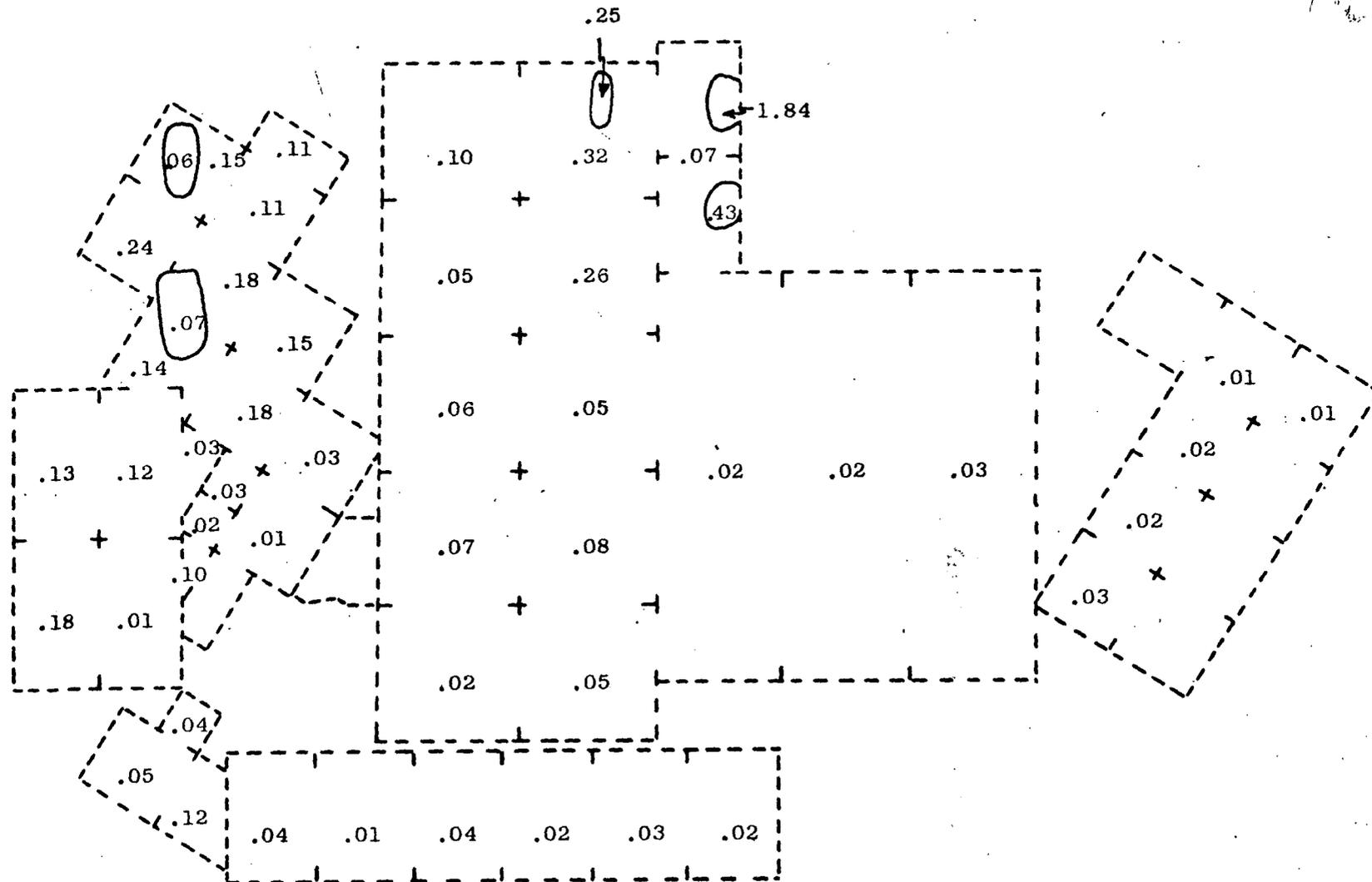


Fig. 28 - Relative Frequency of Bottle, Tumbler, and Stemmed Glassware Fragments [n Bakery and Wash House Areas (F/FT²).

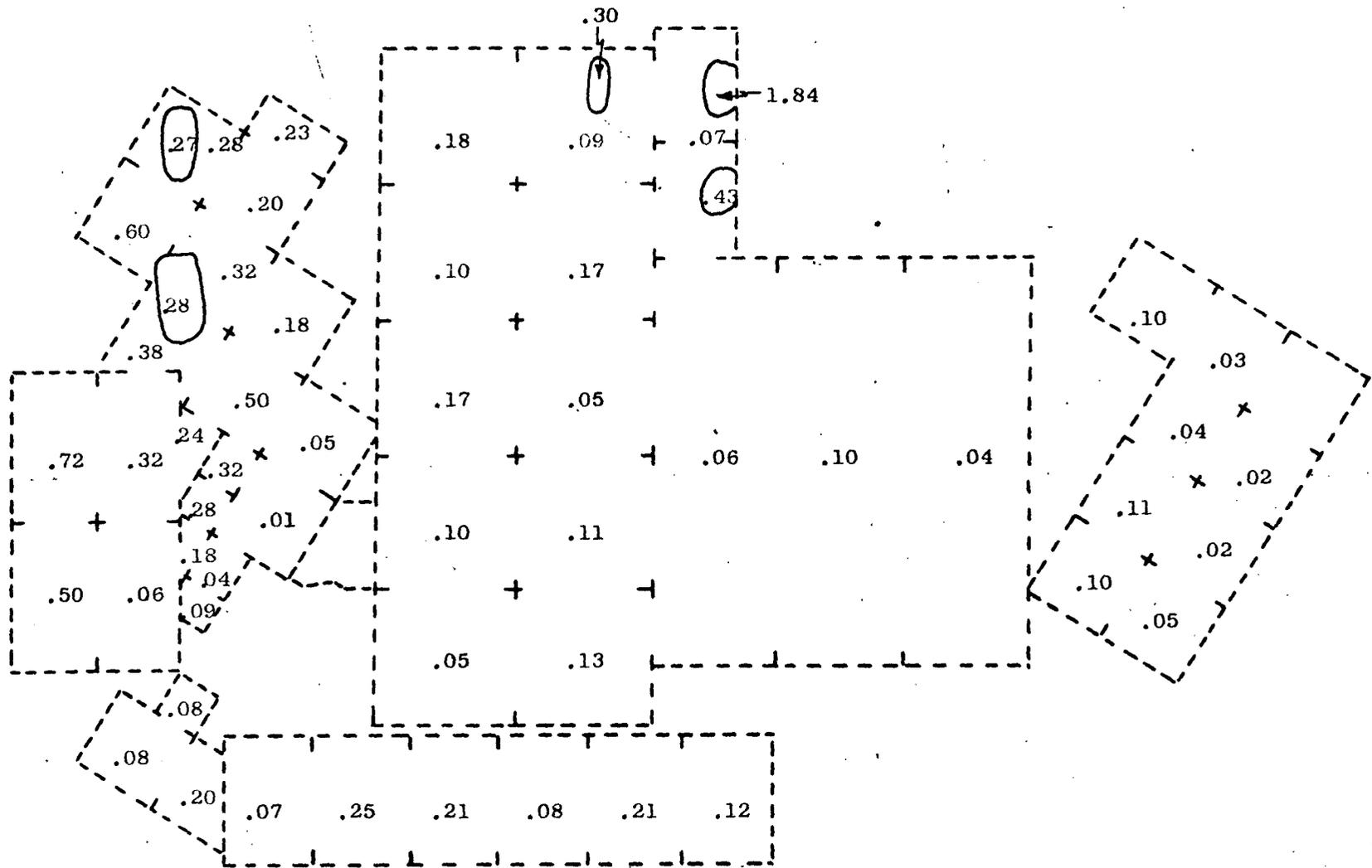


Fig. 29 - Relative Frequencies of Ceramic Fragments in Bakery and Wash House Areas (F/FT³).

joists or sills 40.0 and 25.0 feet long. Whether the footings were originally laid on a contemporary surface or set into the ground cannot be determined at this time. However, it is noteworthy that there are no significant differences in elevations between the footings and the oven foundations; either all or none were set into the ground. Lines of small puncheons at the northeast and southeast corners of the main structure remain enigmas to us. Until we see these features repeated in other buildings at the Fort, we refuse to even speculate on the function of the puncheons.

Artifacts from the Bakery numbered 1396 items (Table 12), and meaningful structural distributions were observed for square nails, window glass, and brick. Distribution of square nails in the Bakery shows relatively high frequency areas at the center of the west wall and the northwest corner (Fig. 24). These frequencies decline in a west to east direction across the Bakery. Relative frequency of window glass in the Bakery also forms a strong pattern (Fig. 25). The highest densities are along the west wall and a progressive declination of glass is noted in a west to east direction. This evidence agrees with the in situ find of a concentration of window glass along the west wall (Fig. 4). Also, 2 hand-forged shutter latch nails were found near the western side of the Bakery suggesting the presence of shuttered windows. From these lines of evidence we infer the presence of several windows, an entrance, window frames, and shutters along the west or interior wall of the Bakery.

Foundations of the Bakery ovens consist of large rounded stones with traces of mortar. The ovens were definitely made of brick, and brick was also used in other areas of the Bakery (Table 13). Frequency maps for brick (Figs. 26 and 27) show absolute rather than relative frequencies in order to emphasize its importance. The density of Class #1 brick in the Bakery is striking -- a progressive increase is shown in a west to east direction. This pattern is complemented by a drastic decrease in frequency immediately east of the ovens (Fig. 26). The occurrence of Class #6 brick does not follow the identical pattern, but does indicate high frequency in the Bakery. In the previous chapter, it was suggested that Class #6 brick is of English manufacture. Evidence also was presented to indicate that Class #1 brick is a homolog of Class #6 brick. In other words, both classes can be attributed to Hudson's Bay Company rather than U.S. Army.

It should be noted that in the total area under discussion, Class #6 brick has a higher frequency inside the 1834-36 Stockade than outside. The pattern is reversed for Class #1 brick. This phenomenon may have functional and/or temporal implications. Only further investigation can shed light on these hypothesized implications.

Among the cultural materials recovered from the Bakery, very little

Table 12 - Artifacts from the Bakery (F106).

Descriptive Category	Subtotal	Total
Ceramic Ware Fragments		239
Kaolin Tobacco Pipe Fragments		35
Glass Fragments		209
Bottle, Tumbler, and Stemmed Glassware	78	
Window Glass	130	
Mirror Glass	1	
Metal Hardware Items		273
Square Nails	186	
Wire Nails	32	
Wire	9	
Straps	28	
Stock	3	
Washers	3	
Shutter Latch Nails	2	
Bolt	1	
Screw	1	
Hook	1	
Pipe	1	
Nut	1	
Keyhole Plate	1	
Tire Stem	1	
Open Wrench	1	
Hinge Part	1	
Hacksaw Blade	1	
Metal Household and Personal Items		5
Buttons	3	
Belt Buckle	1	
Canadian Penny (1966)	1	

Table 12 (cont'd.)

Descriptive Category	Subtotal	Total
Ammunition		5
30 Krag-rimmed Cartridge	1	
30-06 Springfield Cartridges	4	
Unidentified Metal Fragments		78
Construction Material		543
Brick	538	
Mortar	1	
Plaster	1	
Tiles	3	
Stone		5
Slate Tablet Fragments	4	
Circular Sandstone Sharpening Stone	1	
Leather Glove Fragment with Plastic Buttons		1
Bone Toothbrush Fragments		1
Blue Marking Crayon		1
TOTAL		1396

Table 13 - Frequency distribution of brick classes for the Bakery (F106).

Class	Quantity	Percentage
#1	346	61.9%
#2	-	-
#3	28	5.0%
#4	-	-
#5	3	0.5%
#6	104	18.6%
#7	71	12.7%
#8	1	0.2%
#9	6	1.1%

is diagnostic of Hudson's Bay Company activity other than nails, window glass, and brick (Table 12). For instance, the frequencies of ceramics, bottles, and table glass show marked decreases compared to areas outside the Bakery (Figs. 28 and 29). Most of the artifacts from the Bakery can be assigned to Army activities or even later depositions. Additionally, there is nothing in the artifact list to indicate the building's function as a bakery. Massive disruption of the Bakery site prevents credible statements of the building's appearance other than those previously made. However, structural evidence and artifact frequencies taken in context of historical documentation clearly indicate that this building was the last Bakery built and used at Fort Vancouver.

Wash House

As previously stated, the in situ structural evidence of the 1841 Wash House is most sparse and not overly credible. Two possible footings were found along the western edge of the putative Wash House location. These were nothing more than concentrations of rotted wood splinters that bore little resemblance to the more solid footings of the Bakery. Two adjacent postholes were found approximately midway between the putative footings, but there is no surety that postholes and footings are contemporary.

Yet, some sort of structure once existed on the site of the Wash House. The Emmons map of 1841 clearly shows a small, rectangular-plan structure labeled "Wash House etc." in the same position as our excavation. As Hussey (1957:147) has termed it, the Wash House is an "interesting problem".

For instance, a small building in the Wash House position is shown on the Hudson's Bay Company "Line of Fire" map of 1844. The Vavasour maps of 1845 include the building in the small scale version, but not the large scale map. Covington's map of 1846 pictures the position empty, whereas the Bonneville map of 1845 again shows a small building in the pertinent position. However, McConnell's 1845 copy of Bonneville's map is vague in this respect and the Mansfield map of 1845 shows the position empty. A small building in the correct position is shown again on the Wheeler and Dixon map of 1859, but the Covington map of 1859 is uncertain in this detail. This is the last graphic appearance of the Wash House to our knowledge. The U.S. Army sketch of June 1860 does not include the small building and the British Engineers' photograph of May 1860 showing the Factor's Residence (our Fig. 7a) fails to show it. From this particular photographic angle, it would be impossible to see the privies immediately north of the Bakery if the Wash House still stood. These various maps of Fort Vancouver probably reflect a certain amount of copying and reproduction of earlier versions. However, it seems fair to say that a small building stood on the Wash House site by 1841 at the latest, and lasted until at least 1845 or

possibly as late as 1859 (for reproductions of the above maps and sketches, see Hussey 1957).

The archeological evidence appears to support this contention despite a lack of in situ remains. Density of square nails in and around the Wash House is quite high in relation to areas further east (Fig. 24). Most of these nails are 8d and 10d, the most common sizes defined from present excavations. Window glass also has a comparatively high frequency in this location, the pattern being marred only by the presence of much glass in the adjacent Army trash box (Fig. 25). Grouping of brick fragments in and around the Wash House is even more impressive (Figs. 26 and 27). Interestingly, the proportions of Class #1 brick and Class #6 brick are inverse between the Wash House and the Bakery (Tables 13 and 15). Again, functional and/or temporal differences can be hypothesized for these 2 classes of brick.

Distributional evidence of construction materials presently indicates that a structure did once exist in the approximate location of the Wash House. We say "presently" because excavated areas west of this location have yet to be analyzed for frequency distribution of construction materials. Whether the inferred structure was always used as a Wash House constitutes another set of problems. Proximity of the building to a well is expectable for a Wash House (Fig. 4). Yet no evidence of drainage was noted in excavation, unless remains of the 1834-36 Stockade trench were somehow utilized as drainage. Sizable frequencies of bottle and table glass fragments are also noted in and around the Wash House position (Fig. 28). More impressive is the distribution of ceramics in the area (Fig. 29). While these densities may reflect alternate usages of the Wash House, we prefer to avoid interpretation of this situation until analyses of the area west of the structure are completed. Certainly the diversity of artifacts from this position reflects an uncommon amount of mixing between cultural components from a possible prehistoric occupation to a known U.S. Army presence (Table 14).

All we can say about the Wash House at this time is that it once existed in this location. It appears to have been small, perhaps no more than the approximate 15.0 x 30.0 feet area shown on the small scale Vavasour 1845 map. Glass windows were present in the building and several hundred square cut nails were used in its construction. Several classes of brick were used, the most common being that of hypothesized English manufacture. The amount of brick recovered from such a small area (Table 15) suggests a major function for this material, perhaps as flooring and/or portions of a hearth or stove base used for heating water. Any further statements regarding the appearance of the Wash House are purely speculative in view of the available evidence.

Table 14 - Artifacts from the Wash House (F110).

Descriptive Category	Subtotal	Total
Ceramic Ware Fragments		717
Ceramic Personal Items	155	
Kaolin Tobacco Pipes	1	
Earthenware Marble	1	
"Small China" Button	1	
"Piecrust" Button		
Glass Fragments		323
Bottle, Tumbler, and Stemmed Glassware	178	
Window Glass	53	
Glass Beads	92	
Metal Hardware Items		442
Square Nails	328	
Wire Nails	65	
Wire	21	
Straps	14	
Stock	4	
Screws	3	
Hooks	2	
Trap Part	1	
Staple	1	
Rivet	1	
Muleshoe	1	
Wedge	1	
Metal Household or Personal Items		6
Bottle Cap	1	
Buttons	2	
Needle	1	
Trade Ring	1	
Lead Seal	1	

Table 14 (cont'd.)

Descriptive Category	Subtotal	Total
Ammunition		3
30 Krag-rimmed Cartridge	1	
30-06 Springfield Cartridge	1	
30-06 Springfield Cartridge Clip	1	
Unidentified Metal		99
Construction Material		151
Brick	146	
Mortar	1	
Tile	1	
Ceramic Insulators	3	
Stone		3
Slate Tablet Fragment	1	
Projectile Point	1	
Stone Maul	1	
Unidentified Leather Fragment		1
Cloth Fragments		3
Baseball		1
Unidentified Items		3
TOTAL		1909

Table 15 - Frequency distribution of brick classes for the Wash House (F110).

Class	Quantity	Percentage
#1	21	14.4%
#2	-	-
#3	4	2.7%
#4	-	-
#5	1	0.7%
#6	96	65.7%
#7	18	12.3%
#8	3	2.1%
#9	3	2.1%

Stockade and Privies

Our minimal exposures of the east wall of the 1834-36 Stockade permit few credible interpretations. Allowing for deterioration, the individual pickets had basal diameters in excess of 0.4 to 1.0 foot. They were set into a prepared trench about 4.0 feet deep and about 1.0 to 2.5 feet wide. Whether pickets were set individually or as prefabricated panels cannot be determined from the available archeological evidence. Neither can picket heights be determined from the limited excavations. Undoubtedly, this portion of the Stockade was demolished during the eastward expansion of the Fort which resulted in the eastern wall of the 1841-44 Stockade. The relationship, if any, of the large rock-lined posthole outside our southern exposure of the 1834-36 Stockade to this portion of the Stockade remains unknown.

Three of the 4 Privy Pits found in the northeast corner had been previously excavated to one extent or another. The 2 Privies inside the eastern flank of the 1834-36 Stockade, our Features 121 and 122, are described by Caywood (1955:23-25) as Trash Pits 12 and 16. Although we did recover additional material from these pits, we suspect that a good part of this material was backfill from previous excavations. As such, we are hesitant to interpret the frequency distributions calculated for these features. Presumably, the structures that overlay the pits were of wooden construction and similar in design to those in the northeast corner of the 1841-44 Stockade. Their sizes indicate "two-holers" while their contents (Caywood (1955:23-25) indicate their use as both toilets and trash disposal pits. We are especially intrigued by the report of clothing and shoes removed from the pits (Caywood 1955: 23-25) and wish further data were available.

One of the Privy Pits inside the 1841-44 Stockade (F156) had been previously dug and recorded as Trash Pit 3A (Caywood 1955:23). While a small amount of material was recovered by us, we can add little to Caywood's descriptions or the observations based on the 1860 photograph (Fig. 7). We fondly note in passing, however, that one basic aspect of human behavior at Fort Vancouver seems to have been overlooked in past investigations. Caywood describes his Trash Pit 3A as "definitely an outdoor pit toilet of long use" that contained "nothing but human excrement and many smooth oval stones measuring about three inches in length by one inch in width and a half inch in thickness." (Caywood 1955:23.) As a working hypothesis, Hoffman believes that the small smooth stones can be equated with the contemporary American use of dried corn cobs as cleansing devices. This proposition will certainly be tested in future excavations.

The other Privy Pit in this location, our Feature 158, had not been previously dug but was badly disturbed by Stockade reconstruction. Contents of this pit clearly indicate deliberate dumping of material by Hudson's Bay Company personnel (Table 16). On the basis of datable

Table 16 - Material cultural contents of the Privy Pit (F158).

Descriptive Category	Subtotal	Total
<p>Ceramic Ware Fragments</p> <ul style="list-style-type: none">CPI Lustre Ware CupE1 Serving PlatterE2 CupE3 Small Handleless TeacupE4 WashbasinE5 PitcherE6 CupE7 SaucerE8 SaucerE9 SaucerE10 Small PlateE11 Small PlateE12 Deep BowlE13 SaucerE14 Saucer		191
<p>Ceramic Personal Items</p> <ul style="list-style-type: none">Kaolin Tobacco Pipes Marked:<ul style="list-style-type: none">"Ford Stepney" - Style I"Ford Mileend London"		3
<p>Glass Fragments</p> <ul style="list-style-type: none">Bottles, Tumblers, and Stemmed Glassware<ul style="list-style-type: none">B2 BottleB3 BottleT1 TumblerWindow GlassMirror GlassGlass BeadGlass Rods and Strips	118 42 31 1 15	207

Table 16 (cont'd.)

Descriptive Category	Subtotal	Total
Metal Hardware Items		46
Square Nails	9	
Wire Nails	13	
Wire	4	
Straps	19	
Staple	1	
Metal Household or Personal items		2
Pocket Knife Blade	1	
Thimble	1	
Unidentified Metal		3
Brick		6
Slate Pencil Fragments		2
Child's Shoe Sole and Heel		1
TOTAL		461

ceramics, the dumping took place sometime after 1847 and most likely in 1860 when the Company left the Fort. Since no early U.S. Army artifacts were found, it is probable that the Privy was no longer used as such after 1860. As discussed in Chapter II, the external appearance of these later Privies is well known from a 1860 photograph. We will not repeat these observations here other than to add that the presence of 2 doors in each privy strongly suggests that they had internal compartments.

Because of the deliberate dumping of material in the "two-holers", the frequency distribution maps cannot be taken at face value. For instance, the comparatively high frequencies of square nails and window glass in the Privies (Figs. 26 and 27) may actually indicate dumping of otherwise reusable window frames from the adjacent Bakery. It is also possible that the Privies had windows during their putative use-span of approximately 15 to 20 years, but this seems illogical and is contrary to the photographed appearances of 1860. Frequency of Class #6 brick in the pits seems almost random as compared to the area in and around the Wash House (Fig. 27). Class #1 brick is absent from the northern Privy, while its high frequency in the southern Privy (Fig. 26) probably reflects backfilling of the latter in conjunction with previous excavations around the Bakery. Due to the small volume of the pits, the frequencies of construction materials in them may be spurious and represent nothing more than

a scattering of materials during Army construction in 1918.

Presence of 2 "two-holer" Privies in the northeastern corners of both the 1834-36 and 1841-44 Stockades forms a definite pattern. As mentioned before, northeast Stockade corners appear to be high activity areas of the Fort. This hypothesis is based on the placement of Privies for matters of convenience. Thus, the Privies in the northeast corners of the 1834-36 Stockade were convenient for the personnel operating the 1835-36 Bakery (not covered in this report and better known as the 1845 Harness Shop). Privies in the northeast corner of the 1841-44 Stockade were convenient for persons working in the nearby Bakery and Wash House. We intend to test this hypothesis of convenience-association during future excavations in less disturbed areas of the Fort.

Activity other than human can also be hypothesized for the area under discussion. The 1841 Wash House, Well, Privies, and Bakery are known to be contemporary. At this same time, the 1834-36 Privy Pits still existed even if not used. As mentioned in Chapter II, the soils in this sector of the Fort rest on flood plain gravels, highly porous gravels. Excavation of the Well showed the water level of 1952 to be no more than 30.0 feet below surface (Caywood 1955:22), and this is a region well known for heavy rains. The close proximity of the Wash House and 4 sizable Privy Pits to a Well sunk in porous gravels indicates a certain amount of subsurface water pollution. While we have not closely examined the historical records, we believe that typhoid and possibly amoebic or bacillary dysentery can be added to the human events of Fort Vancouver.

Burial

Remains of the fragmentary Burial indicated a single, clothed individual placed in a simple open box. The body was laid out full on its back and the Burial oriented generally north-south in agreement with Fort orientation. Skeletal remains were in extremely poor condition and no significant measurements could be taken. We would speculate that the individual was an adult male on the basis of rounded orbital ridges of the frontals, relatively massive mastoid processes of the temporals, and closure of the cranial sutures.

Materials associated with the Burial are few (Table 17). Personal items consisted of 4 "Calico" buttons that probably came from a shirt or underwear. The 8 shoe fragments have been studied and provisionally reconstructed as a laced, hard-sole moccasin (Fig. 23). Two types of fabric were found adhering to the sides and bottom of the coffin. A yellowish-brown lightweight tweed was found between the sole of the shoe and the coffin end. This appears to have been used as a shroud. Blue-green fibers of a second fabric adhered to the inside of the coffin; whether these represent clothing or another blanket is undetermined.

Table 17 - Material cultural contents of the Burial (F104).

Descriptive Category	Subtotal	Total
Ceramic Ware Fragments		6
Kaolin Tobacco Pipe Fragments		2
"Calico" Buttons		4
Bottle Fragments		5
Metal Hardware Items		58
Square Nails	56	
Wire Nails	1	
Metal Strap	1	
Bricks		4
Leather Moccasin Fragments		8
Cloth		3
Human Skeletal Remains		68
Wood Fragments (Coffin)		184
TOTAL		342

The coffin was a box of milled, wooden planks joined with 8d machine-cut nails. The wood was identified as Douglas fir, Pseudotsuga menziesii, by the Forest Products Laboratory of the Forest Service (U.S. Department of Agriculture 1971), the most commonly available timber in the Fort Vancouver area. Of the 56 coffin nails recovered, 33 were complete and measurable (Table 18). They indicate a modal size of 6.4 cm. long, 0.6 cm. wide, and 0.4 cm. thick (i.e., ca. 2 33/64 x 15/64 x 10/64 inch). This collection of nails probably represents a single statistical population of 8d machine-cut nails and shows the range of variation that could be expected for other 8d nail populations.

Table 18 - Quantitative size distribution of 8d machine-cut nails recovered from the Burial (cm.).

Shank Width	Shank Thickness	Nail Length					
		6.1	6.2	6.3	6.4	6.5	6.6
0.5	0.3				3		
	0.4			1		1	
0.6	0.3		1				
	0.4	1	2	7	11	2	2
0.7	0.3						
	0.4					2	

This nail population shows prominently in the frequency distribution map of square nails (Fig. 24). If a coffin can be termed a "structure", then the computed density of nails in this sector of the Fort continues to be a useful indicator of structural remains. The high frequencies of bottles and ceramics in the Burial (Figs. 28 and 29) are spurious since they are based on only 11 specimens within a very small volume. Like the wire nail, metal strap, and pipe fragments (Table 17), these are undoubtedly intrusions brought about by massive disturbance of the area. It is assumed that the individual was a member of the Fort personnel, but we have yet to establish a positive identification.

V - SUMMARY

Excavation in the northeastern corner of the 1841-44 Stockade produced evidence of 7 structures, a human burial, and several minor features of the Hudson's Bay Company occupation. The outstanding structure was the Bakery built in conjunction with the final east wall of the Stockade. This building consisted of the main wooden section that lay athwart the Stockade, and an oven complex that projected outside of the Stockade. The main wooden section had a rectangular ground plan about 25.0 by 40.0 feet, while the ovens occupied a rectangular space about 15.0 by 25.0 feet. The foundation for the wooden section consisted of regularly spaced wooden footings supporting wooden sills. Oven foundations were native stone laid with lime mortar probably derived from Hawaiian coral. The oven complex was made of brick, which was also utilized in other portions of the Bakery. Superstructure of the main Bakery area exceeded the height of the adjacent Stockade and contained at least one entrance and several windows in its western wall. The section housing the ovens was somewhat lower in height and was probably roofed by a shed arrangement. There is no archeological evidence as to the means of firing and cleaning the ovens. This final Bakery of Fort Vancouver stood, and was presumably used, until 1860.

Immediately north of the Bakery were 2 contemporary Privies. These were partitioned "two-holers" of pole and puncheon construction with slanted roofs. Their external appearance as of 1860 is documented by a photograph. A sizable amount of ceramics was dumped into the Privies; this may have occurred in 1860 when Hudson's Bay Company personnel left Fort Vancouver. The Privies were probably a part of the Bakery complex used between 1841-44 to 1860. Their presence in the northeast corner of the Stockade repeats a structural pattern already established by 1834-36. This pattern, in turn, indicates that this corner of the Fort was an area of heightened activity by Fort employees.

A human burial was found immediately west of the northernmost 1841-44 Privy. Hoffman believes the burial does not appear to be contemporary with the Privies and may predate the final expansion of the Fort. The body of an apparent adult male was laid prone in a simple open box, possibly covered with at least one blanket.

Two short segments of the 1834-36 Stockade were uncovered. These showed a simple trench about 1.0 to 2.5 feet wide and about 4.0 feet deep. Individual wooden pickets had basal diameters in excess of 0.4 to 1.0 foot. The method for setting pickets was not determined. Associated with the Stockade were 2 Privy Pits. These Privies were contemporary with the Stockade and in use between 1834-36 and 1841-44. While little structural evidence was found, both appear to have been "two-holers" that were probably partitioned internally.

No in situ structural remains could be confidently attributed to the

1841 Wash House. Presence of this building was detected by frequency distribution of construction materials on and around its documented position. Density of these materials suggests that the Wash House was primarily made of wood at least partially joined with square nails. Glass windows were used somewhere in the building as were brick of Inferred English manufacture. This brick differs from the predominant type used in the Bakery ovens, and may represent an earlier type.

Excavations around the 1845 Well produced sufficient evidence to question previous interpretations of the Well's construction. There is also reason to believe that water from this Well was polluted and disease-ridden.

The range of Hudson's Bay Company activities represented by non-structural remains is quite limited. The bulk of artifacts consisted of ceramics, bottles, table glassware, and items associated with construction activities. There are no concentrations of portable artifacts indicating use of the Bakery as a bakery, or the Wash House as a wash house. For these functional identifications we have only the documented record.

Most of the recovered ceramics are white earthenware of common utility that was made by the English firm of Copeland & Garrett during the mid-19th Century. Stonewares were also utilitarian and consisted of ale bottles, general kitchen wares and/or storage wares, as well as "Chinese ginger jars". The latter seem omnipresent at Fort Vancouver and deserve full study. Excepting the items of obvious American intrusion, bottles and tableware glass are few and unimpressive.

A majority of the kaolin pipe fragments recovered are presumed to be of Hudson's Bay Company occupation. The frequency distribution of pipe hole diameters suggests the presence of 3 statistical populations, possibly representing different manufacturers and/or time periods.

Window glass and mirror glass were separated morphologically and statistically. There is little uniformity of window glass, as expected from 19th Century technology. Further samples are needed for study before definite statements can be made regarding the appearance of window glass at Fort Vancouver. Only a few glass beads were recovered in this area of the Fort. Most are sewing beads that probably derive from trading stocks. The glass rods and strips recovered from a sealed Privy Pit appear to be unique. They were recovered from an undisputable Hudson's Bay Company provenience, but their functional significance is presently unknown.

Both forged and machine-cut square nails were used in this area of the Fort. The 2 styles are distinguished morphologically and statistically, although there is a predictable overlap in the latter attribute. Machine-cut nails tend to cluster about 8d and 10d sizes -- common construction sizes. Forged nails, on the basis of the present sample,

do not cluster about penny sizes and generally run larger than cut nails. Many can be termed spikes that were probably made locally for specific purposes. Some of the remaining hardware items can be clearly assigned either to the Hudson's Bay Company or U.S. Army occupations (e.g. trap parts and tent grommets). Much of the hardware such as bolts and screws and various pins could derive from either occupation. Excepting items obviously associated with HBC trade, metal household and ammunition items are attributable to Vancouver Barracks and later activities.

Nine classes of brick were recovered and sorted on the basis of morphological and statistical attributes. These classes are pro tem and subject to revision as the archeological sample increases. Presently, we have reason to believe that Class #6 brick, the second most common, is of English manufacture. The most common brick, Class #1, is probably a structural homolog of Class #6 on the basis of occurrence, statistical parallelism in frequency distribution of metric attributes, and structural associations. These hypotheses will also be tested as the sample increases.

Recovery of slate tablets and pencil fragments may be related to Bakery activity. As a pure speculation, these items may have been used for recording of recipes and work orders.

Perishable items recovered included parts of adult and children's footwear, and bits of fabric from the Burial. To our untrained eyes, one of the fabric bits has a weave similar to that of a modern Hudson's Bay Company blanket.

The limited amount of faunal remains is presently assumed to partially represent diets of Hudson's Bay Company personnel (Appendix IV). Domesticates consumed included cattle, goat, sheep, pig, chickens, and possibly duck and/or geese. Local resources were deer, oysters, and possibly duck and/or geese.

In matters of technology and cultural associations, this first report is more provocative than conclusive. Several key hypotheses regarding the construction and use of the Fort have been advanced. These will be tested, reformulated, and augmented in context of accrued data. Much excavation and study remain before arriving at a credible explanation of past lifeways at Fort Vancouver.

APPENDIX I

ARTIFACT PROCESSING PROCEDURES

General Artifact Processing Procedures

Artifact processing begins the moment items are exposed in the field. Each item is placed in an appropriate container (e.g. a vial, bag, wrapped in foil or cotton, etc.) with the following information: excavation unit designation, stratigraphic and/or arbitrary level measurement, feature number if any, date excavated, initials of excavation supervisor, and additional comments if any. From the field, bags are then brought to the lab for additional processing.

Once the field containers reach the lab, and prior to cataloging, the containers are sorted and stored according to their provenience units. When all containers of a single provenience unit have been assembled, that unit is assigned a lot number. The containers are emptied and retained as a cross check on matters of provenience. The objects from these containers are dry-brushed and sorted into material categories (e.g. bone, wood shell, etc.) and artifact categories (e.g. square nails, clay pipes, ceramics, etc.). These categories are then recorded in duplicate on a Field Catalog form (see sample form on the following page). Each separate category is given a catalog number designating both the sequential catalog number and the number of items in that category (e.g. 458/6). The numerator (i.e. 458) denotes the sequential catalog number, and the denominator (i.e. 6) denotes the quantity of items in that group. No sequential catalog number is duplicated, and this is the number which is subsequently written on the artifacts. After cataloging, the objects are stored in separate containers labeled with the catalog number and placed in an appropriate lot container to await future cleaning and analysis.

Prior to analysis, the items are removed from their lab storage containers to be washed, cleaned, and labeled as necessary. Once the items have been analyzed, they are either placed in comparative storage trays, cataloged for the Fort Vancouver museum, or returned to their storage container. Unique and complete items are cataloged for the Fort Vancouver museum utilizing NPS form 10-254. The final disposition for the remaining archeological collection has not yet been determined, but it is assumed that no part of the collection will be discarded. Rather, the items will be stored in some fashion (e.g. lot burial, museum warehouse storage, etc.) which will be accessible to future investigators.

Specific Artifact Processing Procedures

Cleaning Procedures. The majority of artifacts are dry-brushed during cataloging, and only those fragile items such as fiber, paper, etc., escapes this cleaning activity. After dry cleaning, artifacts receive

one of the following treatments: 1) no further cleaning (e.g. square and wire nails, scrap metal, coral, wood fragments, etc.); 2) brushing and washing in warm water and a mild detergent (e.g. ceramics, glass, clay pipes, etc.); and 3) special physical or chemical cleaning (e.g. unique metal objects are sent to Dr. Roderick Sprague, University of Idaho; and leather and fabrics are sent to Susan D'Amato, Midwest Archeological Center, National Park Service, Lincoln, Nebraska).

Artifact Measurements. For the sake of convenience and ease of computation, the metric system is being used for artifact measurements. However, for the convenience of the reader, measurements of both unique specimens and statistically valid artifact populations are reported in both the metric and English systems. The "raw" data in charts, graphs, and tables are generally recorded in the metric system, but in some instances the English system may also be used. Photographic scales appear with every photograph, and these scales employ both metric and English units.

Color Descriptions. Color descriptions are made by reference to the Munsell Book of Color - Glossy Finish Collection, 1966 edition. These descriptions are reported as nominal notations. Those notations which have equivalent renotations (i.e. for "B" glossy paper) are reported as nominal notations, and the equivalent renotations are not given.

Nominal notations can be divided into 2 categories based on the presence or absence of color. The colorless category is generally referred to as "neutral gray." Examples of neutral gray notations include N 9.5/, N 9/ N 8.5/...N 0.5/. The "N" denotes that it is a neutral hue, and numeral denotes the relative lightness or darkness (i.e. the value) of the standard. The smaller the number, the darker the standard. Thus, N 0.5/ is black, and N 9.5/ is white with intermediate grays between.

The color category of this system is divided into the 10 following color subcategories: Reds (R), Yellow-reds (YR), Yellows (Y), Green-yellows (GY), Greens (G), Blue-greens (BG), Blues (B), Purple-blues (PB), Purples (P), and Red-purples (RP). Examples of color notations include 2.5 YR 5/4, 10 P 3/10, and 6.25 R 3/12. With color notations, the numeral and letter combination (e.g. 2.5 YR, 10 P, and 6.25 R) denote the color chart (i.e. the hue) of the standard. The numeral preceding the diagonal denotes the lightness or darkness (i.e. the value) of the standard with the higher numbers indicating lighter colors. The last numeral denotes the brightness (i.e. the chroma) of the standard with higher numbers denoting brighter colors. For a complete explanation of the Munsell Color System, see Anna Shepard's discussion and illustrations in Ceramics for the Archaeologist (1956:107-113).

All color descriptions from this lab using the Munsell Color System

are determined while viewing objects and color standards under a 120 volt, 60 watt incandescent light source located approximately one foot from the object. All other light sources (i.e. sunlight, overhead lights, etc.) are either blocked out or turned off. With the color notation system and light source kept constant, our only variables for color description are variations of individual color vision and variations of material reflection.

Variations in the individual color vision of our staff are unavoidable, but the effects of such variation within the lab are kept to a minimum by crosschecking descriptions. However, crosschecking is useful only on opaque colors since translucent objects transmit light waves, and descriptions of their "true" colors are impossible with the Munsell system. Variables such as thickness, color density, background color, quantity of ambient light, etc., affect the color of translucent objects; any attempt to describe color is only an approximation based upon the researcher's judgement relative to any of the above variables. Therefore, translucent color descriptions must be viewed as relatively more subjective than opaque color descriptions.

APPENDIX II

DISTRIBUTION OF ARTIFACTS BY PROVENIENCE UNIT

In this appendix, excavation units are listed numerically with features first, followed by grid square designations. The letter "F" denotes a feature; "Sq." denotes a square within a feature; "N", "S", "E", "W", "NW", "SW", "NE", and "SE" when used alone denote separate units within a feature; "M" denotes the middle unit of F106; "N", "E", and "W" when used with a numeral denote a grid unit; numerals such as 0.0-0.5', 0.5-1.0', etc., denote depth below the 1970-71 surface; and "1966 Construction Pit" denotes the area excavated in 1966 by construction personnel engaged in rebuilding the east wall of the Stockade. The exact location, size, and distribution of the excavation units appears in Fig. 2.

The total number of artifacts cataloged equals 10,558, and the total number of items analyzed equals 10,571. Thus, there were 13 more items analyzed than originally cataloged. This discrepancy was caused when fragile items, including ceramic wares and brick, were broken during storage and handling. The error was not discovered until the analysis of these items was finished, and it was not deemed necessary to recount all categories for a third time. Subsequently, laboratory procedures for handling and analyzing items have been adjusted to eliminate this problem in the future.

Provenience	Ceramic Ware	Kaolin Tobacco Pipes	Bottle, Tumbler and Stemmed Glassware	Window Glass	Square Nails	Wire Nails	Miscellaneous Metal	Construction Material	Miscellaneous	Total
F104	6	2	5		56	1	1	4	11	86
F105, Backfill	6	1	3	2	3	1	2			18
F105, Sq. 1, 0.0-0.5'	6		25		1	8	6			46
F105, Sq. 1, 0.5-1.0'	6	1	18		4	25	51	1		106
F105, Sq. 1, 1.0-1.5'	9		8	2	14	9	2			44
F105, Sq. 1, 1.5-2.0'	20	1	20		2	4	3	1		51
F105, Sq. 2, 0.5-1.0'	24	1	15	3	3	12	5			63
F105, Sq. 2, 1.0-1.5'	50	2	24	6	19	6	9	4		120
F105, Sq. 2, 1.5-2.0'	7		5		10		2			24
F105, Sq. 2, 2.0-2.5'	1		3		1	1				6
F105, Sq. 3, No Depth				13	2			2		17
F105, Sq. 3, 0.0-0.5'	8		3		7	36	9	4	1	68
F105, Sq. 3, 0.5-1.0'	42	5	74	10	70	90	25	6		322
F105, Sq. 3, 1.0-1.5'	27	1	62	3	48	9	6			156
F105, Sq. 3, 1.5-2.0'	1		8	3	9	8	4	2		35
F105, Sq. 3, 2.0-2.5'								4		4
F105, Sq. 4, 0.0-0.5'	7		3	1	3	6	4	3		27
F105, Sq. 4, 0.5-1.0'	14	2	7	2	7	2	6	9		49
F105, Sq. 4, 1.0-1.5'	24	3	11	1	24	3	8		1	75
F105, Sq. 4, 1.5-2.0'	3		1		3	2	3			12
F105, Sq. 5, 0.5-1.0'	3	1	8		2	3				17
F105, Sq. 5, 1.0-1.5'	5		4		4	3				16
F105, Sq. 5, 1.5-2.0'	8	1	5	11	9	9	3	2		48
F105, Sq. 6, 0.0-0.5'	2		1		3	1	1			8
F105, Sq. 6, 0.5-1.0'	25	1	2	2	6	1				37
F105, Sq. 6, 1.0-1.5'	30	1	18	2	10		6			67
F105, Sq. 6, 1.5-2.0'	19	1	8	4	12	8	13	2	1	68
F105, Sq. 7, 0.0-0.5'	6		4	1	8	41	5		1	66
F105, Sq. 7, 0.5-1.0'	20	4	15	10	25	57	28	1		160
F105, Sq. 7, 1.0-1.5'	7		5	1	3	2	3			21
F105, Sq. 7, 1.5-2.0'	19	4	17	21	12	31	23			127
F105, Sq. 8, 0.0-0.5'	2				2		1			5
F105, Sq. 8, 0.5-1.0'	1		2			5		1	1	10
F105, Sq. 8, 1.0-1.5'	9	3	11	1	11	1			1	37
F105, Sq. 8, 1.5-2.0'	35	7	19	20	19	25	13	17		155
F105, Sq. 9, 0.0-0.5'	4		1	3	1	4				13
F105, Sq. 9, 0.5-1.0'	8	1	9	4	4	6			1	33

Provenience	Ceramic Ware	Kaolin Tobacco Pipes	Bottle, Tumbler and Stemmed Glassware	Window Glass	Square Nails	Wire Nails	Miscellaneous Metal	Construction Material	Miscellaneous	Total
F105, Sq. 9, 1.0-1.5'	24		3	11	17	1	11	1		68
F105, Sq. 9, 1.5-2.0'	23	6	10	13	16	6	16	1		91
F105, Sq. 10, 0.0-0.5'	2		2		1	1				6
F105, Sq. 10, 0.5-1.0'	6		1	1	10		3	4	1	26
F105, Sq. 10, 1.0-1.5'	11		2	1	15	3	1	3		36
F105, Sq. 10, 1.5-2.0'	2	1	2	1	5	5	1	5		22
F106, Surface	3			4				2		9
F106, Floor of Unit							1	1		2
F106, W, 0.0-1.0'	26	10	8	7	21	5	19	22	1	119
F106, W, 1.0-1.5'	44	11	6	65	30	2	8	49	1	216
F106, W, 1.5-2.0'	4			5	2			7		18
F106, W, 2.0-2.5'	19	1	8	17	5	2	5	3		60
F106, W, 2.5-3.0'								8		8
F106, M, 0.0-1.0'	85	9	15	23	57	16	41	174	2	422
F106, M, 1.0-1.5'	17		5	5	3		11	31		72
F106, E, 0.0-1.0'	33	3	31	4	62	7	45	219	6	410
F106, E, 1.0-1.5'	8	1	5		6		13	27		60
F107	1					4		2		7
F110, SW, 0.0-0.5'	5		32		1		1			39
F110, SW, 0.5-1.5'	266	48	44	12	107	22	47	30	11	587
F110, SW, 1.5-2.0'	33	2	14	2	13	25	6	11	1	107
F110, SW, 2.0-2.5'	23		3	4	11	14	4	12		71
F110, SW, 2.5-3.0'	1					2		3		6
F110, NW, 0.0-0.5'	14	2	2		1			1		20
F110, NW, 0.5-1.0'	119	28	15	11	62		27	33	1	296
F110, NW, 1.0-1.5'	133	57	30	6	56		27	19		328
F110, NW, 1.5-2.0'	10	4	2	2	3		1	1		23
F110, NW, 2.0-2.5'	4	1	1	3				1		10
F110, SE, 0.0-1.0'	10	1	1		11	2		8		33
F110, NE, 0.0-0.5'	3	1	2		1					7
F110, NE, 0.5-1.0'	72	9	18	9	44		8	26		186
F110, NE, 1.0-1.5'	7	1	7		6			3		24
F110, NE, 2.0-2.5'	17	1	7	4	12		36	3	92	172
F112, Backfill									1	1
F112, Association	3	4	1		1					9
F112, Sq. 1, 0.0-0.5'	6		2		1			1		10
F112, Sq. 1, 0.5-1.0'	8		3		3					14

Provenience	Ceramic Ware	Kaolin Tobacco Pipes	Bottle, Tumbler and Stemmed Glassware	Window Glass	Square Nails	Wire Nails	Miscellaneous Metal	Construction Material	Miscellaneous	Total
F112, Sq. 1, 1.0-1.5'	19	1	1	4		1	5	2		33
F112, Sq. 1, 2.0-2.5'	2									2
F112, Sq. 2, 0.0-0.5'	8	2	2	1	2		1			16
F112, Sq. 2, 0.5-1.0'	3		1				1			5
F112, Sq. 2, 1.0-1.5'	47	5	5	3	6	1	5	1		73
F112, Sq. 2, 1.5-2.0'	10	2	1	1			3			17
F112, Sq. 2, 2.0-2.5'	7	2	1	1			1			12
F112, Sq. 3, 0.0-0.5'					2					2
F112, Sq. 3, 0.5-1.0'			1	1	1		1			4
F112, Sq. 3, 1.0-1.5'	9	2	1				5	5		22
F112, Sq. 3, 1.5-2.0'	23	3	6	3	10		9	2		56
F112, Sq. 3, 2.0-2.5'	1				1			2		4
F112, Sq. 3, 2.5-3.0'	3	1								4
F112, Sq. 4, 0.0-1.0'	4		8		13		3	5		33
F112, Sq. 4, 1.0-1.5'	37	2	2	3	15	2	6	1		68
F112, Sq. 4, 1.5-2.0'	4		2		1		4			11
F112, Sq. 5, 0.5-1.0'	2		1		4		1			8
F112, Sq. 5, 1.0-1.5'	44	4	3		13		4	7		75
F112, Sq. 5, 2.0-2.5'	10	2			3		1			16
F112, Sq. 6, 0.0-0.5'	3		2	1	7	10	3	7		33
F112, Sq. 6, 0.5-1.0'	2		3		1	2		4		12
F112, Sq. 6, 1.0-1.5'	10		3		2		1	3	1	20
F112, Sq. 6, 1.0-2.5'	2		2		6	1				11
F114	3		1	1	12	3	7	21		48
F117								4		4
F119	11		3	5	2	82	2	208		313
F120	2		2		1					5
F121	19	5	4	4	14	4	5	23	1	79
F122	41	10	10	5	29	9	12	52	53	221
F123, N150 E10	2									2
F123, N190 W20			1		3					4
F123, N200 W20			1	1	1		1	1		5
F123, N210 W20	8	1	8		9	1		3	1	31
F127	7	1	1		2		2	1		14
F153, 0.0-0.5'	16		7	4	4	15	12	23		81
F153, N, 0.5-1.0'	2			2	2	5	1	2		14
F153, N, 1.0-1.5'	5		3		4	14	29	4		59

Provenience	Ceramic Ware	Kaolin Tobacco Pipes	Bottle, Tumbler and Stemmed Glassware	Window Glass	Square Nails	Wire Nails	Miscellaneous Metal	Construction Material	Miscellaneous	Total
F153, N, 1.5-2.0'	7	1	1		3	1	1	5		19
F153, N, 2.0-2.5'	1		8			2		1		12
F153, N, 2.5-3.0'	4		9	1	3	4	3	10		34
F153, S, 0.5-1.0'	3		2	1	5	38	12	16	1	78
F153, S, 1.0-1.5'	7	1	4	1	6	15	16	15		65
F153, S, 1.5-2.0'	6	2	3	1	2	10	5	20		49
F156 & F158, Backfill	5									5
F156	26	3	17	37	26	35	33	146	16	339
F158	94	1	83	42	7	13	22	6	46	314
1966 Construction Pit	97	2	35		2		7		4	147
N150 E10, 0.0-0.5'	3		8		1	1	2	1		16
N150 E10, 0.5-1.0'	3			1	1	2	1			8
N150 E10, 1.0-1.5'	6		3		4	3	3	1		20
N150 E10, 1.5-2.0'					5				2	7
N150 E20, 0.0-0.5'	3		2		4	1		4		14
N150 E20, 0.5-1.0'	2	1	1	3	7	7	1	27		49
N150 E20, 1.0-1.5'	19	3	13		7	3	2	15	1	63
N150 E20, 1.5-2.0'	2		1		1	2				6
N155 E10, 2.0-2.5'			1		5	9		1		16
N155 E10, 2.5-3.0'	1					2		1		4
N165 E5, Association								3		3
N165 E5, 2.0-2.5'	1					4				5
N170 E5, 0.0-1.0'	1						4	2		7
N170 E5, 2.0-2.5'							1	5		6
N170 E5, 2.5-3.0'		1			1			1		3
N180 E10, 0.0-1.0'	1	1	1							3
N180 E10, 2.5-3.0'					1			1		2
N190 E10, 0.0-1.0'	5	1	1		1		1	1		10
N190 E10, 1.0-1.5'	4		4		2		2			12
N190 E10, 1.5-2.0'	1							2		3
N220 E90, 0.5-1.0'			1		6		1	16		24
N220 E90, 1.0-1.5'	5		2		1		4	6		18
N220 E100, 0.0-0.5'					4		1			5
N220 E100, 0.5-1.0'	4				1		2	1		8
N220 E100, 1.0-1.5'	2						2	1		5
N220 E100, 1.5-2.0'	1									1
N230 E90, 0.0-0.5'			1		3					4

Provenience	Ceramic Ware	Kaolin Tobacco Pipes	Bottle, Tumbler and Stemmed Glassware	Window Glass	Square Nails	Wire Nails	Miscellaneous Metal	Construction Material	Miscellaneous	Total
N230 E90, 0.5-1.0'	1	2								3
N230 E90, 1.0-1.5'	10	2	1	1			1			15
N230 E100, 0.5-1.0'	1			2			1			4
N230 E100, 1.0-1.5'				2						2
N240 E90, 0.0-0.5'	2	2				2				6
N240 E90, 0.5-1.0'				2						2
N240 E90, 1.0-1.5'		1		1		1				3
N240 E100, 0.0-0.5'	1			1						2
N240 E100, 0.5-1.0'	1									1
N240 E100, 1.0-1.5'							6			6
N250 E80, 1.0-1.5'	5			1						6
N250 E80, 1.5-2.0'						1				1
N250 E90, 0.0-0.5'	2									2
N250 E90, 0.5-1.0'	1					2				3
N250 E90, 1.0-1.5'				2			2			4
N250 E90, 1.5-2.0'		1								1
N250 E100, Backfill				2		2	2			6
N250 E100, 0.0-0.5'				2		2	2			6
N250 E100, 0.5-1.0'						1				1
N250 E100, 1.0-1.5'		1				1				2
N170 W5, 0.0-0.5'		1	1	1			1			4
N170 W5, 1.0-1.5'	4	1	2	1	2		4	1		15
N170 W5, 1.5-2.0'					2					2
N170 W5, 2.0-2.5'	2									2
N170 W5, 2.5-3.0'		1					2			3
N170 W5, 3.0-3.5'	1				4		1			6
N175 W5, 1.0-1.5'	1					1				2
N175 W5, 1.5-2.0'	2				1					3
N175 W5, 2.0-2.5'	6			2	1		3			12
N175 W5, 2.5-3.0'	6	1	1	3	1		3			15
N175 W5, 3.0-3.5'	2			1			3			6
N180 W5, 0.0-0.5'						1	1			2
N180 W5, 0.5-1.0'	11	1	1	10		2	1			26
N180 W5, 3.0-3.5'	1			2		1	1			5
N180 W10, 0.0-0.5'	5			1	3		5			14
N180 W10, 0.5-1.0'	7	2		3	1		1			14
N180 W10, 1.0-1.5'	4			3						7

APPENDIX III

A LIST OF PROVENIENCE UNITS WITH THEIR
CORRESPONDING LOT AND FOVA CATALOG NUMBERS

The function of this appendix is to aid in the location of artifacts recovered from the provenience units discussed in this report. Thus, all Lot and FOVA Catalog numbers for any given provenience unit can be located without reference to the FOVA Field Catalog.

Provenience	Lot #	FOVA Catalog #	Provenience	Lot #	FOVA Catalog #
F104	12	292- 301	F105		
	218	2328-2336	Sq. 7		
F105			0.0-0.5'	38	587- 596
Backfill	21	399- 400	0.5-1.0'	39	597- 620
	56	793- 794	1.0-1.5'	40	621- 632
	57	795- 804	1.5-2.0'	41	633- 654
Sq. Unknown			Sq. 8		
2.5-3.0'	54	787	0.0-0.5'	42	655- 658
Sq. 1			0.5-1.0'	43	659- 665
0.0-0.5'	13	302- 310	1.0-1.5'	44	666- 678
0.5-1.0'	14	311- 324	1.5-2.0'	45	679- 700
1.0-1.5'	15	325- 334	Sq. 9		
1.5-2.0'	16	335- 348	0.0-0.5'	46	701- 707
Sq. 2			0.5-1.0'	47	708- 718
0.5-1.0'	17	349- 366	1.0-1.5'	48	719- 731
1.0-1.5'	18	367- 386	1.5-2.0'	49	732- 753
1.5-2.0'	19	387- 394	Sq. 10		
2.0-2.5'	20	395- 398	0.0-0.5'	50	754- 756
Sq. 3			0.5-1.0'	51	757- 767
No Depth	55	788- 792	1.0-1.5'	52	768- 777
0.0-0.5'	22	401- 412	1.5-2.0'	53	778- 786
0.5-1.0'	23	413- 432	F106		
1.0-1.5'	24	433- 444	Surface	58	805- 809
1.5-2.0'	25	445- 456	Floor of Excavation	69	983- 984
2.0-2.5'	26	457	West Section		
Sq. 4			0.0-1.0'	59	810- 831
0.0-0.5'	27	458- 466	0.5-1.0'	60	832- 842
0.5-1.0'	28	467- 484	1.0-1.5'	61	843- 864
1.0-1.5'	29	485- 499	1.5-2.0'	62	865- 871
1.5-2.0'	30	500- 507	2.0-2.5'	63	872- 886
Sq. 5			2.5-3.0'	64	887
0.5-1.0'	31	508- 514	Middle Section		
1.0-1.5'	32	515- 520	0.0-1.0'	65	888- 921
1.5-2.0'	33	521- 531	1.0-1.5'	66	922- 936
Sq. 6			East Section		
0.0-0.5'	34	532- 539	0.0-1.0'	67	937- 966
0.5-1.0'	35	540- 549	1.0-1.5'	68	967- 982
1.0-1.5'	36	550- 566	F107	70	985- 987
1.5-2.0'	37	567- 586			

Provenience	Lot #	FOVA Catalog #	Provenience	Lot #	FOVA Catalog #
F110			F112		
SW ¼			Sq. 4		
0.0-0.5'	71	988- 993	0.0-0.5'	104	1321-1323
0.5-1.0'	73	1004-1015	0.0-1.0'	103	1315-1320
0.5-1.5'	74	1016-1042	0.5-1.0'	106	1328-1334
1.0-1.5'	75	1043-1062	1.0-1.5'	107	1335-1350
1.5-2.0'	76	1063-1082	1.5-2.0'	109	1357-1365
2.0-2.5'	77	1083-1096	Sq. 5		
2.5-3.0'	78	1097-1100	0.5-1.0'	105	1324-1327
NW ¼			1.0-1.5'	112	1383-1398
0.0-0.5'	79	1101-1108	2.0-2.5'	108	1351-1356
0.5-1.0'	80	1109-1133	Sq. 6		
1.0-1.5'	81	1134-1154	0.0-0.5'	110	1366-1374
1.5-2.0'	82	1155-1166	0.5-1.0'	111	1375-1382
2.0-2.5'	83	1167-1173	1.0-1.5'	114	1403-1411
SE ¼			1.0-2.5'	113	1399-1402
0.0-1.0'	72	994-1003	F114	117	1419-1420
NE ¼				124	1436-1446
0.0-0.5'	84	1174-1178	F117	122	1431
0.5-1.0'	88	1197-1218	F119	125	1447-1454
1.0-1.5'	85	1179-1186		129	1460-1473
2.0-2.5'	90	1220-1239	F120	123	1432-1435
F112			F121	126	1455
Backdirt	116	1418		131	1481-1496
Assoc. with Timber	115	1412-1417	F122	133	1506-1527
Sq. 1				172	1870-1882
0.0-0.5'	86	1187-1191	F123		
0.5-1.0'	87	1192-1196	N150 E10	127	1456-1457
1.0-1.5'	91	1240-1249	N190 W20	128	1458-1459
2.0-2.5'	89	1219	N200 W20	130	1474-1480
Sq. 2			N210 W20	136	1532-1543
0.0-0.5'	92	1250-1256	F127	132	1497-1505
0.5-1.0'	93	1257-1260	F153		
1.0-1.5'	99	1284-1296	0.0-0.5'	346	3499-3510
1.5-2.0'	94	1261-1265		347	3511-3515
2.0-2.5'	95	1266-1270		353	3570-3580
Sq. 3			N ½		
0.0-0.5'	96	1271	0.5-1.0'	348	3516-3523
0.5-1.0'	97	1271-1275	1.0-1.5'	349	3524-3537
1.0-1.5'	98	1276-1283	1.5-2.0'	350	3538-3548
1.5-2.0'	100	1297-1308	2.0-2.5'	351	3549-3556
2.0-2.5'	102	1312-1314	2.5-3.0'	352	3557-3569
2.5-3.0'	101	1309-1311			

Provenience	Lot #	FOVA Catalog #	Provenience	Lot #	FOVA Catalog #
F153			N220 E100		
S ½			0.0-0.5'	223	2363-2364
0.5-1.0'	354	3581-3592	0.5-1.0'	224	2365-2369
1.0-1.5'	355	3593-3609	1.0-1.5'	227	2380-2382
1.5-2.0'	356	3610-3624	1.5-2.0'	228	2383
2.0-2.5'	357	3625	N230 E90		
F156	358	3626-3651	0.0-0.5'	226	2378-2379
	359	3682-3687	0.5-1.0'	230	2385-2388
	360	3688-3698	1.0-1.5'	231	2389-2394
F158	361	3699-3735	N230 E100		
	362	3736-3750	0.5-1.0'	233	2398-2402
F156 & F158	363	3751-3752	1.0-1.5'	229	2384
1966 Construction Pit	369	3787-3821	N240 E90		
N150 E 10			0.0-0.5'	234	2403-2407
0.0-0.5'	201	2165-2173	0.5-1.0'	235	2408
0.5-1.0'	202	2174-2178	1.0-1.5'	239	2415-2418
1.0-1.5'	203	2179-2188	N240 E100		
1.5-2.0'	204	2189-2190	0.0-0.5'	236	2409-2410
N150 E20			0.5-1.0'	237	2411-2412
0.0-0.5'	207	2268-2275	1.0-1.5'	240	2419-2420
0.5-1.0'	210	2285-2298		238	2413-2414
1.0-1.5'	211	2299-2310	N250 E80		
1.5-2.0'	208	2276-2280	1.0-1.5'	242	2422-2424
N155 E10			1.5-2.0'	241	2421
2.0-2.5'	209	2281-2284	N250 E90		
2.5-3.0'	212	2311-2313	0.0-0.5'	243	2425-2426
N165 E5			0.5-1.0'	245	2431-2433
Assoc. with Well	213	2314	1.0-1.5'	250	2441-2443
2.0-2.5'	192	2113-2114	1.5-2.0'	246	2434
N170 E5			N250 E100		
0.0-1.0'	216	2321-2325	Surface	244	2427-2430
2.0-2.5'	214	2315-2317	0.0-0.5'	248	2436-2438
2.5-3.0'	215	2318-2320	0.5-1.0'	247	2435
N180 E10			1.0-1.5'	249	2439-2440
0.0-1.0'	232	2395-2397	N170 W5		
2.5-3.0'	217	2326-2327	0.0-0.5'	252	2448A-2451
N190 E10			1.0-1.5'	256	2458-2466
0.0-1.0'	221	2346-2353	1.5-2.0'	254	2454
1.0-1.5'	220	2339-2345	2.0-2.5'	253	2453
1.5-2.0'	219	2337-2338	2.5-3.0'	255	2455-2457
N220 E90			3.0-3.5'	257	2467-2469
0.5-1.0'	225	2370-2377			
1.0-1.5'	222	2354-2362			

Provenience	Lot #	FOVA Catalog #	Provenience	Lot #	FOVA Catalog #
N175 W5			N210 W20		
1.0-1.5'	316	3115-3116	0.0-1.0'	268	2585-2595
1.5-2.0'	318	3123-3127	1.0-1.5'	274	2667-2682
2.0-2.5'	317	3117-3122	1.5-2.0'	273	2653-2664
2.5-3.0'	321	3136-3143	2.0-2.5'	272	2645-2652
3.0-3.5'	319	3128-3133	N210 W30		
N180 W5			0.0-0.5'	275	2683-2694
0.0-0.5'	320	3134-3135	0.5-1.0'	277	2701-2713
0.5-1.0'	323	3149-3158	1.0-1.5'	279	2725-2737
3.0-3.5'	322	3144-3148	1.5-2.0'	281	2747-2758
N180 W10			N215 W20		
0.0-0.5'	324	3159-3164	0.0-1.0'	276	2695-2700
0.5-1.0'	325	3165-3170	1.0-1.5'	278	2714-2724
1.0-1.5'	326	3171-3174	1.5-2.0'	280	2738-2746
N190 W10			2.0-2.5'	282	2759-2766
0.0-0.5'	327	3175-3188			
0.5-1.0'	330	3207-3229			
1.0-1.5'	328	3189-3202			
1.5-2.0'	329	3203-3206			
N190 W20					
0.0-0.5'	331	3230-3241			
0.5-1.0'	332	3242-3255			
1.0-1.5'	333	3256-3266			
1.5-2.0'	334	3267-3275			
N200 W10					
0.0-1.0'	261	2499-2516			
1.0-1.5'	258	2470-2481			
1.5-2.0'	259	2482-2491			
2.0-2.5'	260	2492-2498			
N200 W20					
0.0-0.5'	264	2537-2549			
0.5-1.0'	267	2573-2584			
1.0-1.5'	262	2517-2527			
1.5-2.0'	263	2528-2536			
N200 W30					
0.0-0.5'	266	2559-2572			
0.5-1.0'	265	2550-2558			
1.0-1.5'	271	2627-2644			
1.5-2.0'	270	2609-2626			
2.0-2.5'	269	2596-2608			

APPENDIX IV

SUMMARY OF FAUNAL REMAINS

Most of the bones recovered from the areas of the Bakery and Wash House appear to represent domestic stock used for food. Identification of remains was made by Hoffman using comparative collections at the Midwest Archeological Center. The Center presently does not have domestic goat in its collections; therefore, goat identifications in this summary were made on the basis of small mammal elimination and close resemblance to Antilocapra. However, the Fort Vancouver material is not Antilocapra.

Bone identification was done in the usual perfunctory manner. Elements were sorted as to genera or species, where possible, and bodily positions. The usual result of such sorting is to make some sort of statement regarding butchering practices and cut preferences of the site inhabitants, as well as the number of animals involved. Such statements in this summary must be regarded as tentative suggestions only. European butchering and trash disposal patterns of the 19th Century differ greatly from those of American Indians. Obviously, a commercial center of Fort Vancouver's importance did not leave great amounts of butchered bones scattered about. Organized trash disposal and centralized butchering can be assumed on the basis of 19th Century European technology. Also, this summary deals with a selected lot rather than the total site fauna.

Such bones as were found are generally small elements, almost invariably fragmented, that could easily go unnoticed in grass, under woodpiles, or in earthen embankments around structures. In context of my past experience with Indian sites, I find one glaring anomaly in the food bones of Fort Vancouver. Not one bone of this selected lot showed gnawing marks of dogs. Undoubtedly the Fort inhabitants owned dogs that were fed kitchen scraps, but the evidence is yet to be found.

In the tabular summary below, remains are listed by genera or orders, and elements. For brevity, elements are not listed by sides or ends. Such information is available in the laboratory notes for the benefit of interested persons.

Bos

radii - 3	patella - 1	ulna - 1
tibiae - 4	calcanea - 2	astragali - 3
scapulae - 2	navicular-cuboid - 1	humeri - 4
vertebrae - 9	metacarpale - 1	carpalia - 7
pelvis - 2	femur - 1	

These total 41 pieces of at least 3 individuals. Three elements are immature. On the basis of size, 7 pieces are Hereford-like, 3 are

oxen-like, and one is very much like bison. However, it is extremely difficult to sort American bison from oxen or modern Charolais cattle. The majority of elements appear to be from a size range of small but mature cattle quite unlike contemporary Mexican cattle. In any event, the total Bos remains can be inferred to derive from domesticates. On the basis of bodily positions, 18 elements represent forequarters and 14 represent hindquarters; the balance are axial. This precludes any statement of cut preferences.

Ovis

humeri - 3	phalanges - 3	ulnae - 4
tibia - 1	scapula - 1	metacarpale - 1

These total 13 pieces of at least 2 individuals, one of which was immature. Forequarter elements outnumber hindquarter pieces 9:1, but the sample is too small for significance. All elements represent domestic sheep.

Capra

astragali - 2	metatarsi - 2	tibia - 1
calcaneum - 1	ulnae - 2	femur - 1
radius - 1		

At least 2 individuals are represented by 10 elements; 2 of the latter are pathological, all are mature. While exact species identification was not made, these elements appear to be domestic goat.

Odocoileus

Whitetail deer elements consist of 4 radii representing at least 2 individuals, one of which was immature:

Mule or Columbia Blacktail deer consists of 2 radii of one mature individual.

Sus

tibiae - 2	carpal/tarsal - 1	phalanx - 1
humeri - 2		

At least 2 individuals are represented by 6 elements; 2 of the latter are immature. All derive from domestic pig.

Unidentified Mammals

Seventeen elements, mainly teeth and fragmented pelvis, derive from mammals in a size range from goat to calf. Two elements are immature.

Galliformes

carpometacarpalia - 2	tibiotarsi - 3	coracoidae - 3
pelvis - 1	ulnae - 3	humeri - 3
femura - 3		

These total 18 elements of at least 4 individuals, one of which is a turkey. Most appear to derive from domestic chickens ranging from "large" laying hen or rooster size to "small" pullet or fryer size. The latter may include local grouse.

Anseriformes

tarsometatarsus - 1 humeri - 4 coracoideum - 1

At least 2 individuals are represented by 6 pieces. Size range of elements indicate geese to large ducks. No attempt has been made to distinguish between domestic and wild forms.

Unidentified Birds

ulnae - 10 tibiotarsi - 2 carpometacarpalia - 3
humeri - 2 cranial pieces - 6 vertebrae - 2
radius - 1 furculae - 2

These total 28 pieces of at least 6 individuals. Possible identifications include one corvid and one larid.

Miscellaneous

One humerus and 14 carapace fragments of a Western Painted Turtle were recovered. Size of the individual suggests that it was too small for eating and that it was probably a natural intrusive.

A small amount of oyster shell was also recovered. This has yet to be studied, but the small sizes suggest freshwater forms probably obtained in the vicinity of the Fort.

APPENDIX V

SUMMARY OF MISCELLANEOUS MATERIALS

Cultural material, other than artifacts, totals 2419 items and are listed below:

Descriptive Category	Subtotal	Total
Bone		1404
Human	68	
Faunal	1336	
Coral		491
Minerals		152
Ochre	71	
Coal	67	
Slag (or Clinkers)	10	
Asphaltum	3	
Lead	1	
Coprolites		47
Wood		325
Fragments	308	
Fruit Pits	17	
TOTAL		2419

Identifiable items of faunal bone are listed in Appendix IV; the balance are too fragmented for identification. As discussed in Chapter IV, there is little useful information to be obtained from the human bone other than a possible identification as to sex and age. Coral listed here is most likely Hawaiian in origin (Hussey 1957:163). It constitutes one of the basic construction materials of which we know little at this time. Apparently, coral arrived at Fort Vancouver as ships' ballast. Among the listed mineral items, coal, clinkers, and asphaltum possibly stem from Vancouver Barracks, but it would be premature to dismiss them as irrelevant to Hudson's Bay Company activities. The ochre fragments are ferrous concretions from the underlying gravels of the Fort site. Their use, if any eludes us. The single piece of lead is metallurgically refined but unidentifiable as a functional item. Coprolites were recovered from various HBC Privy Pits and are assumed to be human. Other than the coffin pieces, the listed wooden fragments are small unidentifiable pieces found scattered through the excavations. They and the fruit pits can be attributed to both Army and HBC activity.

APPENDIX VI

PEARLWARE TRANSFER PRINTED PATTERN IDENTIFICATION

The following is a list of pearlware fragments which do not belong to a complete or partially complete ware, but have been identified according to manufacturer, pattern name, and pattern color. Fragments manufactured by either the Spode, Copeland & Garrett, and/or Copeland potteries include:

Pattern Name	Pattern Color	Subtotal	Total
"Acorn"	Flow Purple 5 PB 2/4		3
"Aesops Fables"	Blue 5 PB 2/6 - 5 PB 5/6		8
"Alba"	Blue 5 PB 2/6 - 5 PB 4/6		26
"Aster"	Grayish Red 5 R 2/1		4
"B 772"	Flow Blue 5 PB 2/4 - 5 PB 2/6		6
"B 773"	Flow Blue 5 PB 2/6		2
"Beverly"	Blue 5 PB 2/6		1
"Blue Italian"	Blue 5 PB 2/6 - 5 PB 5/6		26
"British Flowers"	Blue 5 PB 2/6 - 5 PB 4/6		69
"Broseley"	Blue 5 PB 4/6 - 5 PB 5/6		26
"Broth"	Reddish Purple 10 RP 5/6		3
"Camilla"			161
	Blue 5 PB 2/6 - 5 PB 5/6	154	
	Green 7.5 GY 3/4	5	
	Brown 5 YR 3/6	1	
	Red 2.5 R 3/6	1	
"Chatsworth"			210
	Blue 5 PB 2/6 - 5 PB 5/6	195	
	Brown 5 YR 2/2	10	
	Red 2.5 R 3/8	2	
	"Saxon Blue" 5 PB 2/8	1	
	Bluish Gray 7.5 B 5/6	1	
	Grayish Blue 2.5 B 7/2	1	
"Chinese"	Blue 5 PB 2/5 - 5 PB 5/6		7
"Geranium"	Lt. Blue 5 PB 3/4 - 5 PB 5/4		11
"Hop"	Flow Bluish Gray 5 PB 2/2		3
"Italian Church"	Blue 5 PB 3/6		2
"May"			14
	Flow Blue 5 PB 2/6	12	
	Blue 5 PB 2/6	2	
"Pagoda"			11
	Green 7.5 GY 3/4	8	
	Lt. Blue 5 PB 5/8	2	
	Brown 5 YR 2/4	1	
"Pekin"			17
	Blue 5 PB 2/6 - 5 PB 4/6	15	
	Lt. Blue 5 PB 5/8	2	

"Pagoda" or "Pekin"	Lt. Blue 5 PB 5/8		22
"Portland Vase"	Blue 5 PB 3/6 - 5 PB 5/6		25
"Queen Mary"	Blue 5 PB 2/6		37
"Rose"	Brown 2.5 YR 2/2		2
"Rose & Sprigs"	Grayish Brown 5 YR 5/1		1
"Seasons"			10
	Grayish Blue 10 B 2/2	8	
	Blue 5 PB 4/6	1	
	Green 5 GY 3/4	1	
"Tower"	Blue 5 PB 2/6		2
"Union Wreath"	Blue 5 PB 2/6 - 5 PB 4/6		2
"Warwick"	Red 2.5 R 3/8 - 2.5 R 4/8		7

Fragments manufactured by the Davenport pottery include:

Pattern Name	Pattern Color	Subtotal	Total
".....n Vase"			3
	Blue 5 PB 2/6 - 5 PB 5/6	2	
	Green 2.5 BG 2/6	1	

One fragment manufactured by the John Maddock pottery includes:

Pattern Name	Pattern Color	Subtotal	Total
"Fairy Villas"	Blue 5 PB 4/6		1

Fragments manufactured by unknown potteries include:

Pattern Name	Pattern Color	Subtotal	Total
"Blue Willow"	Blue 5 PB 2/6		21
"Peacock"	Blue 5 PB 3/6		8
"Royal Gem"	Blue 5 PB 4/6		2

TOTAL NUMBER OF IDENTIFIED FRAGMENTS = 753

APPENDIX VII

GLASS BEAD MEASUREMENTS

The recent classification system for glass beads presented by the Kiddy (1970) underscores the use and need of comparative material. Developing interest in stylistic and distributional analyses of beads promises to be a fertile field of research in the historic archeology of North America. Therefore, we offer a detailed list of beads from the Bakery and Wash House areas for comparative purposes. All 166 measurements listed below are in millimeters.

FOVA Catalog Number	Bead Colors		Dimensions		Hole Dia.	Reflection	Facets
	Primary	Secondary	Dia.	Lgth.			
582	Clear	Whitish	7.5	7.1	2.9	Clear	18
765	7.5 PB 3/10	7.5 PB 7/6	7.9	8.2	3.0	Trans.	21
1034	5 B 6/6		4.2	2.6	1.2	Opaque	
1034	7.5 PB 3/10	7.5 PB 7/6	na	6.0	na	Trans.	> 7
1061	10BG 3/4		6.4	5.0	1.1	Trans.	
1230	10 B 3/8		1.8	1.1	.51-.64	Opaque	
1230	N 8.0/	4 stripes	2.6	1.4	.89-1.00	Opaque	
1230	Whitish	2.5 YR 5/14	6.6	6.5	1.4-1.5	Trans.	48
1230	10 R 2/6		7.4	8.2	2.0	Trans.	
1230	N 9.5/		2.6	2.0	.64-.71	Opaque	
1230	N 9.5/		2.9	2.5	.89-1.00	Opaque	
1230	N 9.5/		2.0	1.9	.71-.76	Opaque	
1230	N 9.5/		2.7	1.9	.89-1.00	Opaque	
1230	N 9.5/		2.5	1.7	.64-.71	Opaque	
1230	N 9.5/		2.0	1.9	.64-.71	Opaque	
1230	N 9.5/		1.9	1.5	.51-.64	Opaque	
1230	N 9.5/		2.3	1.5	.76-.81	Opaque	
1230	N 9.5/		2.5	1.7	.81-.89	Opaque	
1230	N 9.5/		2.0	1.5	.64-.71	Opaque	
1230	N 9.5/		2.0	1.5	.64-.71	Opaque	
1230	N 9.5/		2.4	1.4	.89-1.00	Opaque	
1230	N 9.5/		2.5	1.4	.81-.89	Opaque	
1230	N 9.5/		1.9	1.4	.64-.71	Opaque	
1230	N 9.5/		2.0	1.2	.64-.71	Opaque	
1230	N 9.5/		2.0	1.5	.51-.64	Opaque	
1230	N 9.5/		2.0	1.3	.51-.64	Opaque	
1230	N 9.5/		2.0	1.6	.51-.64	Opaque	
1230	N 9.5/		1.9	1.5	.51-.64	Opaque	
1230	N 9.5/		2.0	1.6	.51-.64	Opaque	
1230	N 9.5/		1.9	1.5	.64-.71	Opaque	
1230	N 9.5/		2.0	1.5	.71-.76	Opaque	
1230	N 9.5/		2.0	1.2	.64-.71	Opaque	
1230	N 9.5/		2.0	1.6	.51-.64	Opaque	
1230	N 9.5/		2.5	1.6	.81-.89	Opaque	
1230	N 9.5/		2.0	1.4	.51-.64	Opaque	
1230	N 9.5/		2.1	1.6	.76-.81	Opaque	
1230	N 9.5/		1.7	1.2	.51-.64	Opaque	
1230	N 9.5/		1.9	1.4	.64-.71	Opaque	
1230	N 9.5/		2.0	1.4	.51-.64	Opaque	
1230	N 9.5/		2.3	1.4	.71-.76	Opaque	
1230	N 9.5/		2.0	1.7	.76-.81	Opaque	
1230	N 9.5/		2.0	1.6	.71-.76	Opaque	

FOVA Catalog Number	Bead Colors		Dimensions		Hole	Reflection	Facets
	Primary	Secondary	Dia.	Lgth.	Dia.		
1230	N 9.5/		1.6	1.0	.38-.51	Opaque	
1230	N 9.5/		1.8	1.5	.51-.64	Opaque	
1230	N 9.5/		1.5	1.0	.51-.64	Opaque	
1230	N 9.5/		1.8	1.4	.51-.64	Opaque	
1230	N 9.5/		1.6	1.0	.51-.64	Opaque	
1230	N 9.5/		2.0	1.5	.64-.71	Opaque	
1230	N 9.5/		1.8	1.0	.51-.64	Opaque	
1230	N 9.5/		1.5	1.4	.51-.64	Opaque	
1230	N 9.5/		1.6	1.0	.51-.64	Opaque	
1230	N 9.5/		1.6	1.0	.51-.64	Opaque	
1230	N 9.5/		1.5	0.9	.38-.51	Opaque	
1230	N 9.5/		1.6	1.2	.38-.51	Opaque	
1230	N 9.5/		1.5	1.1	.38-.51	Opaque	
1230	N 9.5/		1.5	1.2	.38-.51	Opaque	
1230	N 9.5/		1.5	1.1	.38-.51	Opaque	
1230	N 9.5/		1.6	1.1	.51-.64	Opaque	
1230	N 9.5/		1.6	1.1	.51-.64	Opaque	
1230	N 9.5/		2.1	1.0	.81-.89	Opaque	
1230	N 9/		2.9	2.7	.64-.71	Opaque	
1230	N 9/		2.1	1.9	.76-.81	Opaque	
1230	N 9/		2.5	1.3	.89-1.00	Opaque	
1230	N 9/		1.4	0.9	.38-.51	Opaque	
1230	N 9/		2.0	1.2	.71-.76	Opaque	
1230	N 9/		1.5	1.2	<.38	Opaque	
1230	N 9/		1.5	1.0	.38-.51	Opaque	
1230	N 9/		1.7	1.3	.38-.51	Opaque	
1230	2.5 Y 9/2		2.6	1.8	.81-.89	Opaque	
1230	2.5 Y 9/2		2.2	2.0	.76-.81	Opaque	
1230	2.5 Y 9/2		2.5	1.7	.81-.89	Opaque	
1230	2.5 Y 9/2		2.2	1.5	.51-.64	Opaque	
1230	2.5 Y 9/2		2.5	1.8	.76-.81	Opaque	
1230	2.5 Y 9/2		2.3	1.6	.64-.71	Opaque	
1230	2.5 Y 9/2		1.9	1.4	.51-.64	Opaque	
1230	2.5 Y 9/2		2.3	1.3	.76-.81	Opaque	
1230	2.5 Y 9/2		2.0	1.5	.64-.71	Opaque	
1230	2.5 Y 9/2		2.1	1.4	.64-.71	Opaque	
1230	2.5 Y 9/2		2.3	1.5	.89-1.00	Opaque	
1230	2.5 Y 9/2		2.2	1.3	.81-.89	Opaque	
1230	2.5 Y 9/2		2.0	1.0	.51-.64	Opaque	
1230	2.5 Y 9/2		2.1	1.6	.64-.71	Opaque	
1230	2.5 Y 9/2		2.0	1.2	.76-.81	Opaque	
1230	2.5 Y 9/2		1.4	1.2	.51-.64	Opaque	

FOVA Catalog Number	Bead Colors		Dimensions		Hole	Reflection	Facets
	Primary	Secondary	Dia.	Lgth.	Dia.		
1230	2.5 Y 9/2		1.4	1.0	.38-.51	Opaque	
1230	2.5 Y 9/2		1.3	1.0	.38-.51	Opaque	
1230	2.5 Y 8/2		3.7	2.3	1.4	Opaque	
1230	2.5 Y 8/2		3.3	1.9	.89-1.00	Opaque	
1230	2.5 Y 8/2		1.4	1.2	.38-.51	Opaque	
1230	2.5 Y 8/2		1.5	1.2	.51-.64	Opaque	
1230	2.5 Y 8/2		1.9	1.2	.64-.71	Opaque	
1230	2.5 Y 8/2		1.6	1.1	.38-.51	Opaque	
1230	2.5 Y 8/4		1.5	1.2	.38-.51	Opaque	
1230	2.5 Y 8/4		1.8	1.5	.51-.64	Opaque	
1543	N 9/		2.5	1.9	.81-.89	Opaque	
1877	N 9.5/		2.5	1.9	.76-.81	Opaque	
1877	N 9.5/		2.2	1.5	.76-.81	Opaque	
1877	N 9.5/		2.1	1.4	.64-.71	Opaque	
1877	N 9.5/		2.2	1.4	.71-.76	Opaque	
1877	N 9.5/		2.4	1.6	.76-.81	Opaque	
1877	N 9.5/		2.0	1.5	.51-.64	Opaque	
1877	N 9.5/		2.0	1.6	.51-.64	Opaque	
1877	N 9.5/		2.2	1.5	.76-.81	Opaque	
1877	N 9.5/		2.4	1.9	.76-.81	Opaque	
1877	N 9.5/		2.2	1.9	.51-.64	Opaque	
1877	N 9.5/		1.9	1.4	.64-.71	Opaque	
1877	N 9.5/		1.9	1.4	.64-.71	Opaque	
1877	N 9.5/		1.8	1.3	.51-.64	Opaque	
1877	N 9.5/		1.9	1.2	.64-.71	Opaque	
1877	N 9.5/		1.8	1.4	.64-.71	Opaque	
1877	N 9.5/		1.5	1.1	.38-.51	Opaque	
1877	N 9.5/		1.9	1.1	.51-.64	Opaque	
1877	N 9.5/		2.6	1.6	1.4	Opaque	
1877	N 9.5/		2.4	1.4	.89-1.00	Opaque	
1877	N 9.5/		2.0	1.6	.51-.64	Opaque	
1877	N 9.5/		2.4	1.4	.89-1.00	Opaque	
1877	N 9.5/		1.9	1.4	.64-.71	Opaque	
1877	N 9.5/		1.6	1.0	.51-.64	Opaque	
1877	N 9.5/		1.9	1.6	.64-.71	Opaque	
1877	N 9.5/		1.8	1.4	.51-.64	Opaque	
1877	N 9.5/		1.5	1.4	.51-.64	Opaque	
1877	N 9.5/		2.2	1.8	.64-.71	Opaque	
1877	N 9/		2.3	1.4	.76-.81	Opaque	
1877	N 9/		2.2	1.5	.81-.89	Opaque	
1877	N 9/		2.2	1.3	.81-.89	Opaque	
1877	N 9/		2.0	1.4	.64-.71	Opaque	

FOVA Catalog Number	Bead Colors		Dimensions		Hole Dia.	Reflection	Facets
	Primary	Secondary	Dia.	Lgth.			
1877	N 9/		2.0	1.3	.64-.71	Opaque	
1877	N 9/		1.8	1.0	.64-.71	Opaque	
1877	N 9/		2.0	1.0	.64-.71	Opaque	
1877	N 9/		1.9	1.0	.64-.71	Opaque	
1877	N 9/		1.4	1.5	.51-.64	Opaque	
1877	2.5 Y 9/2		2.2	1.7	.71-.76	Opaque	
1877	2.5 Y 9/2		2.8	1.8	.81-.89	Opaque	
1877	2.5 Y 9/2		2.5	1.4	.89-1.00	Opaque	
1877	2.5 Y 9/2		2.8	1.6	.89-1.00	Opaque	
1877	2.5 Y 9/2		2.2	1.6	.71-.76	Opaque	
1877	2.5 Y 9/2		2.0	1.3	.64-.71	Opaque	
1877	2.5 Y 9/2		2.3	1.5	.81-.89	Opaque	
1877	2.5 Y 9/2		2.3	1.4	.89-1.00	Opaque	
1877	2.5 Y 9/2		2.3	1.4	.89-1.00	Opaque	
1877	2.5 Y 9/2		2.0	1.2	.64-.71	Opaque	
1877	2.5 Y 9/2		1.8	1.4	.51-.64	Opaque	
1877	2.5 Y 8/2		1.5	1.0	.38-.51	Opaque	
1877	2.5 Y 8/2		1.5	1.0	.38-.51	Opaque	
1877	5 Y 9/4		2.2	1.5	.81-.89	Opaque	
1877	5 Y 8.5/1		2.4	2.0	.76-.81	Opaque	
2301	N 9/		2.3	1.8	.76-.81	Opaque	
2635	5 B 5/8		5.3	4.0	1.4	Opaque	
3198	5 B 4/8		6.0	na	na	Trans.	
3225	2.5 PB 3/10		6.4	5.2	1.2	Trans.	
3225	2.5 PB 3/10		6.2	5.1	1.2	Trans.	
3236	7.5 B 5/8		10.7	8.2	2.0	Opaque	
3642	7.5 PB 3/10	7.5 PB 7/6	7.1	6.6	2.5	Trans.	
3642	6.25 R 3/12	N 9/	3.4	2.1	.71-.76	Trans.	
3642	6.25 R 3/12	N 9/	3.4	2.5	.89-1.00	Trans.	
3642	6.25 R 3/12	N 9/	3.6	2.4	.89-1.00	Trans.	
3642	6.25 R 3/12	N 9/	3.5	2.0	.89-1.00	Trans.	
3642	6.25 R 3/12	N 9/	3.5	2.1	.89-1.00	Trans.	
3642	6.25 R 3/12	N 9/	3.3	2.2	.89-1.00	Trans.	
3642	N 9/		2.2	1.5	.71-.76	Opaque	
3642	N 9/		2.3	1.5	.64-.71	Opaque	
3642	N 9/		2.2	1.8	.64-.71	Opaque	
3642	N 9/		2.0	1.4	.64-.71	Opaque	
3642	N 8.5/		1.8	1.5	.51-.64	Opaque	
3642	N 8.5/		1.5	1.0	.38-.51	Opaque	
3727	N 9/		1.8	1.6	.51-.64	Opaque	

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