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ARCHAEOLOGICAL INVESTIGATIONS IN THE NORTHWEST BASTION
AND BAKE HOUSE, LOWER FORT GARRY, 1973

by

John Dewhirst
February 1974

1968 EXCAVATIONS AT LOWER FORT GARRY

by

Peter J. Priess
June 1969

PARKS CANADA

DEPARTMENT OF INDIAN AND NORTHERN AFFAIRS
Archaeological Investigations in
The Northwest Bastion and Bake House,
by John Dewhirst

1968 Excavation at Lower Fort Garry
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Archaeological Investigations in
The Northwest Bastion and Bake House,
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Illustrations

21 1 Entrance to the northwest bastion and bake house.
22 2 Plan drawing of the northwest bastion and bake house.
23 3 The east lunette (1K80A) before excavation.
24 4 Garbage mound outside east window of bake house.
25 5 Elevations of the east and west exterior of bake house.
26 6 Drawing of east-west profile, east lunette (1K80A).
27 7 Photograph of east-west profile, east lunette (1K80A).
28 8 South half of east lunette (1K80A) after excavation.
29 9 North half of the west lunette (1K80A) after excavation.
30 10 North half of the west lunette (1K80B) with vegetation removed.
31 11 South half of the west lunette (1K80B) with vegetation removed.
32 12 East-west profile, west lunette (1K80B).
33 13 North half of west lunette (1K80B) after excavation.
34 14 South half of west lunette (1K80B) after excavation.
35 15 Excavated southwest corner and door sill.
36 16 Bake house interior and ovens before excavation.
37 17 Excavated northwest corner and oven base.
38 18 Profile drawing of oven base and floor deposits.
Abstract

This report describes archaeological investigations primarily for specific topographical and structural information on the northwest bastion and bake house, Lower Fort Garry. Minor structural features associated with the doctor's office and the men's house were also examined.
Acknowledgements

I am especially indebted to Mr. Jack Fyfe, Superintendent, Lower Fort Garry, and his staff for their co-operation and assistance during the excavation. I also wish to thank Mr. Hans Honegger and Mr. Ken Elder, Restoration Services Division, for their assistance in orienting the excavation and making available illustrative material used in this report.
Introduction

This report presents notes on archaeological investigations in the northwest bastion and the bake house, Lower Fort Garry. In addition, minor structural aspects of the doctor's office and the men's house were examined. The purpose of these excavations was to provide specific information for the Restoration Services Division, Architecture and Engineering Branch, Indian and Northern Affairs, in response to the following general questions:

1. Investigations required for the bastion:
   a) evolution of the ground level outside the bake house and inside the bastion.
   b) existence of a path and threshold outside the door to the bastion.
   c) existence of a hearth and examination of oven foundations.
   d) evolution of bake house floors.

2. Investigations required for the doctor's office:
   a) the front steps.
   b) the path outside the front door.
   c) any foundation remains.
   d) the grade around the building.
3. Investigations required for the men's house.

a) examination of stone and earth mound between men's house and fortification wall.

b) recommendations on fill-in of previous archaeological pit in men's house.

Information on excavation units and artifacts from the excavation is also included in this report.
The Northwest Bastion and Bake House

According to Goldring (1971: 26) the northwest bastion was the last one to be built at Lower Fort Garry, and was completed between 1846-48. It encloses the bake house which was probably specifically designed for that function. The bake house produced hard-tack biscuit for the Northern Department of the Hudson's Bay Company for an estimated thirty years, and then was gradually abandoned. In 1911 when the Company left the fort, the bakery apparatus was dismantled. Since then the bake house has been used as an ice-house for the Motor Country Club, and as a workshop for National Historic Sites Branch personnel during restoration of other buildings in the fort. At the time of excavation, July 1973, the bake house and bastion were not in use, and were closed to the public.

The northwest bastion (Figs. 1, 2) encloses the bake house and two lunettes. Access to each lunette was by a window, one on each side of the bake house. The window to the west lunette appears to have been blocked up for many years, but the east window is still open. Both lunettes contained several trees over forty years old, small bushes, weeds, topsoil from rotted vegetation, and garbage. The lunettes were excavated to determined the evolution of ground levels, and to reduce the ground to the earliest occupation level of the bastion.
The east lunette

The east lunette contained more garbage and deposition than the west lunette. This is due to the proximity of the east lunette to the visitors' parking lot and to the interior of the fort. Surface garbage included various soft drink and beer containers, motor oil cans, pane glass, and tin sheeting. Garbage deposits were also built up from activities within the bake house. Refuse from the ovens, from repair activities, and from workmen's meals has been thrown out the east window over the years. This produced a low rubble covered mound which is highest outside the window, and gradually spreads out over much of the lunette (Figs. 3, 4, 5). The building stone and mortar rubble on the top of the mound probably came from the oven which was reconstructed a few years ago.

An exploratory trench was dug nearly across the middle of the lunette to determine the east-west soil profile before excavation. The profile (Figs. 6, 7) was well stratified. The surface and topmost layer contained rubble and stones from the ovens, roots of small bushes and weeds, and 20th century artifacts, especially food cans and bottles. These are labelled K80A1. Beneath this was a thick layer of black soil with many lenses of orange, black, and grey ash. This ash came from the ovens which were in use or operational until 1911. Therefore, the layer probably formed from when the ovens were completed in
1848 until about 1911. It contained many metal artifacts, some ceramics and glassware, many butchered large mammal bones, and duck skulls. Underlying the layer of black soil and ash is a band of mortar. This was deposited over the lunette when the bake house and bastion were being built. Beneath the mortar is a thin band of gumbo which was probably spread over the area when foundations of the bake house and bastion were dug. Beneath the band of gumbo is a thin layer of black topsoil, the original topsoil before the bastion was built. This layer contained the occasional artifact. However, artifacts from the black soil and ash layer, the mortar band, the gumbo band, and the black topsoil were all collected together and labelled 1K80A2. The bottom-most layer is sterile gumbo.

The lunette was excavated down to the black topsoil layer, the living level at the time the bastion was built. In fact, much of that layer was removed. This exposed the top of the footing and first two courses of masonry along the bastion wall; the dark stained surface is the freshly exposed masonry (Figs. 8, 9). Detailed photographs of this masonry are available through Lorne Campbell of Restoration Service's as-found team.

In order to build the ground surface of the lunette up to the level formed after completion of the bastion and bake
house, topsoil should be deposited over the lunette to form a flat surface 3.2 feet below the stone sill of the east window of the bake house. This should cover the exposed footing of the bastion wall. I suggest that grass be planted on the topsoil to hinder the reestablishment of trees, bushes, and weeds. The grass covered topsoil will also soak up much of the moisture from rain and melting snow, and thus reduce the tendency for water to form pools on the gumbo.

The west lunette

In contrast to the east lunette, the west one contained considerably less garbage and deposition (Figs. 10, 11). Most deposition was produced by rotted vegetation. Below the blocked-up bake house window a small garbage mound was present (Fig. 11). The position of the west lunette on the exterior side of the fort was not conducive for easy disposal of garbage, and after the window was blocked up refuse from inside the bake house could not be thrown directly into the lunette.

An exploratory trench was dug across the middle of the lunette to determine the east-west soil profile before excavation (Fig. 2). The profile showed good stratification (Fig. 12). The surface and topmost layer contained mostly roots of trees, roots of small bushes and weeds, and some
20th century artifacts. Beneath this layer was a band of black topsoil and mortar. It represents the ground surface after the bake house and bastion were completed. Underlying this old ground surface is sterile gumbo. The excavation removed most of the old ground surface and exposed the footing and lowest courses of the bastion wall; bake house masonry was exposed as well (Figs. 13, 14). Detailed photographs of the freshly exposed masonry were taken by Lorne Campbell of Restoration Services, and are in their files.

In order to landscape the excavated surface of the west lunette so that it approximates the ground level after completion of the bastion and bake house, topsoil should be laid down as a more or less flat surface about 0.2 feet above the footing of the bastion wall. Again, I suggest that grass be planted on it to hinder the reestablishment of unwanted vegetation and to soak up rain water.

Excavation units

The interior of the bastion and bake house was designated as operation 1K80. The east lunette was made suboperation 1K80A. This was divided into two lots:

1K80A1: horizontally, it is the area contained within the east lunette. Vertically it includes all artifacts from the surface
and from the uppermost stratum: roots of surface vegetation and cement and mortar rubble. See Figure 6.

1K80A2: horizontally, it is the area contained within the east lunette. Vertically, it is directly below lot 1K80A1, and includes artifacts from the strata: 1) black soil with lenses of orange and black ash; 2) the mortar band; 3) the gumbo band; and 4) the layer of black topsoil. See Figure 6.

The west lunette was designated as suboperation 1K80B. It contained only one lot.

1K80B1: horizontally, it is the area contained within the west lunette. Vertically, it includes artifacts from: 1) the surface; 2) the roots of surface vegetation stratum; and 3) the black topsoil and mortar stratum. See Figure 12.

Artifacts from the lunettes
At the time of this writing only the ceramic artifacts have been catalogued, therefore only a brief statement based largely on cursory examinations of the artifacts can be made.
Glassware from the lunettes dates from the late 19th and 20th centuries. Late 19th century glass artifacts were mostly containers of liquor, soft drinks, oil, Lee and Perrins sauce, and Dr. Price's extract. Twentieth century artifacts were much the same except for the addition of pane glass, beer bottles, medicine or perfume bottles, preserving jars, a lamp chimney and a car headlight. Most 20th century artifacts were sherds of pane glass found in 1K80A1. These came from a greenhouse and hot house set up near the bastion until 1966.

The metal artifacts span all occupation periods at the fort, but most date to the 20th century. A large proportion of the items are tobacco tins or other "tin cans" for food and beverages. Other domestic items include stove and lamp parts and gardening tools. There are also a large number of iron or tinned iron sheets with nail holes. These were attached with both circular and square nails, which would be wire, cut and/or wrought nails. Peter Priess (personal communication) suggests that the sheets were used to cover holes in walls or floors. Earlier artifacts include a scraper, presumably associated with the use of bake ovens, a key, and some wrought nails. The most recent artifacts are beer cans which were first marketed in Manitoba in the late 1960s.
The most abundant ceramic artifacts were unglazed coarse red earthenware flowerpots from the recent greenhouses near the bastion. These artifacts come from lot 1K80A1. With a few exceptions, all the other ceramics come from lots 1K80A2 and 1K80B1.

Apart from the numerous flowerpots a total of 48 ceramic objects were recovered. Most were wares and patterns found elsewhere on the site. The ceramic objects from the lunettes include the following:

- **Coarse pink earthenware**: 1 lid, yellow glaze.
- **Coarse buff earthenware**: 1 flowerpot, no glaze.
- **Refined buff earthenware**: 1 bowl with American Rockingham glaze.
- **Buff stoneware**: 1 commercial container, a preserve jar; holloware with improved (feldspathic) mottled glaze.

**Refined white earthenware:**

- **Plain**: 14 objects which include 2 chamberpots, 2 saucers, 2 bowls, 1 plate, 1 pitcher, 5 cups, 1 jar.
- **Moulded decoration**: 7 objects: 2 plates, 2 saucers, 2 cups, 1 lid.
- **Banded**: 1 saucer.
- **Transfer printed**: 18 objects: 9 plates, 5
saucers, 1 bowl, 1 wash basin, 2 pitchers.
Hand painted bone china: 1 egg cup and 2 cups.
Plain porcelain: 1 saucer

Sixteen transfer printed objects were manufactured by the W.T. Copeland Company of Stoke, Staffs., and date from 1847 to 1873 (Godden 1964: 171). This company supplied the ceramics for Lower Fort Garry and all Hudson's Bay forts after 1836 (L. Whiter, public relations director at W.T. Copeland & Sons Ltd., personal communication). Therefore, these objects would have been bought at the fort store.

Six objects are decorated with the moulded pattern called "Ceres", by Robert Cochran of Glasgow, but commonly known as "Wheat". One of these, a plate, bears the mark of Robert Cochran of Glasgow and dates from 1865-1918 (Fleming 1923). A slightly different version of the "Wheat" pattern occurs on a cup and saucer with an impressed registration mark dated 1863. One plain saucer was made by W. & T. Adams, Tunstall (1866-92). A plain covered chamber pot was made by Gelson Bros., Hanley (1867-76). A plain bowl made by Alfred Meakin, Tunstall, dates from after 1891 (Godden 1964: 23, 270, 426). The bowl is identical to those recovered from the 1972 excavation of the latrine associated with a building used as a prison and an asylum.
With the exception of the flower pots and one banded saucer made after 1910, the remainder of the ceramic material, though not marked is dateable to the second half of the 19th century. These articles might have been purchased at the fort store, but are just as likely to have been bought in Winnipeg or Selkirk.

The Path and Threshold to the Bastion

To determine the evolution of floors and the remains of earlier door sill and a path or walkway, several flagstone outside the bastion were removed and dug under. Inside the bake house, a large pit was excavated in the southwest corner to reveal a section at 90 degrees to the sill (Fig. 15). A cross-section drawing of the sill with profiles inside and outside was made in the field, but it has somehow become mislaid or lost. Although the drawing is desirable, I can still provide the required information.

There were no remains of a walkway or path to the bastion. Directly below the sod close to the sill is a layer of small stones, rubble, and a few artifacts in black earth. This layer continues until about 1.0 feet below the surface. However, the layer does not extend far from the building, and thus is not the remains of a path, but rubble from construction of the bake house walls and persons using the bake house
entrance. Beneath this layer is a small band of beige sand, mortar, and small rocks deposited during construction of the bastion foundation. Beneath this band is damp black earth with no artifacts. It rests on gumbo about 1.7 feet below the present ground surface. The layer of small stones, rubble and artifacts in black earth has been gradually built up since the bastion was completed. It was a living level and probably a dirt pathway.

Inside the doorway there were no remains of stone or wooden flooring. The present floor consists of a layer of hard packed fine gravel about 0.15 feet thick. The gravel contains some wood chips and shavings left from cutting shingles for restoration of other buildings several years ago. No artifacts or other debris were observed in the gravel to suggest that it is anything more than a modern addition to the floor. Beneath the gravel is a layer of dark earth and rubble. This overlies a band of mortar, which in turn covers a band of clay. Beneath this is a layer of black soil overlying gumbo.

The black soil layer was the ground surface before construction of the bake house. The clay band is gumbo deposited from the foundation trenches. The mortar band is debris scattered from building the foundations and walls. The layer of dark earth and rubble accumulated since the building was
finished, and was the floor of the bake house. The present gravel floor is a modern addition to the building.

No evidence was found for a different threshold. The present large cut stone rests on a low course of masonry built directly on the circular shaped bastion foundation (Fig. 15). The foundation of the west wall of the bake house also rests on the circular bastion foundation in the corner. The wooden sill and jambs of the door are probably not original.

The hearth and oven foundations
To investigate the former presence of a hearth in front of the ovens (Fig. 16) and the oven foundations, a rectangular pit (Fig. 17) was dug to the bottom of the oven foundations in the northwest corner of the bake house room, so that a 6 feet long profile at right angles from the middle of the west oven would also be exposed (Fig. 18).

This revealed no remains of a hearth. The oven foundation ends approximately 3.5 feet below the sill of the left oven door. The oven foundation abuts the wall foundations and rests on the footing of the wall foundation. This can be seen in Figure 17; the trowel on the left rests on top of the wall footing, and the other two trowels are pushed under the bottom of the oven foundation.
The north-south profile coming off the left oven at right angles (Fig. 18) shows that a shallow trench was made to install the oven foundations. It was dug into the black topsoil and underlying gumbo, and is shown by the strata sloping down to the oven wall. The oven foundation was built, and the trench was backfilled with some black topsoil, some gumbo which formed a thin clay band, and mortar and rubble at the base of the wall. The first floor was the black topsoil layer. The present gravel floor was added later.
The Doctor's Office

Front steps and path
Archaeological investigation of the front steps and path to the doctor's office were not possible because of a large concrete slab before the front door and daily use of the building as a guides' office. However, information on the path and steps may be found in a report still in preparation by William Dendy, who excavated around the doctor's office in the summer of 1972. Moreover, the fact that the building is so low to the ground and presently does not require steps for entry suggests that steps were not used formerly.

Grade
The grade around the doctor's office has changed very little over the years. We lifted sod on the north and east sides of the building to reveal a crushed stone surface directly underneath. This indicates that the grade has been more or less level, except now it is slightly higher due to the overgrowth of grass on the crushed stone surface over the years.

It appears that the crushed stone surface went to the walls of the office on the north and east sides, but previous archaeological work has removed the surface for several feet away from the sides of the building. We could not determine
whether or not the crushed stone surface was also present on the west side of the office, because a modern concrete side-walk covers the ground there. However, the crushed stone extends for more than 5 feet from the north and east sides of the office. Finding the exact outward limits would be difficult without proper excavation. This was not done, because unless the exposed stones are consolidated in some way shortly after excavation they will degenerate to a mass of loose small stones, and be lost as a feature.

The foundation

We exposed some of the foundation of the doctor's office by digging a small hole at the northeast corner of the building. The foundation consists of wooden sills resting on large un-cut stones. Hans Honegger of Restoration Services has further information on the foundation.
The Men's House

The buttress
Between the men's house and the fortification wall is a large stone and earth mound that was to be investigated. The north side of the mound is a wall of several courses of dry-laid stones. It abuts the fortification wall and the west wall of the men's house, and is flush with the north wall. Behind the dry laid wall is a large pile of dirt and rubble overgrown with weeds which slopes away gradually for most of the length of the west wall of the men's house. A photograph of the dry laid wall and mound was taken by Lorne Campbell of Restoration Services, and is in their files.

The dry laid wall and earth behind it are a buttress supporting the corner and wall base of the men's house. Examination of these parts of the house revealed extremely rotten wooden sills at the wall base. If the mound and stone buttress were properly excavated the already weak, rotten wall base would be exposed and in danger of collapse. The mound and buttress should be excavated only if the sills can be replaced and the wall consolidated shortly afterwards.

The excavation pit
An additional feature examined was a large pit from previous archaeological investigations in the southeast corner of the
men's house. The pit was dug to obtain structural information on the foundations of the house, and penetrated quite deep into the gumbo. Water which seeps through the sod and black topsoil to the relatively impervious gumbo collects in the hole. To prevent this from occurring, I suggest that the pit be filled with gumbo up to the top of the gumbo stratum, and black topsoil be put on this until the hole is filled.
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Engineering Branch, Indian and Northern Affairs.

North. (Restoration Services Division, Architecture and

Entrance to the northwest bastion and bake house. Looking
2. Plan drawing of the northwest bastion and bake house. Locations of excavation profiles and suboperations are also shown.

(Descriptions and notes are not transcribed as they are not legible.)

NOTES:
1. FLOORING CONSISTS OF TAMPED SAND, SANDSTONE, AND GRIT, SAND, AND STONE.
2. LINE OF WALL ABOVE BAKE OVEN.
3. TOP OF BAKE OVEN REMOVED IN 1929, WITH LARGE STONES RETAINED IN PLACE OVER THE SQUARE OVEN. MOST OF THE TOPS OF OVEN ROOMS HAVE BEEN WOODED AWAY.
4. SPACE BETWEEN OVEN AND WALL FILLED TO A DEPTH OF 1' OR MORE WITH DIRT AND STONE.
5. Filled-in window openings.
6. BAKE OVEN OPENINGS.
7. PLANT FOLD BETWEEN OVEN ARCHES.
The east lunette (1K80A) before excavation, looking south.
The mound of garbage outside the east window of the bakehouse, before excavation.
Elevations of the east and west exteriors of the bake house before excavation.

(Elevation Services Division, Architecture and Engineering Branch, Indiana and Northern)
Drawing of east-west profile, east lunette (1K80A) of the northwest bastion.

Stone sill of window
Elev. 758.84' MSL

Black soil with lenses or orange and black ash

Roots of surface vegetation and cement and mortar rubble

Black soil with lenses of orange and black ash

Gumbo
gumbo
gumbo
mortar
mortar
black topsoil
black topsoil

0  2 feet

Not excavated to wall because of tree and roots.
Photograph of the east-west profile, east lunette (IK80A)
The south half of the east lunette (JK80A) after excavation, newly exposed by the excavation. The top of the wall looking south. The dark stain on the walls is the manor footing is also exposed.
Footings is also exposed.

newly exposed by the excavation. The top of the wall
looking north. The dark stain on the walls is the masonry
The north half of the east juncture (1X80A) after excavation,
The north half of the west lunette (1K80B) with vegetation removed before excavation, looking north.
The south half of the west lunette (1K80B) with vegetation removed before excavation, looking south. A low mound of garbage lies at the base of the bake house window.
12 Drawing of east-west profile, west lunette of the northwest bastion.
The south half of the west lunette (K80B) after excavation, looking south.
South wall of the bake house are built.

Curved footing of the bastion wall on which the still and the west wall of the bakery. This footing abuts the house. On the right side of the pic is the footing of the excavated southwest corner and door sill of the bake
Looking north, Restoration Services Division, Architect.

The bake house interior and ovens before excavation.
on the wall footing of the bake house.

base of the oven foundation. The trowel to the left rests

bake house. The trowel under the stake rod marks the

The excavated northwest corner and oven base inside the
Profile drawing of the oven base and floor deposits in the bake house. This profile is marked by the string Figure 17.
1968 Excavations at Lower Fort Garry

by Peter J. Priess
Excavations at Lower Fort Garry (1K) 1968
by Peter J. Priess

1 Introduction
3 Big House
3 Introduction
3 Areaway
12 Landscaping
14 Latrine
15 Fence
20 Southwest Bastion
21 Penitentiary
21 Introduction
22 1K40A, 1K40B, 1K40L, 1K40N
23 1K40C, 1K40F, 1K40K
24 1K40E
25 1K40G
26 1K40H
27 1K40J
28 1K40N
29 1K40P, 1K40S
29 1K40R
30 Penitentiary addition
30 1K41A
34 Traditional Boat Landing
35 Northeast Bastion
36 Original Drainage
37 Bibliography
Illustrations

39  1  Lower Fort Garry, plan of buildings
40,41  2  1K37, plan of excavations and partial floor plans
42  3  1K38, plan of excavations and fence post remnants
43  4  1K37T, section A-B
44  5  1K37A, partial south profile
45  6  1K37C, partial west profile
46  7  1K37P, north profile
47  8  1K38Z, south profile
48  9  1K40, 1K41, plan of excavations and partial floor plans
49 10  1K40A, east profile; 1K40C, west profile
50 11  1K40C, 1K40F, floor plan
51 12  1K40C, north profile; 1K40F south profile
52 13  1K40E, partial floor plan
53 14  1K40E, profile A-B
54 15  1K40G, profile A-B
55 16  1K40H, profile A-B
56 17  1K40N, floor plan
57 18  1K40N, sections A-B, C-D
58 19  1K41A, cell hardware
59 20  1K42A, north profile
60 21  1K37, south end of areaway
61 22  1K37, box in areaway
62 23  1K37, north end of areaway
63 24  1K37, latrine
64 25  1K40E, plan view of test section
65 26  1K40N, base of oven
66 27  1K41A, interior of cell 4
67 28  1K41A, entrance to cell 3
68 29  1K41A, northwest corner of excavation
69 30  1K43A, limestone drain
Introduction

During the summer of 1968 a fourth season of excavations was undertaken at Lower Fort Garry, Manitoba through a contract from the Research Division, National Historic Sites Service, with the University of Manitoba. The contract was administered by the Department of Anthropology, University of Manitoba under the chairmanship of Dr. William J. Mayer-Oakes and work in the field was under the supervision of Peter J. Priess.

The summer's work also included exploratory excavations at a nineteenth century pottery, located in the town of East Selkirk, as a supplement to research for Lower Fort Garry. However, rather than forming a part of present discussions, the results of this work will constitute a separate report submitted by James R. Henderson, who also carried out the excavations.

Discussion of the site, its background and setting, has already been considered in some detail in the report for the first three years of excavation (Chism: 1968b) and will, therefore, not be considered here again. Actual excavations were carried out within the system of the Research Division, National Historic Sites Service.

In contrast with past summers, this season was completed with a small crew, numbering no more than five, (rather than 15 or 20), and emphasis, of excavation, throughout, was concentrated on existing buildings. Major objective for the summer was the recovery of information for buildings already undergoing restoration or scheduled for such attention within the next few years.
Attention was focused on two existing buildings; the Big House and the Penitentiary, with some work also at the South West Bastion and North West Bastion (powder magazine) (Fig. 1). The latter consisted primarily of consultations with restoration personnel and provided little information for consideration here. Finally, one test trench was completed on the roadway associated with the traditional boat landing, south of the fort.

Purpose of this report is to present the results of excavation. Discussion will primarily be in terms of structural evidence and occasionally, of necessity, be no more than preliminary in nature. Some excavations were intended to locate features rather than carry out extensive investigations of them. Consequently, positive identification of a feature can not always be made. Artifacts were not analysed and, except for a few special cases, will not be considered in here.
Big House

Introduction
A considerable area around this building had already been investigated in two previous field seasons (Chism 1966; Chism et al. 1967) and the majority of restoration work completed. However, several problems relating to this restoration still remained. For purposes of discussion, the building will be divided into two units; the larger "main building" oriented north-south and predating the "annex" which joins the main building at the south end of the west wall (Fig. 1). Excavations were required on an areaway along the west wall of the main building, the landscaping around the areaway, and an earlier fence around the building.

Work on the areaway and associated landscaping was designated operation 37 (Fig. 2) and the fence operation 38 (Fig. 3). However, initial discovery of the fence came as part of operation 37. Excavations precipitated a major reinterpretation of the form and function of the areaway, provided information on landscaping around the areaway, established the location of another latrine associated with the Big House, and the location of some parts of an earlier fence.

Areaway
The areaway was a feature exterior and parallel to the west wall of the main building, consisting mainly of construction features below ground level. Construction was of stone with some brick. The original interpretation had been for an area
excavated approximately to the level of the basement floor, thus providing a path along the wall and access to a door in the wall at this level. Such an arrangement would also have provided additional light for the basement windows. It was further suggested that the walls of such an excavation had been lined with stone at "a slope of approximately 30 degrees" (Chism et al. 1967: 11).

Excavations revealed that the theory of a slope could no longer be supported and that, in fact, additional construction had produced an area more complex than initially anticipated. It was established that the areaway consisted of an extensive excavation, with slightly sloping floor and walls approaching vertical, into which had been built two walls (Figs. 2; 21), at least three walls forming the sides of a box (Fig. 2; 22), and a bake oven (Fig. 2; 23).

In discussing the areaway several points should be clarified at the outset. The majority of construction had been with limestone and once the use had been discontinued, had served as a convenient source for such stone in subsequent construction or the lime burning operation. Consequently, much of the stone had been removed and features were usually represented only by a segment of the original whole. However, in most cases enough stone remained to allow adequate interpretation of the original appearance. A second point centers on the elevations of the various features. Present ground level is relatively flat with an elevation of approximately 757 ft. above sea level. Below this is a layer of limestone rubble, possibly intended as a pavement, or the result of building activities, at an elevation of approximately 756 ft. above sea level. For present purposes, discussion of any feature height will be given relative to the limestone rubble or ground level.

Construction of the areaway had begun with an excavation paralleling the west wall of the main building and extending
out from this wall for a distance of approximately 11.5 ft., to accommodate the two walls, or a distance of approximately 14 ft. for the oven and box. Depth of excavation, along the wall, had been to the level of the basement floor with a slight upward slope away from the building wall. A vertical, mortared limestone retaining wall, three feet wide, had been constructed on the floor of the excavation parallel to the west wall of the main building and the rough nature of its west (back) side indicated it had been set directly against the west side of the excavation. The majority of this wall was represented by no more than a few courses of stone and only at one point near the north end did it approach to within a fraction of a foot from the limestone rubble layer. On the basis of this one section it is suggested that the original wall probably extended at least to this height and slightly beyond to bring it level with the rubble layer. In this way the rubble layer would have extended outward from the top of the retaining wall and, thus, formed a level surface.

The southern limit of the retaining wall could not be established because of subsequent construction of the annex and a relatively recent verandah. The northern limit was the south wall of the box although this wall had also been disturbed by recent trenching.

Paralleling the retaining wall and, abutting on its east side, was another mortared limestone wall, or platform, also three feet in width. Most of the stone had been removed from a major portion with part of the east side, toward the south end, represented by a single row of stones (Fig. 21). Height of this wall is suggested by one section, near the north end, where stones extended to within three feet of the rubble layer. On the basis of this information it is suggested that the entire wall stood at least at this height, although possibly no higher.

It seems reasonable to suggest that the first mentioned wall served to retain the earth in the areaway excavation.
The nature of the soil makes it essential that such a feature be provided. However, the presence of a second wall could have several interpretations. It should be pointed out that these two walls are apparently not joined in any way, and may, therefore, have been constructed at different times. The second wall could have been added to reinforce the other. However, there was no deformation, of the first wall, which could suggest that such additional support was ever required. A second wall, lower than the first, however, could have been constructed to serve as a platform, related in some way to activities in the building and areaway. Maximum height of remaining stone could, thus, approximate height of the total wall, three feet below the top of the retaining wall. This second interpretation is preferred as the most likely. A platform in this area could have served for storage of barrels, fire wood, or other items and would have been an advantage to nearby activities.

Limits of the second wall were probably the same as for the retaining wall. At the north end there is little question of this fact since both walls are represented by sufficient stone. However, the south end of the second wall had been removed almost completely (Fig. 21). Total evidence for the wall at this point consisted of few stones paralleling the retaining wall and aligned with other sections of the second wall. It is, however, possible to consider these as part of an original construction in that they had not been disturbed. Along their east side was a narrow layer of sand associated in other parts of the areaway with a limestone drain system. The presence of the sand suggests that neither it nor the stones had been disturbed since having been put into place. Again, the southern limit could not be determined.

As already indicated, the north end of both walls terminated at a feature referred to presently as a box (Fig. 2; 22). The west wall of this box is most obvious and still
stood to the rubble level. The north wall was an integral part of the oven and may have been constructed at the same time. It appeared that both of these walls had been constructed of only one thickness of stone, with the west one being set directly against the wall of the excavation, as was the retaining wall.

The south wall of the box was no longer present, having fallen victim to recent trenching, for a water line, without the services of an archaeologist. However, protruding stones on an otherwise flat west wall (Fig. 22) strongly suggested the former presence of a wall perpendicular to this west wall.

Identification of purpose for the box has not been resolved. At the moment it would appear that there were only three stone walls for it. At least one of these walls extended to ground level and both of the others may have also done so. The east end could have been filled in with a wooden wall, of which no evidence remained. The suggestion that it served as a well for a stairway to bottom of the areaway and basement door is somewhat questionable in that it would be the only such arrangement for the fort. One other basement entrance had an excavation in steps with stone and possibly wood on top for a stairway. However, it should be pointed out that the north wall and probable location of the south wall are aligned with the basement doorway (Fig. 2). Therefore, some association with this entrance can not be rejected. Alternatively, it can be suggested that a box in this area could have been roofed, for protection from the elements, and used for storage of fire wood. Its location adjacent to a bake oven and proximity to a doorway leading to other ovens and stoves throughout the building lends some support to this suggestion. As a wood box there may also have been no need for an east wall, thus, explaining the lack of evidence for such a wall. Under present circumstances, neither of the above possibilities can be considered to the exclusion of the other and identification of the box must remain unresolved.
North of the box stood the remains of a brick lined limestone bake oven (Fig. 2; 23). The north side of this feature terminated in a line south of the north wall of the main building. North-south dimension, or length of the oven was ten feet. The back, or west side, was a distance of fourteen feet from the west wall of the main structure, the front slightly over five feet from the same wall. This would produce an east-west dimension, or width, of approximately nine feet.

The remains of the oven consisted of a mortared limestone base and brick floor interior. Heat generated during use had reduced the stone, surrounding the floor, to lime. Burning of the stone under the floor had caused the majority of it to sag, leaving no more than two rows of brick at approximately the original level (Fig. 4).

The oven had been built into an excavation similar to that for the remainder of the areaway except, as already indicated, slightly wider. At least the west side, and probably also the north side had again been built directly against the sides of the excavation. The bottom of the construction sloped down slightly towards the building. The east side was aligned with the east side of the second wall, or platform, mentioned previously. The eastern limit was also established, in part, by the presence of a limestone drain stone (Fig. 2).

The oven interior had been built of a single layer of brick set on edge and was represented by the remains of all or most of the floor. During excavation, no additional brick was located although this could have been removed in dismantling the oven. The shape of the floor suggested an interior with a rounded back and straight sides with the possibility of a slight rounding at the front to accommodate a door. There is some possibility that several rows of brick are missing from the front and, therefore, the complete shape can not be determined definitely. The remaining brick had a width (north-south) of 4 ft. and depth (east-west) of 3.5 ft. Original
width is definitely represented by these remains and if some bricks are assumed missing in the front it can be suggested that the oven interior was approximately square with at least one side (the back) rounded. As mentioned previously, the majority of this floor had collapsed as the stone underneath was burned. Two rows of brick remained at a height of 1.3 ft. below the rubble layer, with the remainder approximately 2.7 ft. below (Fig. 4). It is considered most likely that the level represented by the two rows at a higher elevation approximate the original floor level of the oven.

If the entire block of stone construction at the north end of the areaway is considered as a unit it will be noted that the brick floor is not situated centrally. Width of stone north of the floor is two feet but four feet south of it. However, if part of the south side of the oven is considered as actually belonging to the box construction the floor can be considered as being approximately central for the oven. From the remaining stones it is not possible to differentiate definitely between oven and box construction. At some higher point in construction each of these features would have been distinguishable from the other. At this point the first few feet on the south side would have belonged to the box and the remainder to the oven with the brick floor being central to the oven and the oven being, therefore, approximately symmetrical.

Construction of the front of the oven could not be established due to a lack of evidence. A space of four feet is available between the brick floor and the stone drain. This area would have been for a front wall for the oven as well as space for the baker to work properly. 1.5 ft. east of the brick floor were some remnants of highly decomposed wood. However, it was not possible to relate this definitely to any part of the oven construction. Any wooden construction in this area could be considered as a fire hazard and, therefore, unlikely. It could have originated elsewhere and been
left near the oven as debris when the stone was removed.

The construction between the north-east corner of the oven and the north-west corner of the main building was possibly in the form of a retaining wall, although of a small scale. Present evidence suggests a single thickness of stone extending north from the corner of the oven and then turning east toward the building at a point slightly north of the main building north wall (Fig. 2). Furthermore, subsequent construction has disturbed part of this area, making it impossible to establish definitely what happened at the wall of the building. Earlier excavations have established that stones on this corner of the building were dressed for a distance of two and a half feet below ground level (Chism 1966: 14), although restoration saw fit to rebuild it with dressed stone to the bottom of the foundation. Dressed stone at this depth suggests that at least part of the corner was originally exposed and, therefore, it can be further suggested that such exposure may be associated with a stairway in the area. Evidence for such a stairway does not exist at present. A stairway could, however, justify the construction of a less substantial retaining wall, with some of the support being derived from the stair construction.

Drainage of the areaway was represented by several limestone slabs with a shallow channel in the upper surface, at the north-east corner of the oven, and a limestone catch basin, immediately west of a recent concrete drain (Fig. 2). The channel had been cut into the stone and had a width of two-tenths of a foot (at the top) and depth of one-tenth of a foot. It seems unlikely that a channel of such dimensions would have been adequate. The channel also makes a right turn toward the building at the north end of the areaway, suggesting that construction terminated at this point rather than extending around the corner or much beyond the end of the building. The slabs were also packed with sand for levelling. The presence of sand has already been used in discussing the second
wall, further to the south, and can be considered as indicating drain stones at this point and, therefore, probably for the entire length of the areaway.

The catch basin consisted of a square opening with limestone cribbing, the east side of which had been removed by construction of the concrete drain. This opening extended downward to below the level of the basement floor and then made a right angle turn towards the building. It is probable that this, in fact, represents a drainage channel under the building connecting with other similar channels and ultimately leading to the river. Slope of the surface drainage stone slabs would have been such to allow water from both ends of the areaway to flow toward the catch basin and into the drain.

A timber shown near the stone catch basin (Fig. 2) cannot be explained. In appearance it is more like a section of vertical timbering for post on sill construction and its presence near the catch basin may be coincidental. Filling of the areaway provided an ideal opportunity for disposal of a variety of garbage, of which the timber may be an example.

Trenching during restoration operations had disturbed the area along the wall of the building. Therefore, it was not possible to retrieve further information to support or deny the suggestion for a path along the wall. It is considered likely that the area between the second wall and the wall of the building was open, except for the drain, and level and could have been a gravel path as originally suggested (Chism 1968b).

Access to the areaway cannot be established with certainty, since positive evidence for a stairway has not been recovered. However, several possibilities exist. The box has already been suggested as one of these. The north end, as another possibility, is supported by the greater depth of dressed corner stones and lack of evidence for any substantial retaining wall in the area. Another possibility could be
the south end, near the annex. However, no discussion of this can be undertaken because of a more recent foundation. Therefore, if it is to be assumed that some form of access from outside did in fact exist, there are at least three possibilities but under present circumstances none of them can be considered as definite, or preferred.

Landscaping
Excavation revealed that the vicinity west and north of the areaway had at one time been paved with either limestone rubble, fine gravel, and/or minor amounts of brick rubble. The layer of limestone rubble has already been mentioned in establishing elevations for features of the areaway. This layer appears as a fan around the areaway with a roadway leading towards the west gate of the fort. Presence of general paving was established by 1K37A (Fig. 5), 1K37C (Fig. 6), and 1K37P (Fig. 7), as well as most other excavations in the area, and the road by 1K37E, 1K37H, 1K37M, 1K37N, and 1K37S (Fig. 2). Total extent of the road was not established although it possibly approximates the present one, extending through the west gate and beyond. It seems reasonable to suggest that much of this rubble was derived from construction in the area with some intentional effort to determine extent of distribution or size of fragment, although it need not all have been deposited at the same time. Some areas consisted of two distinct layers of limestone separated by a thin layer of brick rubble.

Considering the rough nature of the fragments, it is questionable whether limestone rubble alone could provide a suitable base for traffic. It was found that the entire area of rubble plus an extensive area beyond had been covered by a layer of fine rounded gravel, possibly obtained from the vicinity of the fort. All test trenches in the area encountered some of this gravel and it was noted to extend
well beyond the north end of the Big House (Fig. 2) and up to
the line of the earlier fence (Fig. 2: 5) as well as covering
rubble on the road. Total extent to the west was actually
not determined since excavation was terminated near the
earlier fence line. Thickness of the gravel layer varied
from over half a foot near the areaway to a trace at points
of termination.

Establishing the period of deposition for any gravel
within the fort is questionable. The stones are relatively
small and water worn and can be found in natural deposits
within a few hundred yards north of the fort. Lying at or
near the surface, it would readily be available to any
occupant of the fort. In 1K37E it was obvious that several
layers had been deposited. However it could not be established
whether this represented a span of some time or merely a
difference among various loads brought in during the course
of one season. It is known that the Hudson's Bay Company
used gravel for paths inside the fort (Ingram 1965: Appendix
III). However, the inherent nature of a motor club strongly
suggests an extensive use of gravel for their activities.
Establishing the group responsible for any of the gravel,
therefore, seems unlikely. At present, much of it is
covered by a layer of soil approximately the thickness of
cut sod.

Landscaping in association with the restoration program
could involve no more than removal of sod to uncover the
gravel. However, since the period or affiliation of much of
it is not certain, some of the gravel could also be removed,
leaving the area covered by the limestone rubble. Some
gravel could be left to cover the rubble, thus providing a
better base for pedestrian traffic.

1K37N and 1K37P also located parts of a row of limestone
slabs set on edge and aligned parallel to the west wall of
the annex (Fig. 2). Comparison with other areas suggests this
to be the edge of a path or roadway. However, gravel was found on either side of the stone (Fig. 7). The extent of stone has not been established.

The nature of the areaway and associated paving provides a much stronger justification for its conception and construction. Building of a stone slope to provide better light for the basement windows is a case of maximum effort for minimum return. Other basement windows were not given such consideration and, in fact, on some walls the light was almost completely cut off by a porch, possibly built at the same time as the remainder of the building. The idea of an areaway was conceived as part of the plans for building, which, in turn, led to a decision to make the basement windows on the west wall larger than any other in the building, thus admitting more light. The fact that the basement windows on the entire west wall are all the same size further suggests that the original areaway extended the full length of the building. The areaway would also have provided direct access to the basement, for bringing in supplies which were generally processed in this area and storage space for a variety of items. The bake oven would provide relief from the heat inside the building during the summer. The roadway and gravelled area would provide access and a work space free from major problems of mud.

Latrine

Excavations for landscaping also established the location of a latrine in 1K37N (Fig. 2), north-west of the north-west corner of the Annex. Photographs (Ingram 1965: Illustration VI; Chism 1968b; Plate 1) show at least two different structures in the area and excavations provided information which can be related to both of these.

The latrine consisted of an ell shaped pit cribbed with hand shaped wooden planks (Fig. 24). The cribbing had been
constructed by attaching the planks to vertical corner posts with one side ending at the post and the other projecting beyond, thus making it unnecessary to cut them exactly to a uniform length (Fig. 2). Planks were roughly 0.2 ft. thick and varied in width from approximately 0.5 to 0.8 ft. Most planks still retained some of the original curvature of the tree (Fig. 24). The vertical corner posts were 0.2 ft. square.

The ell was the result of two construction stages. The long arm, oriented east-west, had a depth of at least six feet (part of the top was missing through deterioration), a width of 2.0 ft. and length of 6.5 ft. This probably represents the initial construction phase corresponding to the structure illustrated by Ingram (1965: Illustration VI). The short arm had been added later by digging a pit at the west end of the south wall to about half the depth and corresponds to the structure illustrated by Chism (1968b: Plate 1). Similar cribbing had been used. Dimensions of the addition were 2 ft. by 3 ft. and a remaining depth of 4 ft. The suggested sequence of construction is in agreement with the dates for the two available photographs.

Excavations located the feature and determined its depth and nature of construction. No attempt was made to recover artifacts from the interior. Determination of depth was through excavation of a test pit outside the cribbing. Owing to the dampness of the ground the wood was in a good state of preservation except for the top. The feature has been backfilled and should survive for further excavation.

Fence
Photographs exist which show a fence around part of the Big House. In erecting the present fence such photographs had apparently been consulted to duplicate the form but the location had been approximated. Excavations revealed that
this location was at some minor variance with the earlier location which can be explained, in part, by the trees presently surrounding the building. On the early photographs these appear relatively small and just inside the fence. Since that time they have grown considerably, with some approaching two feet in diameter, and now possibly intrude on the original fence line. When the fence was re-established the problem was overcome by moving it slightly toward the building to bypass these trees. This had apparently occurred in the case on the west and south sides.

The east side of the Big House includes a road leading from the front door to the east gate of the fort. At this point the fence had a large gate which can still be seen in photographs in which the remainder of the fence has been removed. From the archaeological evidence for the earlier fence (Fig. 3) it is likely that signs of this gate remained when the existing fence was erected, since the present gate duplicates the location of the earlier with the remainder of the present fence at a slight angle to the line of the earlier.

Excavations were not considered to locate every shred of evidence for an earlier fence. Rather, emphasis was placed on establishing the position of the earlier relative to the later. On the basis of excavated information it is doubtful whether every post could even be located. Some had been removed so completely that only shreds remained, making their interpretation as posts difficult. In the case of the east side, the fact that the gate was in its original position suggested strongly that the remains of nearby posts would have been disturbed or removed in erecting the new fence. Spacing for the new posts was determined from photographs and, therefore, almost duplicated the spacing of the earlier.

Excavations revealed a close approximation of the earlier fence by the present one; the east side varied from being in the same location to being a foot off, the west side was off approximately three feet, the south side six feet and the
north side apparently within a foot (Fig. 3).

The present fence, however, does not have the same limits as the earlier. Both cut off corners on the east side should not be there. The north east corner post was located by 1K38J, the south east corner was not, but is suspected of being in or near the existing road. The west side presently ends at the road from the west gate to the Big House. However, 1K37A and 1K37K revealed the presence of at least two posts north of this point. A third post should have been in the north end of 1K37M but could have been removed by recent trenching. Further attempts to extend the fence on this side were unproductive. The excavation of 1K38U, and 1K38Z provided no evidence of post remains or holes. 1K38Z did locate one concentration of stones with a square opening in the middle but this proved to have no depth or be associated with any suggestion of a post hole.

Several problems were encountered through the excavations. Numerous attempts made to establish the presence of post remains for the north side of the fence were largely unproductive. Several possible explanations can be suggested. The present fence may approximate the earlier so closely as to have disturbed the evidence for the earlier or an error in estimating the location of the earlier put most of the test excavations in the wrong place. It could also be that there never was a fence in the area although such a possibility is considered doubtful. The probability of some fence in the area is suggested by a post in 1K38S although no others were found.

The north-west corner of the fence or the general area north-west of the Big House provides an additional problem. Watson (1928), on his map of the fort, provides the notation that wood was stored in this area rather than having a fence. Excavations have already established that possibly no fence stood here. 1K38Z was excavated to investigate surface irregularities and revealed the presence of an unusually high
amount of charcoal and ash (Fig. 8), which could represent either a disposal area for such material or the burning of wood, in place. It appears possible that the area was used for wood storage without a fence being present.

Restoration of the fence to its earlier position would require reference to available photographs for form, and existence of openings. Spacing and general location can be based on archaeological evidence. Excavating for total information of the fence would be frustrating and it is questionable whether the ends would justify the means. Such procedures should be considered only for the north side where evidence is least definite. The only practical method of locating every mold or hole would be a use of power equipment, thereby endangering other possible features.

Evidence for the fence consisted of post remnant set into hand dug holes. It was obvious that these holes had been dug roughly square, approximately two shovel widths to a side. A wooden post had been set approximately in the center and the hole filled with clay, limestone fragments, and occasionally an additional wooden brace. Maximum depth for a post was 2.9 ft. (1K38C) and minimum 1.8 ft. (1K38S). Other than 1K38S, all posts extended at least 2 ft. into the ground. Posts were found in various states of decay, making some measurement difficult. Post size ranged from 0.3 ft. square to 0.5 ft. square, with the majority concentrated at the upper end of the range. Measurements were usually taken at the top of the remaining post since it was obvious from some that the bottom ends had been left in an unaltered round state.

The post located in 1K38C may post some degree of a problem. The wood was in a much better state of preservation than any other, the bottom of the post was much larger, and the post hole had the appearance of having been dug with an auger. The hole was round and its sides vertical. This
possibly represents the replacement of a deteriorated post. However, photographic evidence (Chism 1968b; Pl. 1) also has a hitching rail in the area immediately south of the earlier fence. Until evidence for such a feature is located, 1K38C, and subsequently also 1K38B, can not be ignored as possible evidence of this feature rather than the fence.
Southwest Bastion

The designation of operation 39 was given to continued excavations at the Southwest Bastion. Work consisted mainly of attempts to provide more complete information on floor joists, inside the structure, by uncovering most or all of the wood remains, so that a more complete record could be made by the restoration draftsmen. Time chosen for this work was inappropriate and excavation was finally terminated in frustration after extensive exposure to traffic from a variety of people who were either unable or unwilling to avoid stepping on every scrap of wood uncovered. No sub-operations were assigned and no additional information recovered for present considerations.
Penitentiary

Introduction
Excavations were undertaken both outside the building, designated operation 40, and inside, designated operation 41 (Fig. 9). Emphasis was on locating features rather than extensive investigation of their nature. Therefore, the present report can provide more information on location than on appearance or size. In the case of some, it is not even possible to provide reasonable identification. One reason for the limited excavations was that many of the features were of such depth as to make extensive excavation impractical with available labour. In addition, unusually heavy rains in August flooded some of the excavations repeatedly and made completion of the work impossible within time limits of the season.

Excavations outside the building were restricted to areas on the north and west side. The remaining sides were not considered largely because of a lack of time. However, it can be argued that the possibility of extensive structural information along the south side probably does not exist. This side faces the road and was, at one time, fronted by a palisade. Information in this area would be on the palisade and possibly some structures associated with the entrances. Therefore, it is felt that the lack of excavation on the south side does not pose a serious problem. On the east side there could be any number of structural features but these must await another field season. Discussion will be in terms of sub-operations rather than features because of occasional difficulties of identification.
1K40A, 1K40B, 1K40L, 1K40N

Four test excavations along the north wall of the structure (Fig. 9) produced no evidence for additional construction although providing some information on stratigraphy.

1K40A uncovered a wide trench extending part way down the foundation wall and cutting an earlier builder's trench (Fig. 10). The profile is in contrast to that of 1K40C, considered to be normal for the area. Cement repairs on the wall at 1K40A to the bottom of the trench identified it as being a relatively recent intrusion.

1K40B located an area of limestone rubble under a sod and gravel layer. The rubble lay on mixed clay which rested on undisturbed black. Both clay and rubble are considered construction debris. The west end of the sub-operation was cut by the repair trench already mentioned for 1K40A.

1K40B did uncover a ventilator opening in the wall of the structure. Originally this would have been above ground level but had been covered by soil accumulation. The opening was 0.35 ft. high, 0.95 ft. wide and surrounded by dressed limestone. It was similar to other openings on the north and south wall at this level.

1K40L was situated around a former door in the north wall but failed to locate any construction associated with this door. Excavation to a depth of 1.4 ft. established the presence of a builder's trench of about a foot width. Stratigraphy consisted of sod underlain by a layer of sand and gravel and then a layer of mixed clay. These are considered to be construction debris.

1K40M located a pit, at the north-east corner of the structure, under the normal stratigraphy of sod, sand and gravel, and clay, consisting of an irregular circular depression with wood or similar material at the bottom and filled with blocks of limestone. Maximum diameter was 5.7 ft. and a depth below sod of about 5 ft. Purpose is unknown although
a temporary latrine or storage pit could be suggested. The fact that gravel and clay cover the area suggests a date prior to construction of the Penitentiary.

1K40C, 1K40F, 1K40K
A palisade was located, extending from the penitentiary to the south-east corner of the foundation in 1K40E (Fig. 11). The excavation of 1K40K established that it did not continue beyond 1K40E and thus could have served to block off an area between two structures.

The palisade consisted of vertical pickets set into a trench and held in place by clay fill, sand, some rocks and, apparently, also wood scraps (Fig. 12). Dimensions obtained for the wood range from 0.25 ft. to 0.4 ft. for the width. However, all wood was highly deteriorated and consequently such measurements can be seen only as minimums. Spaces between the wood were generally as wide as the wood itself. It appears likely that all wood was either heavy planking or split log. Maximum depth of wood was 4.65 ft. below sod although the bottom of the trench was not established at this point. At the Penitentiary, the palisade trench cut the Penitentiary builder's trench and, thus, the palisade must post date construction of the Penitentiary. However, the narrowness of a builder's trench at 1K40E makes it difficult to establish such a relationship. The plan view (Fig. 11) suggests the slight possibility that the palisade also post dates 1K40E. However, since the palisade apparently does not extend beyond the structure in 1K40E it is possible that the two features are related, and contemporary.

Height of palisade above ground is not available although it must be remembered that pickets in 1K2 had a depth of 4 feet (Chism 1966) and are reported to have had a height of twenty feet.
A series of excavations, within one sub-operation, served to uncover and test a structure consisting of a partial stone foundation with numerous timbers between the two side walls. Excavation consisted of uncovering the probable extent of the foundation and testing at one point to determine depth.

The foundation was of unmortared limestone with an approximate length of 20.5 ft. and width of 7.0 ft. Excavation for construction had been the size of the required foundation since it had been built directly against the clay wall, resulting in an unfinished outside surface with a relatively smooth straight inside. Inside width was approximately 3.7 ft. and length could not be determined. The lack of mortar had probably contributed to a collapse of the north wall and an inward bow on the south wall (Fig. 14).

Excavation of one section to a depth of 6.5 ft. extended below the bottom of foundation stone and into clay, considered to be undisturbed. In this area were numerous timbers and remnants of planking, representing either a floor or section of wall which had collapsed (Fig. 13; 25). The timbers were roughly squared with maximum thickness of 0.75 ft. and planking no more than 0.1 ft. thick. In the five foot width of the test this wood was removed to provide access to the bottom of the foundation. However, further excavation would uncover the remaining segments and provide a better idea of their nature and purpose.

Shape of the structure and the poor quality of its foundation suggests its function as a latrine. In shape it is similar to the latrine of 1K27. However, the one test to the bottom of the foundation produced neither the abundance of artifacts nor organic fill which have come to be associated with latrines. If it had been constructed as a latrine it was apparently never used as such or had been cleaned before being abandoned. Further excavation may suggest some other function.
1K40G

A series of excavations were initiated between 1K40N and the north wall of the penitentiary (Fig. 9), and proved to be the most frustrating part of the entire field season. The sub-operation is associated with an extensive, and yet unidentified feature. Although several possibilities have been considered, identification can come only through further excavation. A major problem was a depth of at least eight feet for the feature. Work at this depth was awkward and further hampered by rain and ground water. Wet Manitoba clay is extremely difficult to work in for an archaeologist. Ultimately parts of two sides and a balk collapsed and the whole mess never dried up in time to permit continuation of work. At no point was the bottom of the disturbed, or construction, zone achieved.

Major element of the feature was a square excavation, of unknown depth, with a minimum of support for the sides and filled with a variety of clay, rubble and scrap. Apparently this excavation, measuring approximately eight feet square, had been dug into the clay, a heavy vertical plank set in each corner (Fig. 9) and at least two horizontal rings of single planks put in, (Fig. 9; 15) to provide little, if any support. These rings were approximately 4.5 ft. from each other. The walls of the excavation were relatively straight and there was little evidence for additional cribbing or support. Nails protruded from some of the planks but no additional wood remained to indicate construction or function. The straightness of its walls and a lack of substantial support suggest that the excavation had not stood open for any length of time. Furthermore the bottom several feet of fill were uniform and free from debris. Therefore, it is felt that the excavation had been made to permit construction of a feature at a depth not yet achieved by the archaeology. Completion of such construction was followed shortly by filling the excavation.
Excavation was terminated at a depth of just under eight feet at which point several horizontal planks were uncovered. However, excavation could not be carried out to determine their extent or purpose. Both to the north and south of this excavation was a clay filled trench line although these also were not excavated to the bottom to establish their nature. The trench to the south, however, did contain the horizontal planking mentioned previously. To the north the trench apparently ran to the fort wall whereas to the south it extended to the Penitentiary.

At present the feature consists of a pit, approximately eight feet square, of unknown depth, and with some wooden construction and unidentified trenches extending from it to the north and south. An early suggested identification for a well, suspected of being in the general area, should be rejected because of size and probability that it had not been open for any length of time. However a second possibility appears more reasonable. The nature of overall appearances suggests an original drainage system with the square excavation for construction of a basin with channels in the trenches. This interpretation is preferred although presently unverifiable.

1K40H
The initial location of this feature was through an obvious surface depression and one test trench was undertaken to investigate it. Shortly after excavation began we were informed by park staff that in recent years the depression had been more pronounced and been filled with soil from the Museum construction. In the profile (Fig. 16) this is probably represented by the uppermost layer consisting of dark clay, some gravel, and sod.

The feature consists of wood cribbed pit roughly 4 ft. wide, and of unknown depth and length. Remains of horizontal timbers may represent some form of superstructure but not enough was uncovered to determine this.
Although excavation was not very complete it is probable that the feature represents a latrine. Work was terminated before any volume of organic fill was encountered which would confirm such an identification. However, the large quantity of artifacts recovered provided for an indirect identification through comparison with a similar situation in other latrines from the site. The majority of artifacts were obtained from below the level of horizontal timbers and appeared recent, consisting of such items as preserve jars, sheet metal pot lids, electrical heating coils and units, and rubber automobile floor mat fragments. It is likely that such fill represents the Motor Country Club.

Reference to the profile (Fig. 16) will show that part of the fill consists of a layer of gravel which must obviously post-date the latrine. If the latrine is accepted as relatively recent, as suggested by the artifacts, then the gravel must be even more recent and probably the work of the Motor Country Club. Therefore, it must follow that the gravel and path of 1K40P and 1K40S are also probably recent.

1K40H is probably a latrine dating from the early twentieth century. The Motor Country Club is undoubtedly responsible for filling it with debris and gravelling the general area. Original construction may be late Hudson's Bay or early Motor Country Club. The location of this feature was established, however, without determining its extent or depth.

1K40J
The sub-operation consisted of clearing the base of a bake oven on the inside north wall, several feet east of 1K40N. The oven was more recent and appears on photographs from the Motor Country Club period. The area had been partly covered with grass but at least half the stones were still visible at the surface.
The base was square, 7.2 ft. to a side, and built of mortared limestone. Depth of the stone was not determined. The upper section of the chimney still stands on the fort wall. Further excavation would establish the relationship of construction to the rubble layer butting on the oven in 1K40N.

1K40N
The base of a second bake oven was located along the north wall (Fig. 17; 26), west of 1K40J. All remains were below present ground level and consisted of the bottom of a roughly circular oven set onto a square base. Construction was of limestone with some brick and very little mortar.

The base, measuring 7.8 ft. east-west by 8 ft. north-south, consisted of two courses of unmortared stone set into an excavation approximating the size as the base. Top of the base was 2.2 ft. below present ground level (Fig. 18). The remainder of the oven had been set approximately in its center and had been constructed of unmortared stone. It is, however, probable that the superstructure would have had some mortar to protect it from moisture and deterioration.

Beginning approximately at the center and terminating at the southern edge was a trough bordered with a single width of mortared brick on either side. Maximum height for remaining brick was three courses (Fig. 18). Additional bricks at the top of the oven remains and also set into the mortar around the trough suggest an increase in use of brick at this point and continuing into the oven.

The trough diverged slightly toward the edge, increasing in width from 0.8 ft. to 1.4 ft., as well as sloping upward. Toward the edge there was a decrease of approximately 0.5 ft. in depth. A single stone at the south end may have served as a step and may, consequently, represent ground level while the oven was being used.
The trough probably served as a pit into which ashes could be scraped as they were removed from the oven interior in preparation for baking. When excavated, ash was the major item of fill encountered.

Placement of chimney, as suggested by the arrangement of stone, (Fig. 17) was probably on the north side against the fort wall. Heat discoloration of stones in the wall reinforced this possibility.

Stones appearing in the northeast corner of the sub-operation (Fig. 18) are part of limestone rubble pavement. These also occurred in other areas around the oven but were removed to expose the base.

1K40P, 1K40S
The west wall of the building had a central door and hints of a path leading westward from here. Three test trenches were completed, providing the information that the general area had been gravelled, some of this gravel subsequently removed, and a stone edged gravel path constructed. There was no indication as to when this had taken place nor did the limited testing provide any clues for structures in the area.

1K40R
One partial section was made of the road southwest of the building (Fig. 9). Continuous traffic made it impossible to consider more complete excavations at the time. It was established that an earlier road had existed approximately in the same location as the present one. The earlier was narrower; approximately ten feet, versus fourteen for present. The base was limestone rubble although no attempt was made to locate any other material under this. Again it must be argued that some gravel must have been used to make the surface
suitable for traffic. The present road consists partly of building up and widening the earlier with repeated applications of gravel. Restoration to its earlier condition would involve removal of gravel from the sides and top, thus, reducing the height and curvature. Width at this point may be affected by the presence of the prison palisade slightly over a foot to the north. Proper restoration should be considered only after more tests have been completed. There may be some chance that boulders lining the edges of the present road may reflect a similar arrangement on the earlier and the width may vary from one section to another.

Penitentiary addition
Throughout the excavations between the Penitentiary north wall and north fort wall no evidence was located for an addition containing prison cells and supposedly built in the 1870's to relieve crowded conditions in the Penitentiary (Ingram; personal communication). These would have been built of brick although no brick debris was located. There is a possibility that all evidence was missed in the excavations and an addition was actually made. Scars and alteration to the north wall of the building suggest some construction in the area.

1K41A
The designation of 1K41A was assigned to the entire interior northwest corner in which were located four sub-floor detention cells. Excavation was of a preliminary nature, intended to locate, establish general construction and assess condition. Therefore, information is presently incomplete.

The four cells were located along the north wall, beginning at the west wall. For purposes of discussion, these were numbered 1 to 4 beginning at the west wall. Lot-designations were also assigned to cells as they were excavated. Excavation
consisted of removing some overburden, cleaning part of the
area between cells and north wall, a partial cleaning of
cell 3 and almost total cleaning of cell 4.

The cells were constructed of mortared brick, set one
beside the other, faced north, and opened onto a passageway
between them and the north foundation wall. It is likely that
the floor also was of brick although ground water prevented
a verification of this. The roof had been arched and remnants
of plaster remained on the wall (Fig. 27). Each cell was
approximately seven feet deep, three feet wide and seven
feet high at the center of the arch. Thickness of wall between
cells was the length and width of a brick.

Each cell had been provided with a wooden door frame set
into a brick wall. The frame from cell 3 (Fig. 28) was removed
and provided the following information. Construction was with
circular sawn planks 0.15 ft. thick, 0.85 ft. wide for the
sides and 0.55 ft. wide for the lintle. The lintle had been
notched close to either end for the side pieces and the entire
frame had been assembled with nails. Inside width was two
feet, total length of lintle was 2.65 ft., and maximum
remaining length of a side 5.95 ft. Inside height may have
been intended as six feet although the bottom ends of the
side planks may have been lost through deterioration.

No direct evidence for a door was discovered although
from the hardware it is clear that they were on the outside
and extended in width to the outside edges of the frame.
When the cells were abandoned the doors had been nailed shut,
as indicated by a row of nails in the frame (Fig. 28). On
the basis of these nails it was established that door thickness
had been between 0.15 and 0.2 ft. although it was not
determined whether this was a single or multiple layer of wood.

Excavations recovered the majority of hardware from cells
3 and 4. It is likely that the remainder can yet be found and
its state of preservation warrants consideration for its use
in restoration. It has been established that each door was provided with two socket type strap hinges, hung on bolted pintles; a large hasp, hung on an eye bolt and a small hasp (Fig. 19). Hinges were attached to the door with three bolts with nuts on the outside whereas the pintles and eye bolts were run through the frame with a nut on the inside. These latter bolts would have had riveted ends to prevent removal of the nuts. The small hasp was attached with a clenched staple. The large hasp extended from one side of the frame to another and fit onto an eye bolt through which the lock could pass. Some of the doors opened from right to left although this is probably not the case for cell 1. Although not found in site, it is suggested that the small hasp served a small door within the larger one. This would be in the form of peep hole or the like. Short rectangular iron rods also recovered could be associated with such a door.

Access to the cells could not be established but the only reasonable alternative is from above. There was no strong indication for a basement entrance from outside although irregularities in the foundation occasionally raised hopes for such a possibility. The original floor over the cells has long been removed. However, the cells appear to be built into an excavation without an opening leading away from it. Access therefore must have then been from the floor above. Considering the limited space below, this must have been a trap door and vertical ladder. Excavation at the west end of the aisle may produce a solution for the problem but chances are doubtful.

The cells are covered by a thick layer of bark and wood chips which may have been intended as insulation although excavation of this as part of the cells is presently inadequate.

Present condition of the cells can be considered as relatively good. However, excavation was terminated because any further removal of fill would have had an unbalancing effect possibly causing a major collapse. Of the four cells
the first two no longer have the major portion of their roof whereas cells 3 and 4 are complete except for the front wall. It may be that much of the between cell walls and parts of the front wall are still extant in unexcavated areas. One section of front wall is probably represented by a section of brick construction in the northwest corner of the building (Fig. 29).

Continuation of excavation should be accompanied by a reduction of overburden and the provision of adequate braces for walls as fill is removed. With such precautions the cells could probably be excavated completely, thereby recovering more complete information on their construction.
Traditional Boat Landing

One test, designated 1K42A, near the top end of a road leading from the edge of the river up to the east entrance of the fort, was made for the Traditional Boat Landing. The profile (Fig. 20) showed a layer of clay with no accumulation of humus or dark soil on top. Obviously this area had been altered to produce a level surface, probably as a road. Minor amounts of limestone rubble are not considered as significant.

The north end of the profile shows a thick layer of fill and a buried sod line. The fill is considered a continuation of fill used to level an area for 1K4 (Chism et al. 1968a).

Therefore no definite evidence has yet been recovered for the tradition boat landing. The road is obvious, topographically, and, therefore, was known about before excavations took place. The area of the landing could extend along the river bank from the east gate southward to a creek, an area in excess of five hundred feet. Archaeology, therefore, has an extensive area to consider. Excavations would also be lengthy because of a thick accumulation of river silts from the annual spring high water.
Northeast Bastion

Work on this bastion, containing the powder magazine, was designated operation 43 and consists, at this point, of a trench, dug by the restoration project, around the perimeter of Powder Magazine. This trench was filled with cement to stabilize the wall of the building and the extent of archaeology consisted of consultations with restoration personnel on probable height for the cement, based on probable original grade, and recovery of artifacts. There is no structural information to record here except for one feature to be considered subsequently.

The trench revealed an original ground level under a thick accumulation of builder's debris and gravel. The decision made was that present ground level was within several tenths of a foot of the historic and, therefore, cement was poured to within a short distance of the existing level.
Original Drainage

A discussion of original drainage was precipitated by the situation at the powder magazine. During trenching it was discovered that near the bottom of the foundation a channel for drainage had been left inside the stonework of the wall. In addition, there were two stone drains leading away from the building; one on the southwest wall at the south corner and one of the northeast wall at the south corner. These outside drains were noted and photographed, then removed for the trench, and the channel in the wall was breached in numerous places to permit better flow of cement. It was felt that an open channel in the wall was a weak point to be overcome.

Other drains for other buildings, have been located. In general they consist of a limestone slab at the bottom of a trench, a slab set eventually on either side of this and another slab laid across the top (Fig. 30). However, no great interest has been shown in these and no consideration given to drainage as a valid object of excavations. Stone drains have been found for the Big House, fur loft, and powder magazine and probably also exist for the Penitentiary. Thus it is likely they also exist for every other structure within the walls. Some consideration should be given to investigating these properly so their pattern and extent are established. Drainage is part of the original fort planning and thus a necessary element for site interpretation. One possible outcome of such research could be a resolution of rumors about a tunnel from the river bank into the fort which could be no more than a large drain.
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LOWER FORT GARRY MANITOBA 1K
BIG HOUSE 1K37T
SECTION A-B

LEGEND

LIMESTONE

BRICK

4 LK37T, section A-B (1K-68-102-17).
5 1K37A, partial south profile (1K-68-102-9).
6 1K37C, partial west profile (1K-68-102-18).
7 1K37P, north profile (1K-68-102-10).
8 1K38Z, south profile (1K-68-102-7).
9 1K40, 1K41, plan of excavations and partial floor plans (1K-68-102-15).
10 1K40A, east profile; 1K40C, west profile (1K-68-102-12).
11 1K40C, 1K40F, floor plan (1K-68-102-1).
IK40C, north profile; IK40F south profile (IK-68-102-20).
13 1K40E, partial floor plan (1K-68-102-16).
15 1K40G, profile A-B (1K-68-102-5).
1K40H, profile A-B (1K-68-102-11).
17 1K40N, floor plan (1K-68-102-6).
1K40N, sections A-B, C-D (1K-68-102-13).
19 1K41A, cell hardware (1K-68-103-1).
20 1K42A, north profile (1K-68-102-14).
21 South end of areaway, looking north, showing the remains of the two stone walls (1K-87M).
22 Box in areaway, looking west, showing north and west walls and scar of south wall (1K-96M).
23 North end of areaway, looking southwest, showing remains of oven and north end of the two stone walls (1K-93M).
24 Latrine, looking north, showing outside of cribbing (1K-72X).
25 Plan view of test section looking northeast, showing timber and planking in test section (1K-102X).
26 Base of oven, looking north (grid is in 1 ft. by 2 ft. units) (1K-136 X).
27 Interior of cell 4, looking south, showing plaster remnants on west wall (rod is marked in 1 foot lengths) (1K-97M).
28 Entrance to cell 3, looking southwest, showing upper portion of door frame with hardware (1K-87 X).
Northwest corner of excavation, looking west, showing possible remnant of displaced front cell wall and portions of door frame with hardware of cell 1 (1K-1B).
30 Limestone drain at south corner of southeast wall, looking south (1K-117X).