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Archaeological Explorations at Signal Hill, Newfoundland, 1965-1966, by Edward B. Jelks

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Cover: British fleet entering St. John's Harbour, 19 September 1762, painted by Dominique Serres *(Original owned by Mr. Arthur Lundrigan, Pres., Lundrigan's Ltd., Corner Brook, Newfoundland).*

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Archaeological Explorations at Signal Hill Newfoundland, 1965-1966

by Edward B. Jelks

Abstract

Archaeological investigations were carried out during 1965 and 1966 at three areas in Signal Hill National Historic Park, St. John's, Newfoundland, to determine what remained of the military installations that formerly occupied the hill. These areas included the Queen's Battery, Lady's Lookout and the area where a new Interpretation Centre was to be constructed. Significant finds were made primarily in the first two areas.

Structural remains found were typical of buildings of the first half of the 19th century, although these structures had had to be accommodated to the topography of the hill. Artifacts included clay pipes, buttons, bottle and ceramic fragments, and military insignia and accoutrements.

The structural and artifact data are presented descriptively as a sample of British colonial materials dating from 1800 to 1860.

Acknowledgments

Heading the list of those who contributed to the Signal Hill excavations are the archaeologists who served as assistants: J. Ned Woodall and Carole Yawney in 1965; Stephen Archibald and the selfsame J. Ned Woodall, undaunted after his first summer on the hill, in 1966. They all demonstrated professional skill of high order. My debt to them for nursing the field work to completion is gratefully acknowledged.

In the chilly, violently windy environment of the hilltop, the labourers–truly a hardy breed in the best Newfoundland tradition–exhibited commendable zeal, prideful facility in the use of tools, and remarkable stamina (sustained in part, it was sometimes suspected, by surreptitious tippling of that ubiquitous beverage of the Avalon Peninsula, Big Dipper Rum).

I wish to thank Newfoundland Memorial University, through whose offices labourers were recruited from the student body and laboratory space for processing field specimens was provided the first year. The Federal Unemployment Insurance Commission was also helpful in finding labourers.

Special thanks are due Patrick Wohler, Superintendent of Signal Hill Park, for his full support of the archaeological work and for innumerable personal courtesies. Patrick Brophy, Park Custodian in 1965, and Richard Clancy, Assistant Custodian, extended a helping hand in one way or another every day.

David Webber, Director of the Newfoundland Memorial Museum, was in Europe in 1965, but in 1966 he was in St. John's where he freely offered every possible assistance and courtesy. Among other things, he provided work space in the museum's laboratory for processing field specimens, furnished copies of important historical documents relating to Signal Hill, compiled a list of regiments that were stationed at Signal Hill, and examined the military buckles, shako plates, and other decorative accoutrements, making precise identifications when possible.

During the first summer, the artifacts were processed, catalogued, and packed for shipment by a crew headed by Sonia Kuryliu that had been especially trained for the purpose at Fort Lennox.

Archaeologists who visited the dig included John Rick, Jervis Swannack, Donald McLeod, and Helen Devereaux (all of the Canadian National Historic Sites Service), Roger Grange of the University of South Florida, John L. Cotter of the U.S. National Park Service, and Curtis D. Tunnell, Texas State Archaeologist. I benefited greatly from the useful suggestions they had to offer.

Most of the artifact analysis and preparation of the site report were done at Dallas, Texas, where the Laboratory of Anthropology at Southern Methodist University kindly provided work space. SMU students who helped sort and tabulate artifacts included Marcia McGee, Scott Hays, Sherry Humphreys, and Gerald Humphreys. Above all, I am indebted to Norma Hoffrichter, Kathleen Gilmore, and Dessamae Lorrain who helped with so many aspects of the laboratory work and report preparation that it is impossible to list their many contributions. In particular I wish to thank Mrs. Lorrain, then a Research Archaeologist at Southern Methodist and an authority on 19th-century glass, who examined the entire sample of glass from Signal Hill and set up the classification under which it is described in the report.

Richard Ahlborn of the Division of Cultural History, Smithsonian Institution gave date estimates for the spoons. Edgar Howell and Craddock Goins, both

of the Department of Military History, Smithsonian Institution, helped identify such military items as uniform buckles, buttons, and friction tubes used for igniting cannon charges.

Final typing of the manuscript was done by Marilyn Kelly.

After the manuscript had been submitted to the Canadian National Historic Sites Service, many useful editorial suggestions were offered by editors Angela Gorman and Natalie Stoddard, and by Jean-Pierre Cloutier, DiAnn Herst, Olive Jones, and Elizabeth Wylie, all on the staff of the Service's Ottawa office.

The combined knowledge and skill of all the persons enumerated above were brought to bear on the archaeology of Signal Hill. My debt to them, individually and collectively, can hardly be overstated, and I am sincerely grateful to each and every one of them.

During the summers of 1965 and 1966 several areas within the boundaries of Signal Hill National Historic Park, St. John's, Newfoundland, were explored archaeologically in order to determine what, if any, material remains might have survived of the military installations that formerly occupied the hill. Work was concentrated in three areas, the Queen's Battery, where cannon protected the entrance to St. John's harbour from the 1790s until the 1860s or thereabouts; Lady's Lookout, one of the highest spots on the hill where an observation post was maintained from the mid-18th till the mid-19th century, and an area between Signal Hill and Gibbet Hill on which the new Interpretation Centre was subsequently built. Purposes of the excavations were: (1) preconstruction exploration of the Interpretation Centre area to ensure that no important archaeological remains were endangered by construction; (2) appraisal of the developmental potential of Lady's Lookout and the Queen's Battery for interpretation to park visitors, and (3) recovery of artifacts and other data of general value to archaeological studies of British colonial sites.

Nothing of consequence was found in the Interpretation Centre area, but significant finds were made at both the Queen's Battery and Lady's Lookout. This report describes the geologic and cultural deposits at each area; provides a description of each major building, building foundation, or other structure excavated; describes and enumerates the artifacts found, and gives the provenience of the artifacts. The concluding section is a summation of the finds and their significance.

Finds were recorded by the standard system of operations, suboperations, and lots customarily employed for archaeological field work by the National Sites Service, Department of Indian Affairs and Northern Development. In addition, buildings and other structures were numbered individually (structures 1, 2, 3, and so on), even though a single structure might embrace a number of different operations. Specific spots within the park were located in terms of coordinate distances in the cardinal directions from an arbitrarily selected base point. All measurements were in feet and tenths of feet.

The Hill

Beginning north-northeast of St. John's at Torbay and running south is a chain of towering hills that fronts the Atlantic for a distance of some nine or ten miles (Fig. 3). In order from north to south, the chain comprises the White Hills, Signal Hill, and the South Side Hills–a rocky triumvirate that presents a sheer, rugged face to the pounding surf. Nestling behind the hills in a comfortable sheltered position is St. John's harbour, an elongated embayment of deep water that connects with the Atlantic through a narrow passage leading off one end (Figs. 1, 2). This passage, known as the Narrows, separates Signal Hill from the South Side Hills.

The top of Signal Hill proper consists of a narrow ridge aligned north-northeast and south-southwest (Figs. 1, 3). On the seaward side, the face of the ridge descends abruptly to a deep trough, Ross' Valley, which parallels the ridge several hundred feet below. On the landward side, the terrain slopes downward less steeply to George's Pond. The highest point on the hill–more than 500 ft. above sea level–is at the north end of the ridge in the area known as Lady's Lookout. From that point the surface of the ridge steps down in a series of small

1 Aerial photograph of Signal Hill, view looking southwest. Atlantic Ocean at lower left; St. John's at upper right; mouth of the Narrows at left centre.
2 Aerial photograph of St. John's *(lower left)*, Signal Hill *(upper centre)*, and St. John's harbour *(right)*.

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plateaus for a lateral distance of perhaps a thousand feet, then drops steeply down to the Narrows. Bordering the north edge of the Narrows is a precipitous cliff running westward from the south end of the main ridge at a lower elevation. The Queen's Battery was situated on top of that cliff at a spot commanding both the Narrows and the harbour (Fig. 11). Gibbet Hill, a small eminence, lies west of the Queen's Battery area, across the swale in which the new Interpretation Centre is located.

The bedrock at Signal Hill is of the Signal Hill Formation, Cabot Group (Rose 1952:22-7). The age is not known with certainty as fossils are absent, but because of its stratigraphic position Rose considers it of Precambrian age, possibly late Proterozoic.

There are three main members of the Signal Hill Formation: "a grey or greenish grey to green sandstone with intercalations of black argillite and slate near the base; a reddish to reddish brown feldspathic sandstone, with interbeds of reddish slate and argillite; and a reddish to reddish brown conglomerate with reddish sandstone and slate interbeds....

The Signal Hill formation is well bedded in the main, and cross-bedded and ripple-marked in places....In general the formation is broadly folded; beds are overturned to the east in a few places, steeply dipping in many, and gently dipping in a few....Many faults intersect the rocks, and an inherent rhombohedral joint system is very well developed locally....

There is good evidence that the Torbay area was heavily glaciated during Pleistocene times by ice moving radially seaward from the central part of Avalon Peninsula. Considerable thickness of relatively unweathered glacial debris of

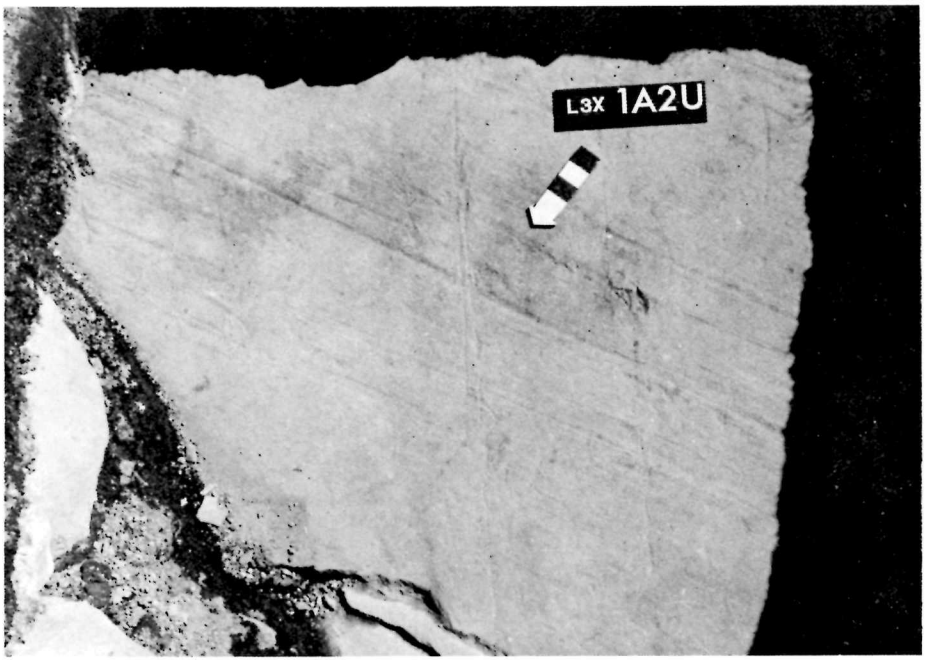
3 Map of Signal Hill and vicinity (based on Army Survey Establishment, R.C.E., 3rd ed., 1959).

4 Historical base map, showing approximate location of documented buildings.

5 Exposed bedrock in lower Queen's Battery, showing striations produced by glaciers.

local origin, including erratics 20 feet in diameter, are common. Glacial markings–striae, grooves, rock polish, and chattermarks–are abundant and especially well preserved beneath the mantle, and occur even on the tops of the highest hills. They indicate that the direction of ice movement from Cape St. Francis to St. John's was, in general, to the east-northeast and from St. John's to Aquaforte, slightly south of east, with minor variations....(Rose 1952: 25,26,7).

Striations and polish produced by glaciers were noted at several places on Signal Hill during the archaeological explorations (Fig. 5).



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History*

The wealth of protein food readily available on the Grand Banks was being exploited by European fishermen from several countries by the early 16th century, or even possibly in the late 15th century. From the beginning, Grand Banks fishermen sought shelter in the magnificent harbour at St. John's, and some of them built temporary shacks along the shore.

Little is known about the early years of St. John's but by 1760 it had attained a permanent population estimated at 1,100 persons and contained about 300 houses. The seasonal influx of fishermen swelled the population to 10,000 in the summers. At the northeastern edge of town stood Fort William (established shortly before 1700)–its defences poorly kept, its soldiers inadequately armed–overlooked by the commanding height of Signal Hill. Despite its obviously strategic importance to the security of Fort William, Signal Hill had no fortifications at all in the mid-18th century. Nevertheless, the hill's value as a lookout station was recognized by 1750 or earlier. From the main ridge, ships approaching the Narrows from any direction could be seen miles away. When one appeared, the lookout stationed there ran flags up the signal tower to alert Fort William that friend or foe, as the case might be, was approaching (Richardson 1962).

In June, 1762, during the Seven Years' War, a French expeditionary force appeared at St. John's, and Fort William was surrendered without resistance. The French captured a number of other towns in Newfoundland at the same time. A British force under the command of Colonel William Amherst was speedily organized and dispatched to recapture the fort. Staffed mainly with troops from New York and Nova Scotia, Amherst's force stormed a small French detachment on Signal Hill on the night of 15 September 1762 and captured the hill. Positioning guns on Signal Hill and Gibbet Hill, Amherst began to bombard the fort, and two days later the French surrendered.

Thus went the Battle of Signal Hill, the last land engagement of the Seven Years' War. But even after the battle had demonstrated unequivocally that control of Signal Hill was the key to the defence of Fort William and St. John's, no effort was made to fortify the hill until more than 30 years later. Finally, however, in 1795, a blockhouse was erected in the Lady's Lookout area, and over the following 50 or 60 years, plans for extensive fortifications on Signal Hill were alternately drafted, discarded and revised, construction was begun then abandoned, but the plans were never brought to completion. At one time it was planned to make an impregnable keep out of the hill, to which beleaguered

*Based on Prowse (1895), Ingram (1964), and Webber (n. d.).

troops from Fort William could retreat if need be. To that end, a start was made on scaling the cliffs to make them vertical all the way around Lady's Lookout. But most of the plans came to naught, which perhaps was just as well, for no engagements were fought at the hill after 1762.

During Signal Hill's period of greatest activity–1795 to the mid-19th century–three main batteries were maintained most of the time: the Queen's Battery, the Duke of York's Battery, and North Point Battery. The historical record is vague as to when the batteries and soldiers were finally withdrawn from the hill; probably it was in the 1860s.

Cabot Tower was erected in 1898 and, perpetuating tradition, has continued to be used as a lookout station up to the present day. Temporary buildings and gun positions were installed on Signal Hill during both World War I and World War II. Two Quonset huts erected during World War II are still in use for storage at the park.

In 1958 the hill and its environs became Signal Hill National Historic Park.

At the time archaeological excavations began at Signal Hill in 1965, a new visitors' centre was scheduled for construction in the marshy vale between Gibbet Hill and the Queen's Battery (Figs. 6, 7). One of the major criteria in selecting a site for the centre was that it be where there was little likelihood of encroachment on any building foundations or other historically significant remains that might lie buried beneath the ground. Even though there is no record that the vale ever held any fortifications or other structures, it was thought advisable to make certain, and therefore archaeological exploration was undertaken.

A crew excavated a series of squares and trenches in the Interpretation Centre area. The results were generally negative. Much of the area was so marshy that groundwater began to fill a hole as soon as it was started. Tests dug on higher ground, although dry enough, were completely sterile of cultural material except for one exploratory pit near the eastern edge of the area which yielded the only artifact unearthed in the Interpretation Centre excavations, an iron wedge.

On top of a small knoll just to the north of the Interpretation Centre area proper was discovered a circle of stones about 12 ft. in diameter, plainly visible on the surface of the ground (Figs. 6-9). It was designated structure 1 and was excavated and recorded.

Stratigraphy

As in many places about Signal Hill Park, the bedrock in the Interpretation Centre area was quite erratic in its surface configuration, lying bare on the surface in some spots and dipping several feet below the surface in others. Save for the marshy areas, the soil overlying bedrock in the Interpretation Centre area consisted of intermixed glacial till and talus containing numerous irregular grain sizes ranging from a minimum of 1 mm. or 2 mm. to a maximum of 2 cm. to 3 cm. in diameter. The grains tended to have angular edges that were often softened by abrasion.

Overlying the bedrock was a zone of dark grey, gravelly soil up to more than two feet thick; over that lay a yellow-orange soil averaging about a foot thick which also contained small stones, but fewer than in the underlying grey zone. Above the yellow-orange zone was the surface zone of humus-stained soil, averaging about six inches thick. All the buried upper surfaces of the bedrock, as well as the upper surfaces of the larger stone inclusions in both zones, were coated with a thin layer of fine-grained, light grey clay, varying from less than a millimetre to more than a centimetre thick. This material was evidently picked up from the overlying deposits by percolating water and redeposited on the buried rock surfaces. In the marshy places soil profiles could not be studied because of ground water. As only one artifact was found in the entire Interpretation Centre area, the stratigraphic zoning was of no value to artifact distribution studies.

Structure 1

Structure 1 was an arrangement of 37 stones forming a circle some 12 ft. in diameter that rested on the modern ground surface atop a small knoll in the Interpretation Centre area. All but two or three of the stones were fragments of the pink sandstone that composes the bulk of Signal Hill. The stones tended to be more or less flat but otherwise were quite irregular in outline, many having sharp, angular edges. The majority were between 1 ft. and 2 ft. in their

6 Archaeological base map of Interpretation Centre area.
7 View from Gibbet Hill, looking northeast across Interpretation Centre area swale. In the background is Cabot Tower; the knoll with structure 1 on top of it is at centre.

maximum dimension and between 3 in. and 7 in. thick. None had dressed faces.

Although the over-all form of the structure was almost a perfect circle, the individual stones were not neatly fitted together. In some instances a stone may have overlapped its neighbor at the edge, but there was essentially only a single tier in the circle. No evidence of mortar was observed.

A nail picked up from the surface of the ground within the circle was the only artifact found in the vicinity of structure 1, but it is by no means certain that the nail and the structure were of the same age. Structure 1 does not seem a suitable foundation for a masonry building – or even for a substantial wooden building for that matter – and both its purpose and its age remain unknown.

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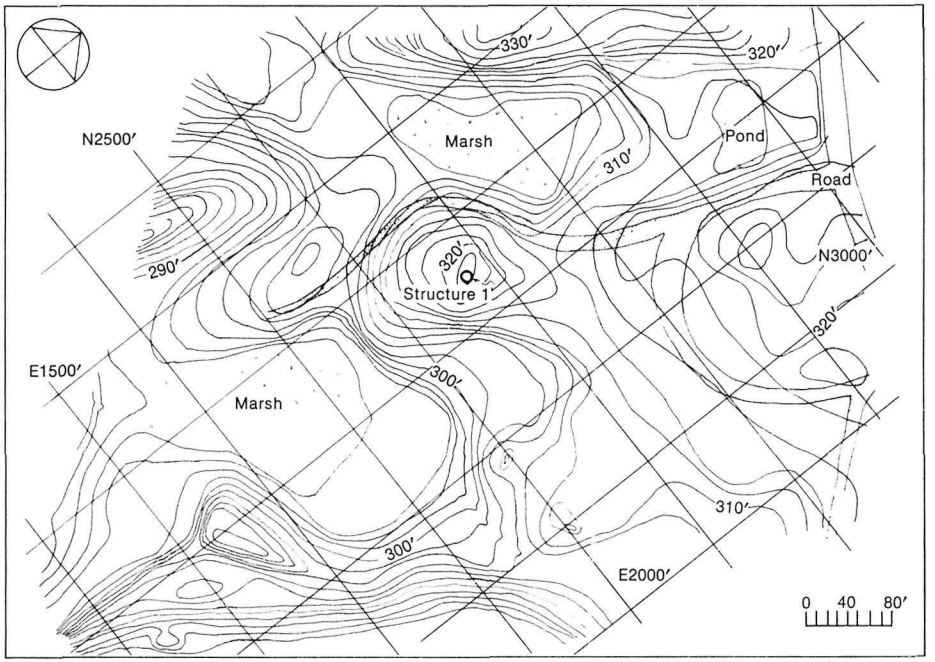

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8 Structure 1, view looking northeast.
9 Plan of structure 1.

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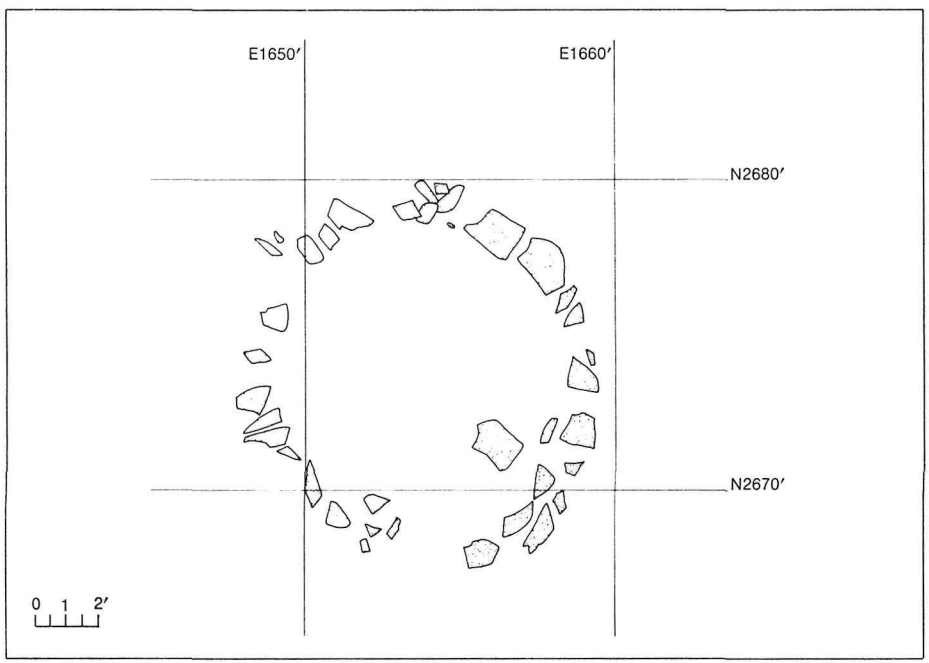


Most of the 1965 field season was spent excavating the Queen's Battery and its immediate environs. Two subareas were distinguished: (1) a lower level where the guns had been mounted; and (2) an upper level just to the north where magazines and other structures once stood.

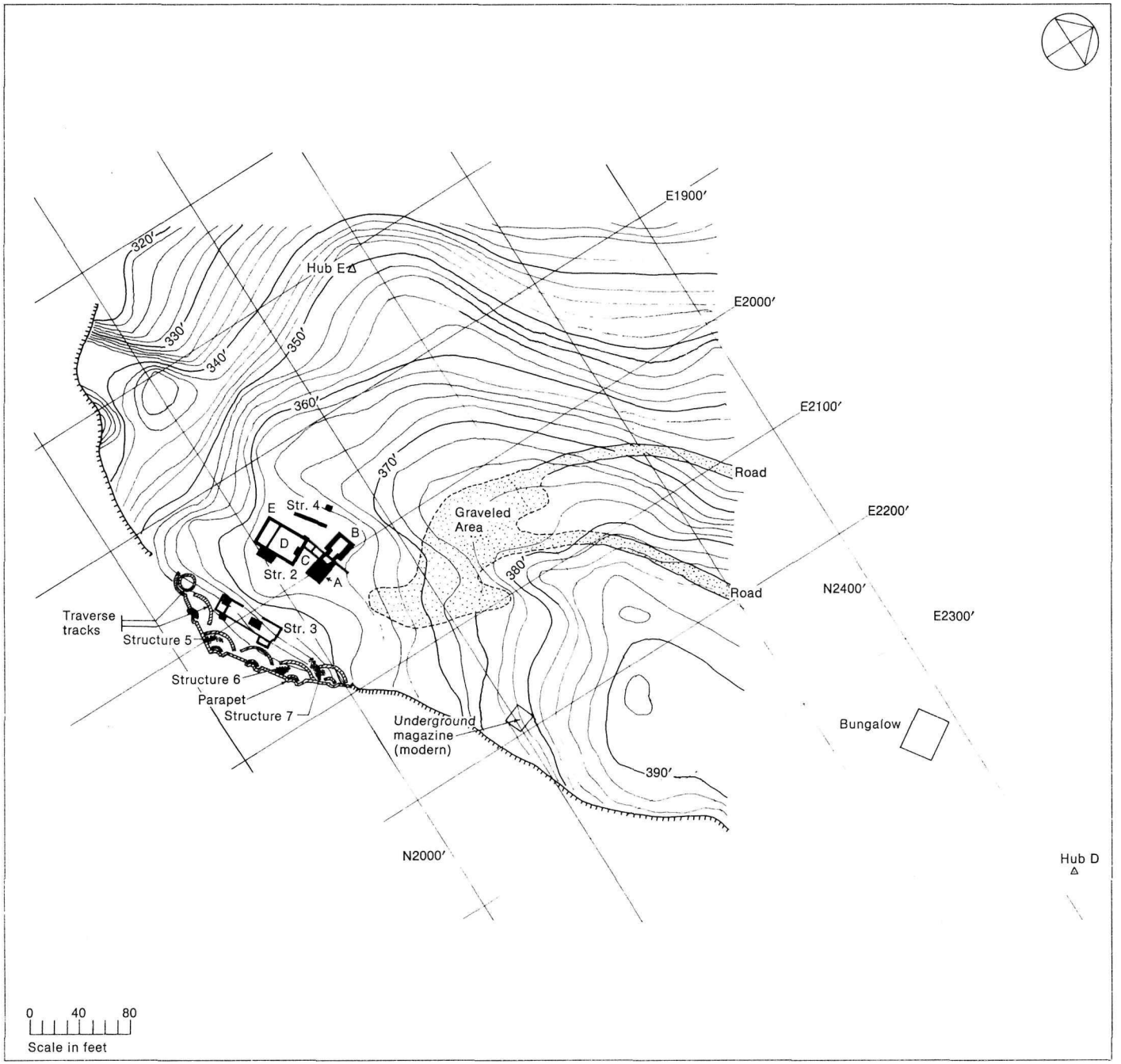
Lower Queen's Battery

The battery proper was situated on a sort of shelf, some 160 ft. long by 40 ft. wide, overlooking the Narrows of St. John's harbour from atop a particularly precipitous section of cliff (Figs. 11, 12). This shelf, referred to here as the "lower Queen's Battery" area, was excavated by a crew under the supervision of Carole Yawney. A stone building foundation (structure 3) and three paved areas (structures 5, 6, and 7) were found there.

Along the shelf's outer edge was a low stone parapet behind which stood, in 1965, a battery of six cannon mounted on wooden bases. The cannon were not original, having been brought into the park from some unknown source–probably after 1900–and set up to portray, for the benefit of park visitors, how the battery might have looked early in the 19th century.

Across the back of the lower Queen's Battery area, that is, along the inland edge of the shelf, the bedrock rose to form a narrow ridge running roughly east and west and parallel to the cliff at the seaward edge of the battery. The top of this ridge stood some 12 ft. above the level of the lower area of the battery, and its south flank, facing the gun emplacements, formed a steep scarp. The stone parapet along the outside of the shelf curved to meet the scarp at both ends of the lower Queen's Battery area. The face of the scarp had been scaled off to make it steeper along much of its western half and also at its extreme eastern end.

10 Archaeological base map of the Queen's Battery area.



11 Aerial photograph of cliff at north side of the Narrows with Queen's Battery area at its top.
12 Lower Queen's Battery area after excavation, view looking east-northeast (taken with wide-angle lens). Note stone foundation of structure 3, low scarp at left, parapet at outer edge of battery, iron traverse tracks mounted on stone bases, Cabot Tower in background.

Prior to excavation an earthen ramp angling up across the middle of the scarp provided a connecting roadway between the lower level of the battery and the upper level behind the scarp. East of the ramp where the scarp made a concave bend there was a stone retaining wall running along the chord of the bend, and the space between the wall and the scarp was filled with earth. The retaining wall, in effect, extended the approximately straight-line face formed by the western half of the scarp on across the eastern half. The retaining wall ran underneath the east side of the earthen ramp but did not emerge from the west side. From superficial appearances it looked as though the ramp was built at a later date than the retaining wall, and this was borne out by excavation.

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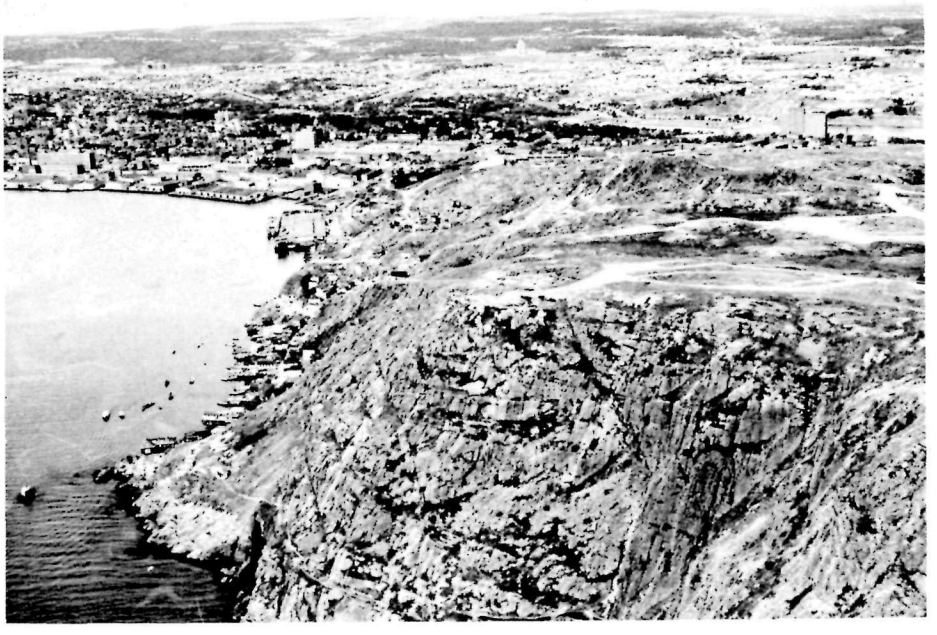

The lower area at the Queen's Battery was thoroughly explored. Virtually all of the cultural deposits lying on the shelf behind the parapet were excavated, and deposits banked against the exterior face of the parapet were tested.

There was one major structure in the lower Queen's Battery; the stone foundation of a rectangular building designated as structure 3. Other structures, three patches of flagstone paving near the cannon, were labelled structures 5, 6, and 7 respectively.

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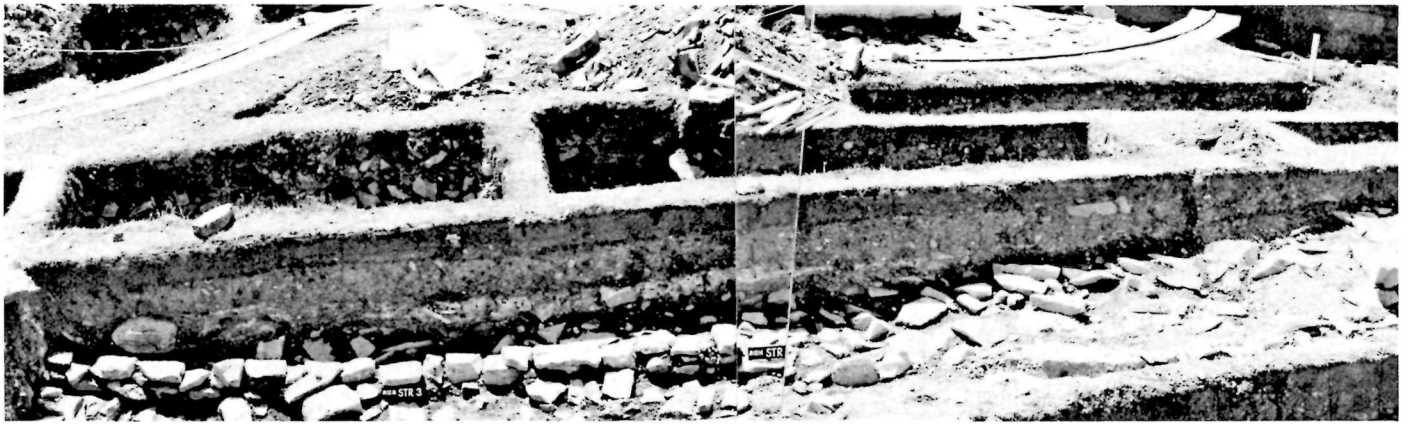
Stratigraphy

Study of the deposits in the lower Queen's Battery area revealed that the flat shelf on which the battery had been installed was not a natural topographic feature but a purposely levelled surface. Originally the ground had sloped steeply from northwest to southeast, but it was levelled with stone rubble before the battery was emplaced. In addition to the rubble there were several other major depositional zones that proved of impor-

13 Composite photograph showing typical soil profile at lower Queen's Battery. Note (from top to bottom) topsoil (zone A), thin layer of charcoal (zone B), brown soil (zone C), whitish stratum containing crumbled mortar (zone D). The rubble zone (E) is not exposed. Part of structure 3 is visible at lower left.



tance to archaeological interpretation of the area (Fig. 13).

Zone A. Semisterile topsoil, averaging about a foot thick, extended over all of the lower area of the Queen's Battery. The upper part of this zone was a layer of turf that obviously had been laid down in relatively recent times, as it extended over the gravel fill of the trenches in which the traverse track foundations were set. According to Patrick Brophy, custodian of Signal Hill Park in 1965, the area was sodded during or shortly after World War II.

Zone B. A thin charcoal-stained zone, nowhere more than an inch or two thick, appeared just beneath the topsoil over much of the lower Queen's Battery area. It contained little cultural material.

Zone C. Semisterile brownish, sandy clay, generally between one and two feet thick, was distributed over the entire lower area of the Queen's Battery. This was apparently a layer of detritus that washed down from the upper area of the battery to the northwest. It contained a few bits of charcoal and an occasional tiny fragment of metal or a sherd from a broken dish, but these were probably washed in with the detritus.

Zone D. A zone in the general vicinity of structure 3 with a high content of deteriorated mortar, up to 1.5 ft. thick, was rich in artifacts. Resting directly on top of the stone rubble with which the area was initially levelled, this zone consisted of trash that accumulated in and around structure 3, presumably during the time it was used as a barracks and perhaps for a short time afterward.

Zone E. The rubble used for levelling, distributed over the southern and central portions of the lower battery area, reached a maximum thickness near 7 ft. and was semisterile. The rubble consisted of small, irregularly shaped stones from an inch or so to a foot or two in diameter with an occasional brick intermixed. Some of the stones had patches of mortar adhering to them, indicating that they had previously been part of a building at some undetermined place. Since the original ground surface had sloped downward to the southeast, the bed of rubble was thickest along the edge of the area near the parapet, and it pinched out against the higher ground on the north and west. Much of the foundation of structure 3, the paved spots near the cannon (structures 5, 6, and 7), and the stone parapet were all laid directly on the levelled surface of the rubble. The foundations for the traverse rails had been set in trenches that were dug into the rubble zone and refilled with small gravel.

Zone F. Sterile deposits of glacial till rested on the irregular surface of the sandstone bedrock. The upper part, representing the surface of the ground prior to levelling, showed light humus staining produced by decayed vegetation. This zone actually included several different lenses of varicoloured soils, grouped here in a single zone for all of them are localized deposits of oxidized glacial till and, more importantly in an archaeological study, all of them predated human occupation of Signal Hill and were completely sterile of cultural material.

As at the Interpretation Centre area, a fine-grained, grey clay coated the buried surface of the bedrock. Patently this was a subsurface accumulation formed by the redeposition of fine particles that were transported downward by percolating ground water. Some of the buried bedrock surfaces bore exceptionally well-preserved glacial polish and striations (Fig. 5).

14 Structure 3, view looking east-northeast. Note partitioned room with brick hearth in foreground, chimney base at upper centre.
15 Room at southwest end of structure 3. Note flagstone entry at lower left; brick hearth at upper right.

Structure 3

At the south end of the lower Queen's Battery area was found the stone foundation of a long, narrow, rectangular building (Figs. 12, 14, 16) of the proper dimensions to have been building 35 of the historical base map (Fig. 4), a wooden barracks erected prior to 1812. Approximately 55 ft. long by 13 ft. wide with its long axis running east-northeast and west-southwest, this building had been built against the previously described bedrock scarp marking the western boundary of the lower Queen's Battery shelf. The foundation consisted of undressed and crudely dressed stones of variable size mortared into narrow rows only a foot or so wide.

The south wall and adjacent parts of the east and west walls were laid on and in the upper part of zone E, the stone rubble with which the lower Queen's Battery area had been levelled. Because it was so crudely made, the foundation was difficult to discern among the rubble at times. It stood only one stone high in most places, but there were two and even three tiers remaining in others, especially in the eastern portion of the structure. The north wall must have been built directly against the vertical face of the bedrock scarp which had, in fact, been partially scaled off and dressed to make it straighter and more nearly vertical where it bordered on structure 3. The foundation was not sturdy enough to have supported masonry walls; therefore it appears certain that the walls of the building were of wood.

A narrow cross wall marked off the building into two rooms, a large one 45 ft. long by 13 ft. wide at the east end and a smaller one (Fig. 15) measuring 10 ft. by 13 ft. running across the west end. At the north end of the smaller room was a brick hearth laid directly on

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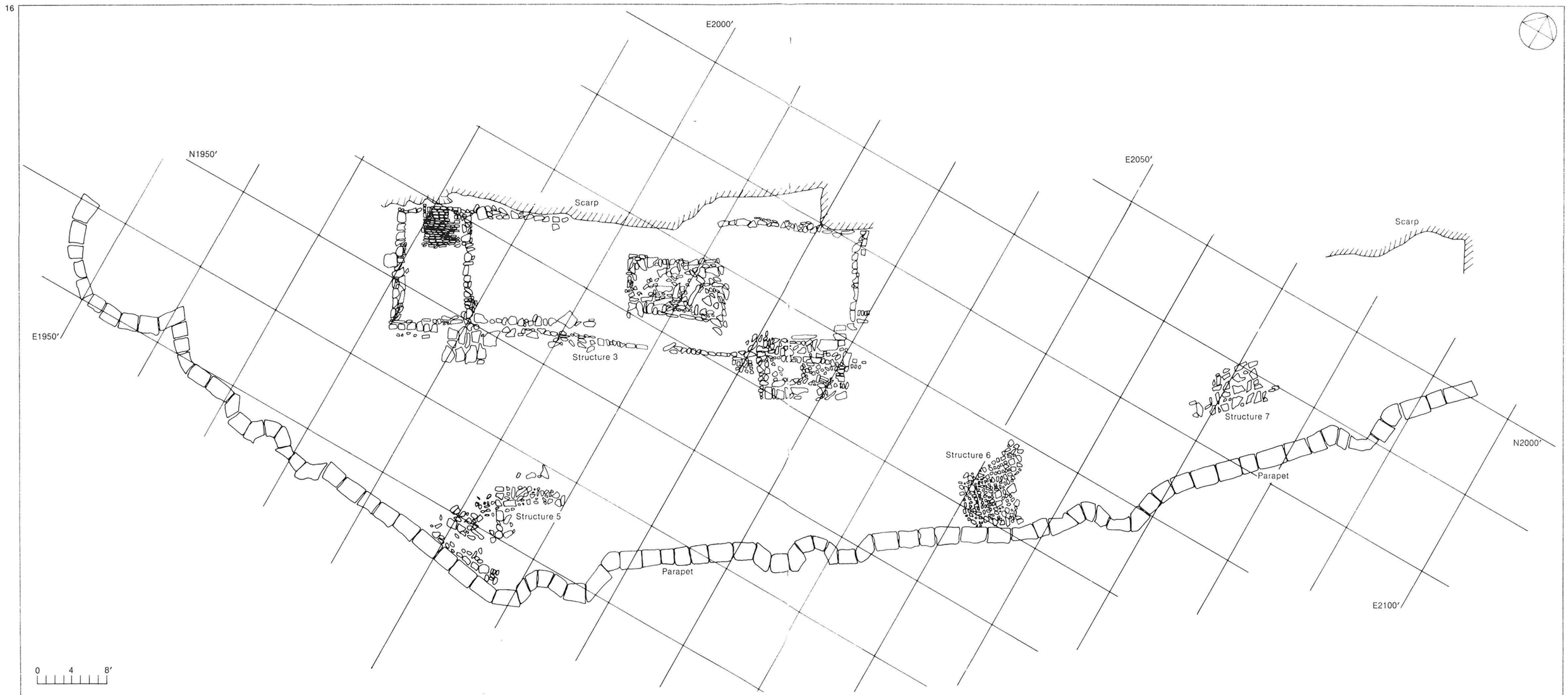
16 Plan of structures 3, 5, 6 and 7.



17 Chimney base, structure 3; view looking southwest.
18 Detail of stone foundation, east corner of structure 3; view looking north.

the ground. A large rectangular chimney base (Fig. 17) near the centre of the large room was so placed as to suggest that its chimney was shared by two back-to-back fireplaces, presumably serving separate rooms. However, there was no evidence of a partition in the surviving foundation pattern.

In and around the foundation of structure 3, especially in the eastern portion, were relatively heavy accumulations of trash in zone D, much of which appeared to have been discarded by the occupants of the barracks. These accumulations produced a large and varied sample of artifacts.

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Structures 5, 6, and 7

Structures 5, 6 and 7 were small floor areas paved with flagstones, or with flagstones and brick mixed together. The floors were laid on top of the stone rubble used to level the area and were buried beneath several inches of topsoil. The trenches in which the traverse track foundations were set had disrupted the floors, leaving only remnants of what originally may have been rather extensive expanses of paving.

18

The purpose of these floors is not certain. Since they occupied the gun emplacement area, perhaps they were to provide solid footing for the men working the guns; or possibly some of them were floors of sentry boxes like the one that reportedly stood in the lower Queen's Battery area in 1805 (Ingram 1964:28). Structure 6, especially, appeared to have been of the proper size and shape for a sentry box floor.

Structure 5 (Figs. 16, 19) had been partially destroyed by a ditch in which the traverse track foundations for one of the cannon had been set. One edge of the pavement abutted the inside edge of the stone parapet, but it could not

19 Structure 5, view looking northeast.
20 Structure 6, view looking northeast. (Label in photograph shows wrong structure number.)

19

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be determined with certainty whether the pavement was older or younger than the parapet.

The surviving portion of srtucture 5 occupied a curved area about 15 ft. long and averaging perhaps 7 ft. or 8 ft. wide. The stones at the inner side were arranged in a squared up pattern. The original shape of the whole paved area is uncertain.

Structure 6 was a square paved area about 7 ft. across with a short extension leading off the north corner (Figs. 16, 20). Paved with stones and bricks, it was built up against the stone parapet that borders the lower Queen's Battery. Most of the stones had been crudely squared to make them about the same size as the bricks. There had been some disruption of the pavement by two of the traverse track ditches. Traces of mortar indicated that the stones and bricks had formerly been mortared together.

Structure 7 (Figs. 16, 21) consisted of a roughly rectangular floor paved with flat, unshaped stones of varying sizes. Located near the northeast end of the lower Queen's Battery, it measured about 6 ft. long by 5 ft. wide. There were no traces of mortar between the stones. Although interrupted by traverse track ditches, the floor, when complete, was probably little larger than the portion that has survived.

Upper Queen's Battery

The upper level of the Queen's Battery area lay above, and to the northwest of, the scarp that demarcated the border of the lower level (Fig. 10). The upper level consisted of a narrow bedrock ridge running along the top of the scarp, and behind the scarp to the northwest, an elongated, shallow depression averaging about 30 ft. wide paralleling the ridge. Another scarp, 10 ft. high on the

21 Structure 7, view looking north.
22 Excavation outside parapet, lower Queen's Battery, showing parapet foundation; view looking west.

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average, bordered the elongated depression on its northwest. The entire area was explored thoroughly.

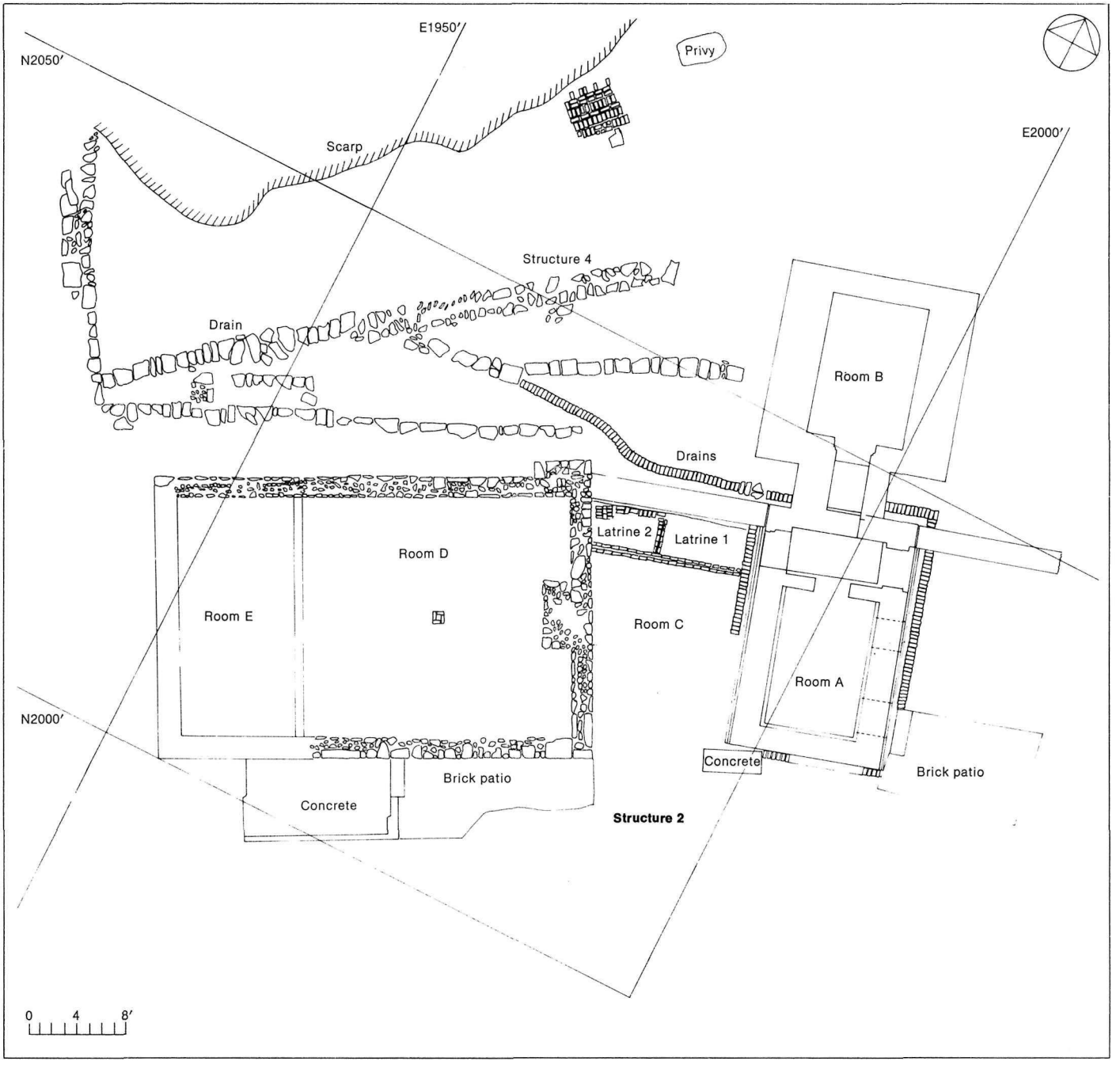
Several masonry structures in various stages of ruin and disrepair were to be seen on the upper level before excavation began: (1) a one-room brick building with an intact, vaulted ceiling connected by a passageway to a one-room stone and brick building with its roof collapsed; (2) the ruins of a building comprising two large rooms, and (3) stone walls standing several feet high which connected the two-room and one-room buildings. Since this whole complex of rooms was joined together and the historical relationship of one room to another was not clear at the beginning of excavation, the entire series of connected rooms was labelled structure 2. Subsequently, excavation revealed that structure 2 consisted of several distinct components (magazines, barracks, and other structural elements of uncertain purpose), some of them built at different times than others. In several places there was unmistakable evidence of remodelling.

One other major structure, a rectangular foundation of stone, was discovered in the course of excavating the upper Queen's Battery. It was designated structure 4. Minor structural remains found in the vicinity of structure 2 included remnants of several masonry walls and a subterranean drainage system made of bricks and stones.

Stratigraphy

In the upper Queen's Battery area, bedrock was exposed on the surface at the more elevated spots but was buried beneath deposits of glacial till, detritus, and topsoil in lower places. The geologic deposits were of no particular value for archaeological interpretation, being

23 Plan of structures 2 and 4.



24 East side and north end of room A, structure 2. Concrete reinforcing has been applied to the south end in modern times. The windows were added after the room was no longer used for storing powder.

25 View looking east down the south wall of room E (foreground) and D (beyond brick cross wall at lower left); room A in background. Note the steeply sloping bedrock inside room D; also the chimney base against room D's east wall.

relatively thin and containing no undisturbed archaeological material. But within the component rooms of structure 2–and to a lesser extent around structure 4–the deposits often consisted of discrete strata containing cultural residue. These strata were excavated separately wherever it was practical to do so. The details of localized stratigraphy will be described below in the discussions of the respective structures and rooms.

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Structure 2

Structure 2 was the previously mentioned complex of rooms and walls at the upper level of the Queen's Battery, much of which stood above ground when excavation was begun in 1965. Buildings 52, 59, and possibly 80 of the historical base map were clearly present in the complex.

Prior to excavation, structure 2 was divided into five components, labelled rooms A through E (Fig. 23), and each was dug as a unit. A house (partly frame and partly brick according to informants) was built over the ruins of rooms C, D, and E at some unknown but relatively recent time, probably in the 1920s.

Room A. The most complete early building on Signal Hill, room A was a brick magazine with a vaulted ceiling (Figs. 23, 26), evidently either building 36 or 52 of the historical base map (Fig. 4). A major portion of its brick roof was still in place in 1965; however, the entire building was levelled in the winter of 1965-66 as it was deemed a hazard to park visitors. Room B was razed at the same time.

Made of yellow brick laid in English bond, the magazine here designated room A was a sturdily built structure. Its walls, more than 2 ft. thick, were sup-

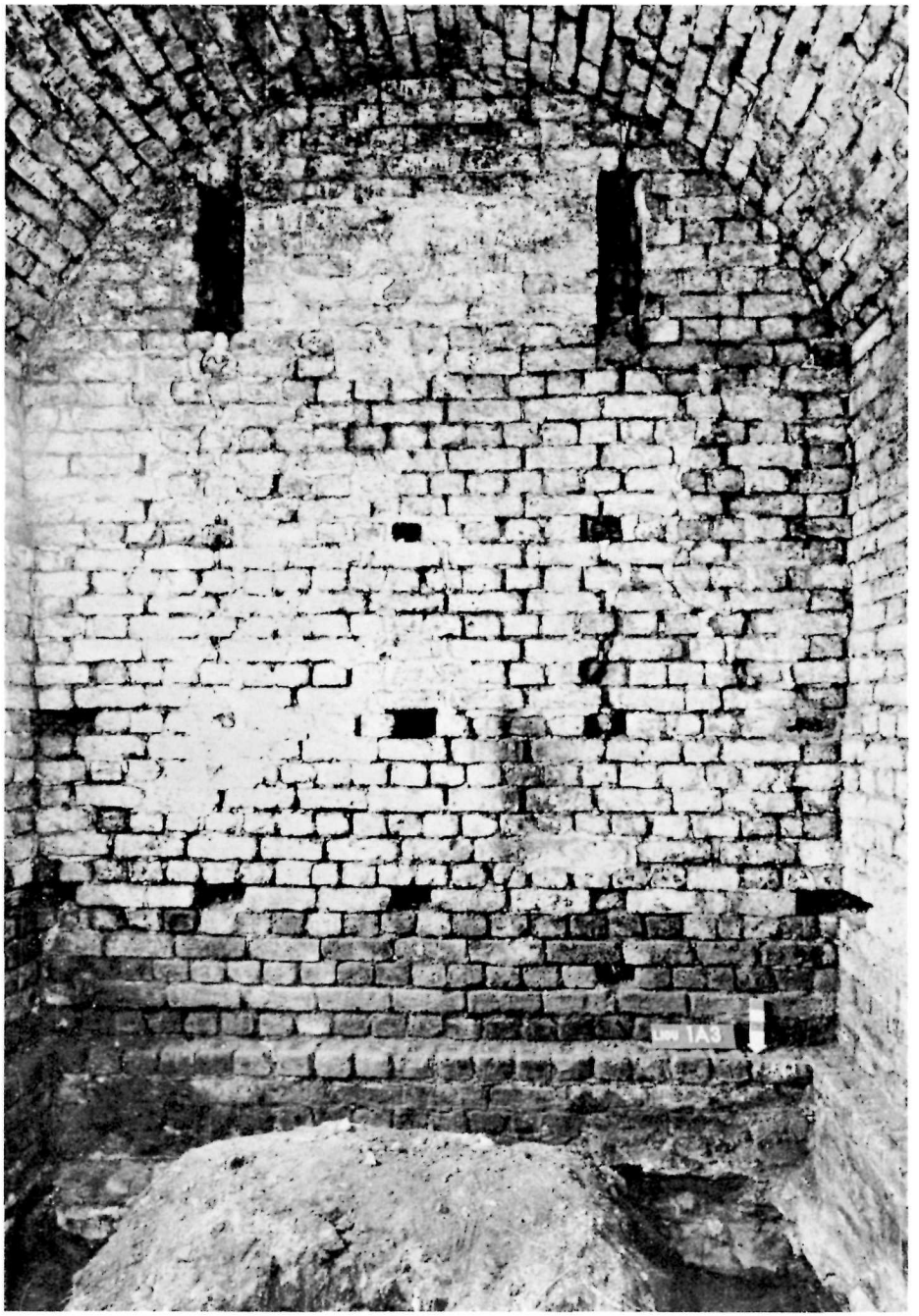
26 Interior of Room A, structure 2, showing the vaulted ceiling and the south wall. The two vertical slits just below the ceiling are the interior openings of a baffle-type ventilator.

ported by a brick footing some 3 ft. wide which rested on a massive foundation of dressed and rough stone mortared together. The latter was seated on bedrock or, in some places, on compact glacial till.

Room A was of rectangular shape, with its long axis running roughly north and south. The original floor was of wood. Baffle type ventilators had been built into the east, west, and south walls, and a narrow hall with an arched brick ceiling ran across the north end. The hall possibly served as a shifting room. A door at its east end opened to the outside, and entrance to the magazine proper was gained through a door in the south wall of the hall. The exterior surface of the south wall had been stabilized – rather obviously in recent years – by applying a coating of concrete.

Inside dimensions of the main room were: length, 12.5 ft.; width, 8.25 ft.; maximum ceiling height above the original floor level, 9.5 ft. A subterranean drain made of brick ran around the exterior of the magazine against the outside of the wall's footing, a foot or so beneath the surface of the ground; it led off to the northwest, joined a stone drain coming down from room B and continued to the western border of the Queen's Battery area where it emptied down the hillside (Figs. 23, 27, 28, 29).

Room A had been remodelled at least once and probably twice. When room B (another magazine) was erected contiguous to room A on the north, a connecting doorway was cut through the north wall of the narrow hall. Two windows were cut into the east wall of the main room after it was no longer used for storing powder, and a door was installed at the west end of the hall. Two rows of bricks running across the room evidently had helped support a wooden



27 Detail of drain construction, south exterior wall foundation of room A, structure 2.
28 Juncture of drains from room A *(left)* and room B *(right)*. North exterior wall of room C at upper left.

floor during the later occupation of the room.

A few artifacts were found in the soil inside room A, but no stratigraphic analysis was attempted as most of the artifacts appeared to be of very late 19th- and 20th-century age and of little or no value for distributional analysis.

Room B. Another magazine, room B (Figs. 23, 29) was constructed of stone after room A was already standing. It consisted of a rectangular main room the same size as room A (12.5 ft. by 8.25 ft. inside dimensions) and a hall (Fig. 30) connecting it to room A. The long axes of both the room and the hall were aligned with that of room A (that is, running approximately north-south). The north wall of room A was incorporated into room B as its south wall, and a door was cut through its centre to provide entrance into the main room via the hall.

Judging from pieces of granite lying nearby, the exterior of this magazine above ground level was originally faced with slabs of granite, but if so the facing was subsequently removed. The walls were estimated to have been about 4 ft. thick when still intact, and, behind the facing, they were made up of rough, flat, irregular stones set in mortar. In 1965, the interior wall surfaces consisted of the flush edges of these flat stones (Fig. 31), but before the magazine fell into ruin they were probably surfaced with plaster.

There had been a vaulted ceiling like that of room A (except that it was made of stone), but it had collapsed along with the roof. Still in place was the ceiling of the hall at room B, consisting of long blocks of granite laid athwart the hall, their ends resting on the tops of the east and west walls (Figs. 30, 32). The hall was floored with flagstones; the main room originally had a wooden floor.

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29 West side of room B, structure 2, view looking east. Part of room A at upper right, curved drain at lower right centre, structure 4 foundation angling across photograph at lower left.
30 Looking north from inside room A, structure 2, down granite-ceiled hall of room B. The collapsed ruins of main room B are visible at the end of the hall.

Two magazines (buildings 36 and 52) are shown in the upper Queen's Battery area on the historical base map (Fig. 4), but they are portrayed as being separate, not joined. Nevertheless, rooms A and B must be the magazines shown. Unfortunately there is no available information on the dates of construction or other historical details regarding them.

The south half of room B was not excavated, but the north half was taken down to undisturbed soil. The accumulated deposits in the entrance hall were also removed down to the flagstone floor. Two distinct zones of fill were visible inside room B: (1) a thin layer of dark material containing a great deal of charcoal and some artifacts, resting on sterile subsoil and ranging in thickness from 1 in. to 4 in., and (2) a heavy accumulation of building stones and other debris extending from the charcoal layer to the surface, 4 to 5 ft. thick. The artifacts from the two strata were studied separately in the distributional analysis, the artifacts from the entrance hall being included with those from the upper stratum.

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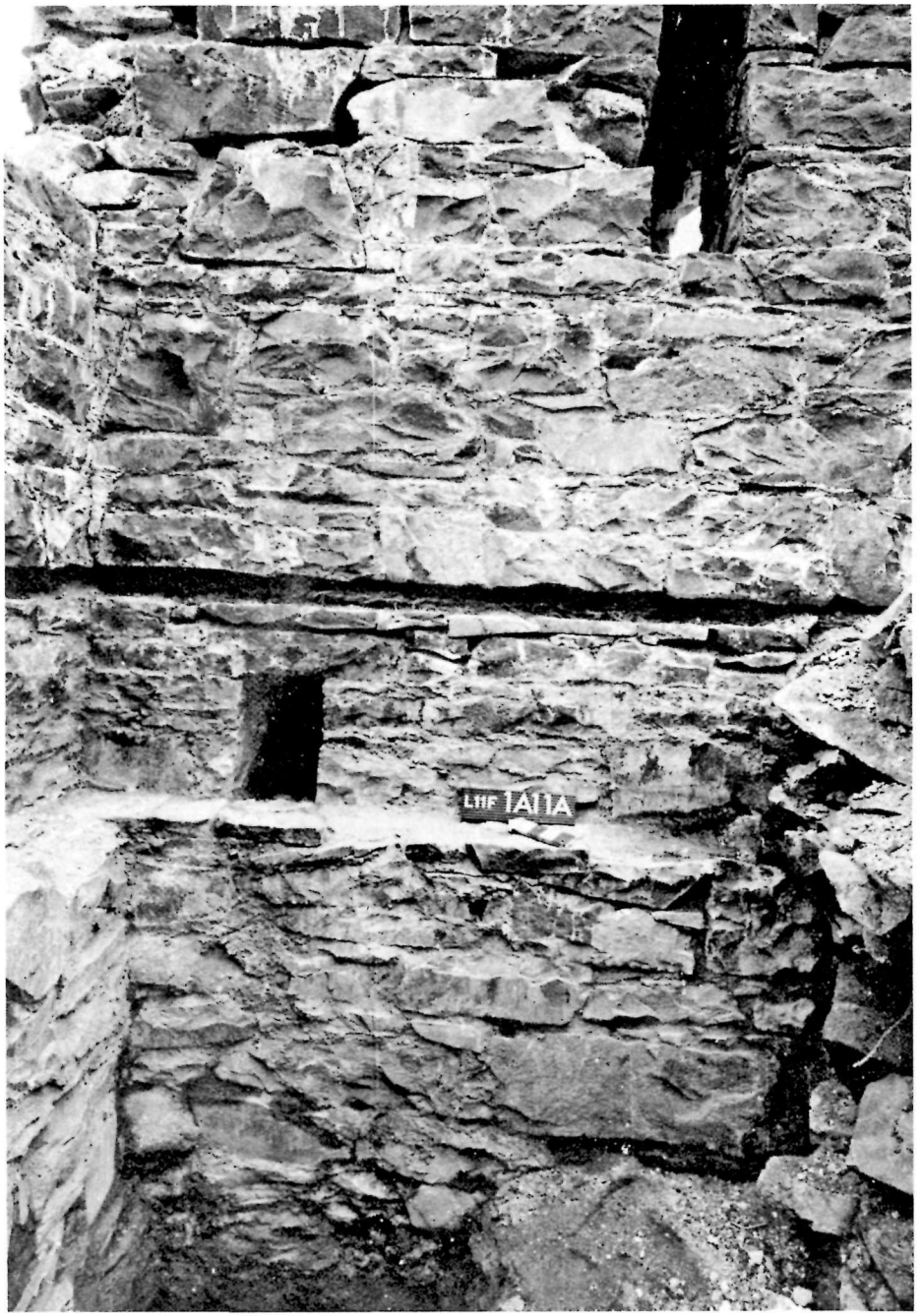
Room C. The area between room A and Room D was designated room C (Fig. 23), although after excavation it became doubftul that there ever was an actual enclosed room there. The west wall of room A formed room C's eastern boundary and the east wall of room D its western boundary; a stone wall connecting the southwestern corner of room B with the northeastern corner of room D formed its northern boundary. There was no evidence of a wall on the south side of room C. Perhaps the room C area functioned primarily as a firebreak zone between the magazines on the east and what was evidently a barracks (rooms D and E) on the west.

The wall marking the north boundary of room C was made of rather nicely

31 North interior wall of room B, structure 2, after rubble has been cleared out.



squared stones of varying sizes (Fig. 33). Two feet wide and still standing several feet above ground in 1965, this wall was abutted squarely against, but was not bonded into, the southwest corner of room B. The north face of the wall was flush with the north face of room B's south wall. A corresponding stone wall extended eastward from the southeast corner of room B (see Fig. 23). The south wall of room B, it will be recalled, was originally the north exterior wall of the brick magazine (room A) before the stone magazine (room B) was built. The two stone walls which, in effect, extend that wall east and west were probably added before the stone magazine.

Inside room C, against the stone wall at the north end of the room, were two stone and brick lined, rectangular pits that evidently were built as latrines but which ultimately were used for disposal of trash (Figs. 33, 34). Measuring 4 ft. wide, 6 ft. or 7 ft. long, and 3 ft. or 4 ft. deep, these pits yielded more artifacts than any other part of the structure 2 complex, most of them seemingly dating from early to mid-19th century. A layer of soil containing a small quantity of occupational debris had accumulated over the bedrock and sterile glacial till which constituted the subcultural floor of the room C area outside the two latrine pits, but it produced no material of particular significance.

Careful inspection of the walls, foundations, drains, and other structural remains in and around room C led to the conclusion that the latrine pits and the room's north wall were contemporaneous and that both postdated the brick magazine (room A) and predated the stone magazine (room B) as well as the barracks (rooms D and E).

For analysis of artifact distribution, the deposits within room C were divided into

32 Detail of east wall, room B, structure 2, showing window and granite-slab roof construction.

three areas: (1) the east latrine; (2) the west latrine, and (3) the floor area outside the latrines. The deposits in the floor area, only about 1 ft. in maximum thickness, were separated into two units, upper and lower. Artifacts from the more than three feet of deposits in the ash pits were plotted by the levels of excavation –three inches each in most instances.

Rooms D and E. Contiguous to room C on the west lay the stone foundation and lower walls of a rectangular building, its long axis running roughly east and west (Figs. 23, 25). It was divided into two sections–designated rooms D and E respectively–by a jerry-built cross wall of brick. This clearly represents the remains of a substantial building which can confidently be identified as building 59 of the historical base map, a barracks built in 1831 (Ingram 1964:32).

The exterior walls were 2 ft. thick. The exposed stones on their inner and outer faces were squared and neatly fitted together (Figs. 35-37); the core of the walls, however, was of mortared rubble. In 1965, the walls were standing to what appeared to be the level of the original wooden floor, which of course had disappeared long ago; in other words, these were the walls of the barracks basement. Bedrock at that particular spot sloped downward steeply to the north, and the footings of the south wall together with those of the southern portions of the east and west walls were set directly on bedrock (Fig. 35). The north wall and adjacent parts of the east and west walls, however, were footed on glacial till and stood considerably higher at floor level than the south wall because of the steep gradient of the ground.

A rectangular buttress at the northeast corner of the barracks was bonded into the foundation and therefore must have been built into the original building.

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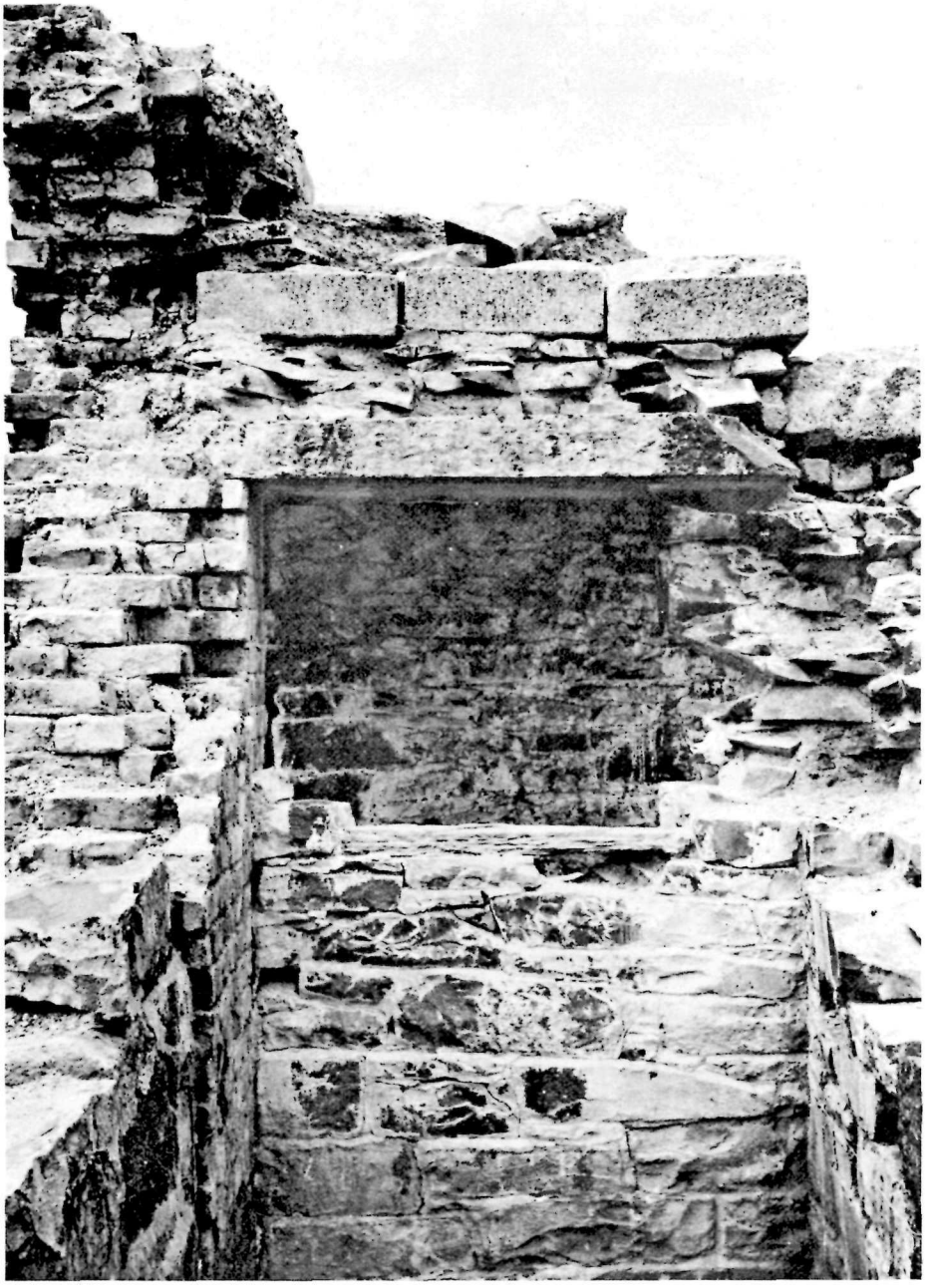

33 View of the north end of room C, structure 2, looking north. The wall connecting rooms B and D is facing the camera; the two latrines are at its foot.
34 View looking straight down into latrine 1, room C, structure 2.

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Other structural features included a heavy stone chimney base set against the interior of the east wall (Fig. 36) and a small footing–evidently for a wooden pier which has long since vanished–in the middle of room D.

The brick cross wall, which was not bonded into the exterior wall foundation at either end, divided the barracks basement into two rooms, the larger one (room D) to the east measuring 21 ft. by 23 ft. on the inside, the other (room E), 21 ft. by 10 ft. The cross wall, 8 in. thick, was built partly of yellow bricks like those of room A and partly of red bricks that were slightly shorter than the yellow ones. The bonding was erratic.

When excavation was begun, both rooms were filled with brick, stones, and other rubble from the collapsed building. It will be remembered that a house which had been built on the foundation of the original barracks was occupied until 1956, when it burned. A major part of the rubble appeared to have come from that house. In any case, modern (mostly 20th-century) rubble including the remains of household furnishings and other artifacts was found all the way down to bedrock or undisturbed glacial till over all of room D. In room E, however, there was a separate, earlier deposit underlying this rubble which contained artifacts of mid-19th century age almost exclusively. They undoubtedly accumulated as trash under the building during its use as a barracks.

For distributional analysis the artifacts from room D were lumped together as a single sample, but those from room E were separated into two groups; an earlier one thought to correlate with the 19th-century barracks, and a later one believed to have derived from the 20th-century caretaker's house. The earlier sample from room E came from a stra-

35 Interior south wall of room D, structure 2. Note how foundation has been laid directly on glacially polished bedrock.
36 Chimney base at east wall of room D, structure 2, view looking north.

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tum several inches thick which was covered over with several feet of debris that presumably derived from the burning and collapsing of the caretaker's house.

Other Features of Structure 2. Besides the five rooms described above there were several components related to the structure 2 complex of buildings which are worthy of mention.

Jutting off in an easterly direction from the southeast corner of room A was an area measuring approximately 12 ft. long by 6 ft. wide which was paved with bricks (Fig. 24). Evidently a sort of patio, this structure is believed to have dated from the caretaker era of the 20th century.

Running along the outside of room D on the south side was a second brick-paved patio 6 ft. or 7 ft. wide (Fig. 25). It began at the east end of the room and extended for some 18 ft., about two-thirds of the room's length. This patio may have dated from the 19th century when the barracks was in use, but there was no way to be certain.

Extending on to the west from the brick patio, along the south side of rooms D and E, was a poured concrete floor 12 ft. long by 6 ft. wide. This surely was of 20th-century provenience. The concrete floor, probably for a porch, appeared to have truncated the brick patio, which in its original state perhaps ran all the way across room D.

A system of masonry conduits draining the two magazines was obviously intended to keep the powder storage areas dry (Figs. 23, 27-29, 39). Around the outside of the earlier magazine (room A) ran a brick drain which was built against the outer face of the stone foundation a foot or two underneath the ground. The floor of the drain consisted of a single row of bricks laid edge to edge; its side walls were formed by two courses of stretchers, a single brick wide,

37 Interior west wall of room E, structure 2. Bedrock at lower left, top of brick partition wall at bottom, unexcavated balk running from centre to bottom.
38 Structure 4 wall foundation, view looking northeast.

and the top consisted of a single row of edge-to-edge bricks like that of the floor. The resultant conduit had an opening that was about 6 in. square in cross-section.

The drain for the stone magazine (room B) originated in a vertically placed iron grate that was set in the ground approximately 2 ft. outside the magazine's west wall, about equidistant from the two ends of the building. The grate opened into a conduit similar to the one described above except that the sides and top were made of flat stones instead of bricks. The floor was of bricks placed edge to edge like that of the other drain.

The two drains converged some 20 ft. west of the magazines and continued as a single conduit (made like that of the stone magazine) on across the shelf of the upper Queen's Battery to empty down the steep hillside at the shelf's west edge. On the way it intercepted the southwest corner of structure 4, then bent sharply to the left, a route suggesting that the drain was designed to serve not only the two magazines but structure 4 as well.

In room C, just below the surface of the ground, a short section of brick drain was exposed. It was V-shaped in cross-section and was not covered. A narrow floor was composed of a single row of bricks set end to end; each side, angling up from the floor at perhaps 30 degrees off the horizontal, was made up of a single row of bricks placed edge to edge. This drain was laid over the fill of the west latrine and clearly was of relatively recent, probably 20th-century, vintage.

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Structure 4

Structure 4 was represented by only two components: a brick hearth and a single course of dry-laid stones forming a straight, three-foot-wide footing some

39 View from top of low scarp at north edge of upper Queen's Battery, looking down into structure 4 area. Brick hearth at lower left, structure 4 foundation wall and drains from rooms A and B, structure 2, at upper centre.

16 ft. long (Figs. 23, 38, 39). The line of the footing ran approximately northeast and southwest, paralleling a bedrock scarp about 15 ft. to the northwest. The area between the footing and the scarp was filled with stone rubble. The brick hearth lay at the base of the scarp opposite the east end of the footing.

The face of the scarp had been straightened and dressed off to make it more vertical, in much the same manner as had the scarp in the lower Queen's Battery area against which the north wall of structure 3 was built. Structures 10 and 11 were built in a similar way; that is, with their north walls against sheered natural scarps.

In view of the similarity of the structure 4 remains to the pattern established by structures 3, 10, 11, it appears likely that a wooden building occupied the structure 4 area at one time, its south wall standing on the stone footing and its north wall set right against the scarp. The hearth, in that case, would have served a chimney in the northeast part of the building. This is conjectural, however, as no wall foundations were present where the east and west ends of such a building would have been, nor was there any trace of a foundation along the base of the scarp where the north wall would have stood.

Miscellaneous Features

In addition to structures 2 and 4, additional structural features were unearthed at the upper Queen's Battery; a pit containing 20th-century trash (evidently the caretaker's privy), and two stone walls that met to form a right angle (Fig. 23). One of the walls, about 40 ft. long, ran alongside the north wall of the barracks (rooms D and E of structure 2). A space of four or five feet separating the wall from the barracks was filled with stone rubble. From the southwest end of that wall, at right angles, extended the second wall, 23 ft. long. The latter ran across the end of the shallow depression lying between structure 2 and the scarp at the northwest edge of the upper Queen's Battery. As the shallow depression drained naturally down a steep cliff at that end, the wall was probably designed to check loss of the scanty topsoil by erosion.

Testimony of the Caretaker

On July 16, 1965, Mr. Walter Boone, who claimed to have lived in the caretaker's house for 22 years, was interviewed by Mr. Woodall. The exact dates of Mr. Boone's residence were not ascertained, but he must have lived there between 1900 and the time the house burned, apparently in the middle 1950s. The following notes on Mr. Boone's testimony were made by Mr. Woodall.

Mr. Walter Boone, who lived in the barracks-magazine complex for 22 years, came out to the site this afternoon to point out what he could concerning the age of walls, original features of buildings, etc.

The brick patio adjoining the east wall of the magazine (Room A) was laid by Boone, and is therefore modern in age.

Concerning Room A proper, Boone stated that the door on the north wall was at one time a thick, very heavy wooden door secured by metal hinges to the outside, and the door opened outward from the building. Boone said a wood floor, laid along the top of the interior footing, was in place when he lived in the building. Also a wood floor was in the hall between Rooms A and B. The windows in Room A were there when Boone occupied the place.

[Room B] was in a state of ruin when Boone moved into the barracks, although the roof was still up. The roof was arched like that of Room A, but because of the hazard of it falling in was broken and lowered purposely by St. John's housing officials at a late date. The entranceway was used by Boone to hold coal, and a door was present at both ends of the entrance as well as in the window. The bulk, if not all, of the modern iron and metal artifacts recovered [by the archaeologists] from clearing this room were left by Boone. None of the wooden beams, stones, or other features of this room were done by Boone.

[Room C] was covered by a kitchen with a porch extending to the south, ending about 4' beyond the SW and SE corners of Rooms A and D respectively. None of the walls were built or modified by Boone, and the kitchen floor was level with the threshold at the west end of the hall between Rooms A and B.

[The area comprising rooms D and E was] the main living quarters for Boone and his family. The floor level was at the interior footing–remains of the wood beams are still visible on this footing. It was partially supported by a brick pillar in the centre of the room; the cement foundation of this pillar is visible. A door was present at the northeast corner in the east wall; in the middle of the west wall, and in the south wall by the cement porch (not laid by Boone) were two doors, one opening into the Room E area, the other into Room D. The brick wall separating Rooms D and E extended all the way to the roof at the time of Boone's occupation. Boone's privy had been located in the area of Lots 4-9 of 1A6B [the area where the previously mentioned pit was found]. Windows in Rooms D and E had been present on the north, west, and south sides, but most of them were located high on the wall and their exact locations cannot be determined. At least two were on the north and south sides, and at least one on the west end.

Besides the privy located at 1A6B4-9, the west wall [the designation for the retaining wall running across the downslope end of the shallow depression] had been built by Boone. The south wall [the one at right angles to the west wall] was repaired by him, but it and the rubble fill between it and Rooms D and E were in place when he moved in. The wall in 1A6C [structure 4] and the hearth in 1A6B [structure 4] where not known–Boone stated that to his knowledge no construction had been done in this area in recent years. A drain had been built by Boone down the slope to the west, behind Room E. None of the "French drains" [those draining the magazine areas] were built or modified by him, except one part of the drain now being exposed in 1A6R where it meets the west wall.

History of the Queens' Battery Area

Installation of the gun positions at the Queen's Battery was begun in 1796 and presumably was completed the same year (Richardson 1962: 6). Probably levelling of the lower Queen's Battery area was done at the same time. There seems to be no record of exactly when the 50 ft. by 13 ft. wooden barracks at the lower Queen's Battery (structure 3 of this report; building 35 of the historical base map) was built, but it is reported to have been standing in 1812 (Ingram 1964: 28). In 1831, it was torn down and replaced by a more substantial barracks at the upper Queen's Battery (structure 2, rooms D and E of this report, building 59 of the historical base map) (Ingram 1964: 8, 32).

The brick magazine (structure 2, room A) and the stone magazine (structure 2, room B) cannot be individually correlated with documented structures. However, they are probably buildings 36 and 52 of Figure 4, even though Ingram (1964: 29, 31) states that both buildings were brick. There seems to be no contemporary reference to a stone magazine.

Chronology for the lower Queen's Battery

1796	Lower Queen's Battery area levelled (zone E deposited)
1796-1840(?)	Zone D deposited
1809-1812	Structure 3 built sometime during this period
1831	Structure 3 torn down
1840(?)-1870(?)	Zones B and C probably deposited during this period
1870(?)-1965	Zone A deposited

Dates for the paved areas at the lower Queen's Battery (structures 5, 6, and 7) are uncertain, but they predate the traverse tracks and consequently were probably installed before 1860.

Chronology for the upper Queen's Battery

Before 1831	Brick magazine (structure 2, room A) built; north wall of room C, structure 2 built (after brick magazine) along with latrines
1831	Barracks (structure 2, rooms D and E) built
After 1831	Stone magazine (structure 2, room B) built (probably before 1870)

1820(?)-1860(?)	Cultural deposits in latrines probably accumulated during this period
1831-1860(?)	Lower level, room E of structure 2 deposited
1860(?)-1950s	Upper level, room E of structure 2 deposited

No accurate estimate can be given of the date of structure 4, but it may well have predated the barracks built in 1831.

Lady's Lookout is a high, narrow ridge, oriented in an approximately north-south direction, which stands just north of the Cabot tower parking lot. One of the earliest structures on Signal Hill, a blockhouse surmounted by a signal tower, which gave the hill its name, was erected at Lady's Lookout before 1800 (Ingram 1964: 2). The highest point on Signal Hill lies on Lady's Lookout.

Near the end of the 1965 season, exploratory excavations were undertaken at three places in the Lady's Lookout area: (1) on top of the ridge in the vicinity of the blockhouse (a locality referred to here as "Lady's Lookout proper"); (2) on a level shelf termed the "south flat" that occupies the south flank of the ridge, and (3) on a long, narrow, multilevel bench, the "east flat" that runs along the east flank of the ridge. During the 1965 season remains of the blockhouse foundation (structure 9) were unearthed on top of the ridge and traces of an unidentified building (structure 8) were discovered on the south flat. Only one small test was dug at the east flat in 1965.

The 1966 season was devoted entirely to excavation of the east flat. It was known from documentary records that a commissary building had occupied the flat from 1811 until the 1830s (Ingram 1964: 41-2); that a two-storey canteen stood there in the 1830s and 1840s (Ingram 1964: 34-5), and that a later commissary building extending southward from the canteen area was in existence from 1835 until the 1850s (Ingram 1964: 34). By the end of the season, remains of all three of those buildings had been identified. Both the canteen (structure 10) and the earlier commissary (structure 11) were completely excavated, while the later commissary (structure 12) was partially exposed. In addition, a latrine (structure 13) was excavated together with its adjoining ash pit (structure 15), and two building foundations (structures 14 and 16) were found of which apparently there is no historical record.

Lady's Lookout Proper

Lady's Lookout proper consisted of a comparatively level central area some 80 ft. across bordered on both north and south by a small knob of bedrock. The surface of the central area was comprised of bare bedrock save where depressions had trapped patches of thin soil. This area had been intentionally flattened as was attested by the presence of blasting holes drilled into the bedrock.

Beyond the flattened area on the north was a deep cut in the bedrock, 70 ft. long, 40 ft. wide, and 30 ft. deep, where stone had been quarried. On the knob at the south edge of the flattened area was a conspicuous, circular mound of rubble and earth which, upon trenching, proved to be a United States Army anti-aircraft gun installation of World War II.

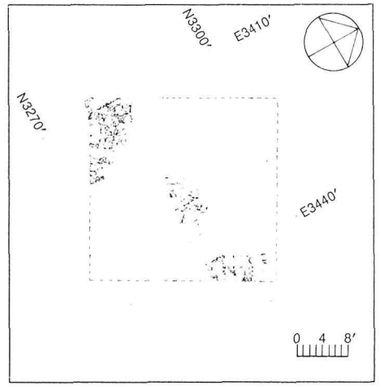
The only *in situ* structural remains at Lady's Lookout proper were several sections of a building foundation (structure 9) identified with the 1796 blockhouse. Debris scattered about the surface suggested that other buildings had occupied the vicinity in the past, but no in-place structural elements remained and the exact location, size, and architectural details of these hypothetical buildings could not be determined.

Stratigraphy

The surface at Lady's Lookout proper consisted of bare bedrock relieved here and there by shallow depressions in which a few inches of soil had accumulated. There was too little soil for any stratification: in fact, exposing of the

40 Archaeological base map, Lady's Lookout area.

41 Plan of structure 9.



blockhouse foundation was more of a cleaning-off operation than true excavation. A few artifacts were unearthed in the course of excavating around structure 9, but the spottily distributed soil was too thin to contain much in the way of cultural debris.

Structure 9

The only surviving remains of structure 9 were several discontinuous remnants of a stone masonry foundation (Figs. 41, 43) which had been afforded scant protection by being located in some of the shallow depressions in the bedrock at Lady's Lookout proper. This structure was surely the blockhouse building 29 of the historical base map (Fig. 4) that was erected about 1796 (Ingram 1964: 27).

Two major sections of wall foundation were still intact, and fortunately they were situated at opposite corners of the square building so its ground level dimensions could be determined accurately. There was a third masonry remnant in the interior of the building which clearly was part of the foundation of interior walls shown on a contemporary plan of the blockhouse (Fig. 42).

The stones were carefully fitted and mortared, and the foundations were quite strong. A good deal of ingenuity had been required to adapt them to the knobs, ridges, and depressions of the bedrock on which they were directly laid. Several tiers of stones were present at both the east and west corners (Fig. 45). Of some interest was a large boulder weighing hundreds of pounds that was incorporated in the northwest wall.

Structure 9, as measured in the field, was 30 ft. square (outside dimensions of the foundation), and the walls were 4 ft. thick. These are the exact documented dimensions of the blockhouse (Ingram 1964: 27).

Lady's Lookout: South Flat

The shelf on the south slope of the Lady's Lookout eminence, the south flat, was explored thoroughly through a series of trenches. The only significant feature discovered was the incomplete foundation of an unidentified building, structure 8.

Stratigraphy

Soil completely blanketed the surface of the south flat, but it was shallow (less than 2 ft. thick) and unstratified. It appeared largely to be detritus that had washed down from the higher ground to the north. Although the soil contained a fair quantity of artifacts, they could not be related with certainty to structure 8 nor to any other occupational feature owing to the absence of discrete depositional components.

Structure 8

Structure 8 was a wall foundation consisting of two parallel rows of stones a foot apart, each row 1.5 ft. wide and 14 ft. long (Figs. 44, 46). On and among the stones, which resembled thick flagstones, were traces of mortar. This probably was a footing for a wall of a frame

42 Contemporary plan of blockhouse (structure 9) at Lady's Lookout proper. (Traced from a photostat of the original, dated 1801.)
43 Looking northeast across Lady's Lookout proper; structure 9 at centre. The north knob bordering the area is visible at top centre. Note how the foundation of structure 9 is fitted to depressions in the bedrock. (Taken with wide angle lens.)
44 Plan of structure 8.
45 Detail of west corner of structure 9 foundation, view looking southeast.

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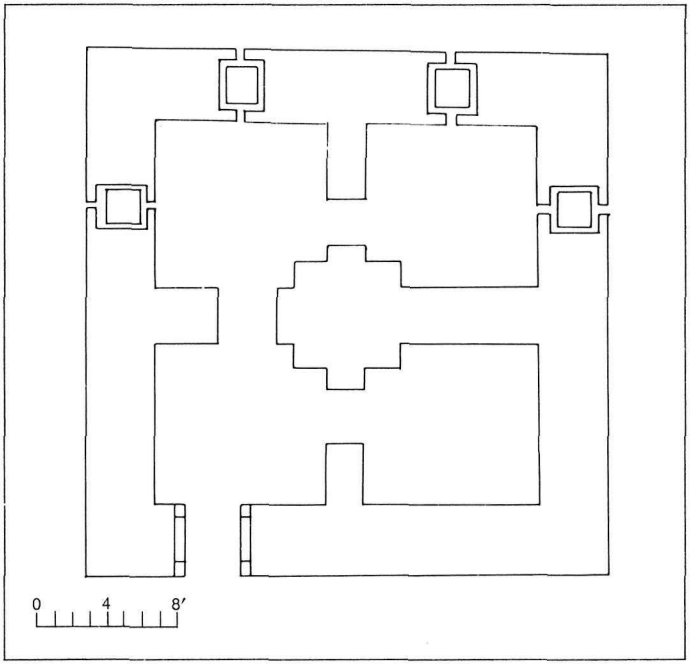

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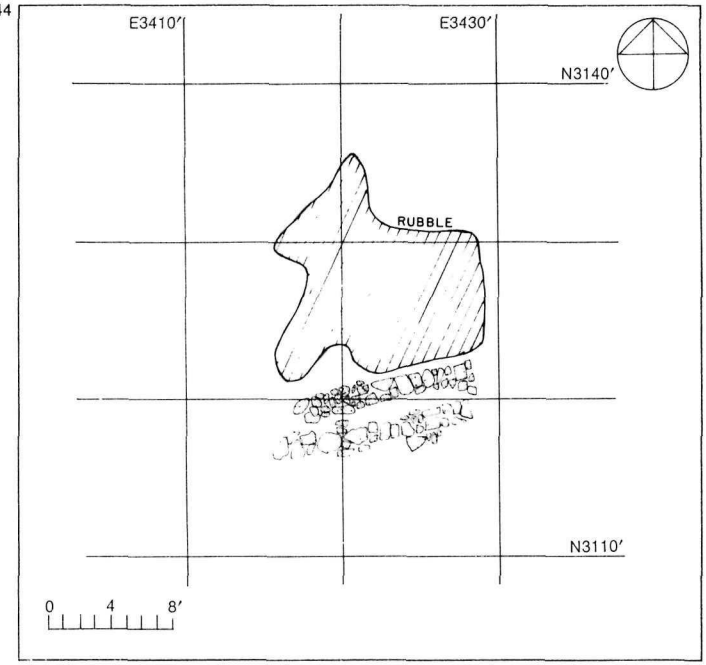

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46 Structure 8, view looking east. Note stone debris at left.
47 Plan of structures 10, 11, 13, 15 and 16.

building, but if so, neither corners nor footings for the other walls were found in spite of a careful search. Just north of the footing was a mass of stone debris about 15 ft. in diameter that could have been a fallen and scattered chimney.

Lady's Lookout: East Flat

The east flat consisted of three subareas which will here be referred to respectively as shelves A, B, and C (Figs. 47, 48). Shelf A is an artificially levelled expanse where structures 10, 11, 13, 15, and 16 were situated. Shelf B is a more or less natural bench adjoining shelf A on the south and standing at an elevation some 10 ft. higher than shelf A. Shelf C is a very narrow, artificially levelled area running along the seaward edge of shelf B at approximately the same elevation as shelf A.

Shelves A and C were created by erecting a sturdy retaining wall of massive, squared sandstone blocks along the steep eastern slope of Lady's Lookout ridge and then filling in behind it with stone rubble. Shelf A was further extended to the west and to the south by quarrying the bedrock.

Shelf A is about 120 ft. long (north-south) by 40 ft. wide (east-west); its eastern edge, formed by the masonry retaining wall, drops precipitously to Ross' Valley some 300 ft. below, while its western and southern edges are delineated by stone scarps standing at a maximum height of more than 15 ft. A large quantity of detritus, evidently washed down from the higher ground to the west, had accumulated on shelf A after the buildings which formerly stood there had been razed. This material was banked heavily against the vertical scarps at the western and southern edges of the shelf. The detritus had completely buried the building foundations;

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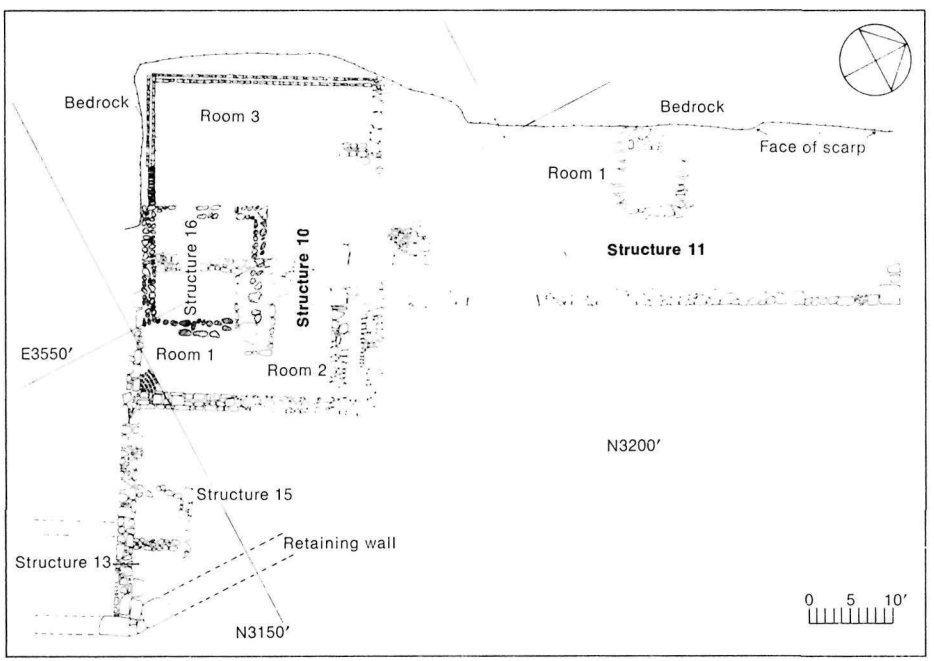

48 Aerial view of Lady's Lookout area, looking west. Lady's Lookout proper is in upper centre, the south flat is at upper left, and the east flat is in lower centre. Note the bedrock scarp at the west edge of the east flat; also note the retaining wall made of large, dry-laid stones at bottom of photograph. The exposed building foundations on the east flat are: structure 10 (rectangular outline with its west wall against the bedrock scarp); structure 11 (represented only by its east wall which extends to the right from structure 10); structures 13 and 15 (the two small outlines between structure 10 and the retaining wall); structure 12 (the short wall running to the left from structures 13 and 15); structure 14 (the long rectangular foundation to the left of structure 10). Shelf A is the flattened area at lower right between the bedrock scarp and the retaining wall. Shelf B is the bench on which structure 14 is situated. Shelf C is the very narrow shelf running to the left from structures 13 and 15, below structure 14. The topography between shelves B and C is obscured by piles of backdirt from the excavation.

49 Shelf A, east flat of Lady's Lookout area, view looking north; excavation just underway.

consequently, prior to excavation, no structural remains were visible on the surface except the retaining wall at the eastern edge of the shelf.

Shelf B appeared to have been a naturally level space with perhaps a few rough spots that were flattened before structure 14–evidently the only building ever built there–was erected. Roughly rectangular in shape, shelf B measured approximately 100 ft. in its north-south dimension and 40 ft. east to west.

Shelf C was formed by filling behind a southward extension of the same masonry retaining wall that faced the eastern edge of shelf A. A commissary built in 1835 (structure 12) occupied the entire area of shelf C. The east wall of the commissary, in fact, was laid directly on top of the retaining wall, and its opposite wall stood against a low scarp marking the inland edge of the shelf (Ingram 1964: 35, sketch). Shelf C is about 100 ft. long but only 11 ft. wide. This corresponds closely to the recorded dimensions of the commissary (*Ingram 1964: 34; historical base map*, Fig. 4).

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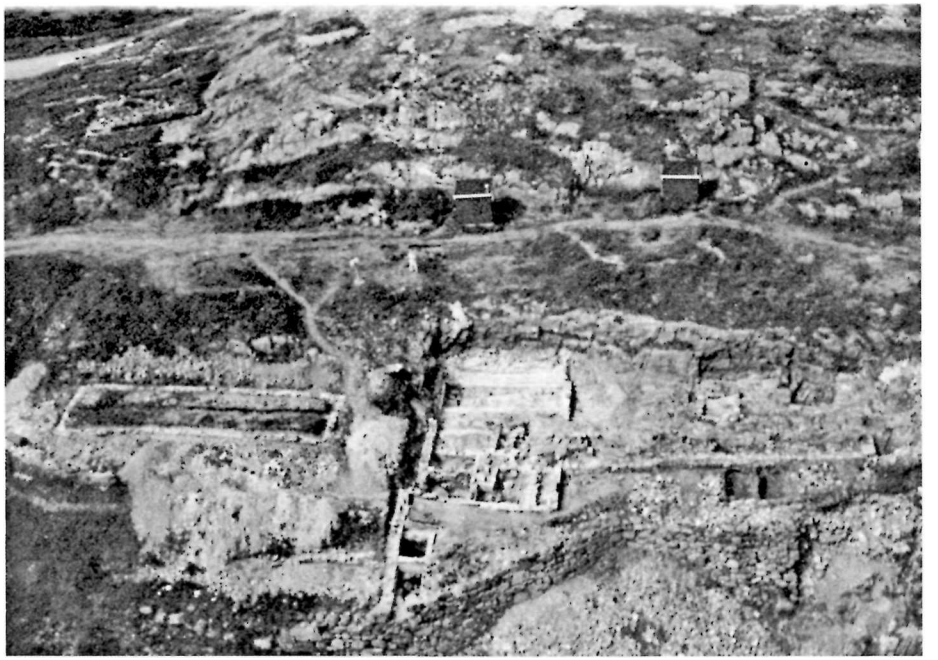

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Stratigraphy

Shelf A

Four major stratigraphic zones of archaeological significance were observed at shelf A (Fig. 52).

Zone A. The stratum of stone rubble fill had been placed behind the heavy retaining wall to level the eastern part of the shelf. The individual stones were jagged pieces of sandstone ranging from fist-sized chunks up to boulders weighing hundreds of pounds. Most or all of them probably came from quarrying the western part of the shelf in the levelling process. Some of the building foundations were built directly on

50 Shelf A, east flat of Lady's Lookout area, view looking north, after ruins have been cleared. The northeast corner of structure 10 is in foreground; the east wall of structure 11 runs north and south at the centre of the photograph.

the surface of the zone A rubble (Fig. 63). In most places the interstices between the stones were empty, but several spots were found where earth and trash had worked down into the spaces. Occasionally, too, artifacts were found where they had fallen in between the stones. The thickness of zone A was variable, ranging from a foot or two up to perhaps 10 or 12 ft. Although a few exploratory tests were dug several feet down into zone A, as a general rule the excavations were terminated on reaching its surface. Its maximum depth was not determined.

Zone B. A layer of dark brown soil, 1 ft. to 3 ft. thick in most places, was distributed over most of shelf A. It rested on top of zone A at spots where zone A was present; elsewhere it lay on the quarried bedrock floor. Zone B was one of the most productive of the artifact-bearing zones.

Zone C. A quite distinctive, light grey stratrum was composed almost entirely of crumbled mortar. Varying from 1 in. to 12 in. thick, zone C may have accumulated on the surface of the ground when the canteen was torn down, then have been buried under the mantle of detritus that built up subsequently. As is often done today, the mortar may have been scraped from the salvaged bricks on the spot in order to reduce the task of hauling them away for re-use. If so, everything found stratigraphically below zone C (that is, in zones A and B) should date from a time prior to the razing of the canteen, evidently about 1855; everything above zone C, by the same token, should have been deposited after that date. Zone C extended over the entire structure 10 area except for several places where it had been disrupted by the construction of structure 16 (which post-dated structure 10) or where there were other local disturbances.

Zone D. A layer of dark brown soil, averaging about a foot thick, lay next above zone C and extended up to the surface of the ground in most parts of shelf A. Zone D contained not only 19th-century trash but also material dating from World War II and later.

Localized Zones. Two localized strata in the shelf A area appeared to be depositionally discrete and therefore were used as contextual association units for artifact distribution studies. The zones were: (1) a layer of midden soil inside room 1 of structure 11, and (2) an accumulation of dark, trash-filled soil heaped around the exterior of the northeastern corner of structure 11. Neither stratum contained substrata: both, however, were excavated by arbitrary vertical increments which were later employed to give the artifact distribution patterns a gross temporal dimension.

Shelf B

The only excavation of shelf B was for the purpose of discovering the extent of structure 14. The entire top of the structure's foundation was exposed, but the foundation was not followed down to its base except in three or four shovel-wide tests. These indicated that bedrock lay at a depth of 1.5 ft. to 2.5 ft. over most of the shelf B. No significant strata were observed, and it is not likely that any are present. More thorough study of structure 14 and shelf B will be required, however, before an accurate stratigraphic appraisal is possible.

Shelf C

Exploration of shelf C was inadequate for accurate interpretation of the stratig-

51 View of shelf A, east flat of Lady's Lookout area, looking south, after ruins have been cleared. Shelf B, at a higher level than shelf A, is in the background.

52 Stratigraphy at east flat, Lady's Lookout area. Zones are as labelled.

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53 Contemporary plan of canteen (structure 10).
54 Structures 10 and 16, view looking southeast. The south wall of structure 16 (which is superimposed over the south wall of structure 10) contrasts with the masonry of structure 10 at right centre.

raphy. Limited testing did reveal that zone A, the basal layer of rubble fill behind the retaining wall at shelf A, extended into the northern part of shelf C where, as a rule, it was buried under an accumulation of soil only a few inches thick. Probably zone A continued along behind the retaining wall all the way across shelf C, but this was not determined with certainty.

There are probably only two major strata at shelf C, the thin stratum of superficial soil and the underlying zone A fill. Only through future excavation can full and accurate knowledge of the stratigraphy be acquired.

Structure 10

Structure 10 consisted of the masonry foundation of a rectangular building together with sections of its west and south walls, made of brick, that still stood several feet high. As may be seen by comparing Figures 47 and 53, these ruins are patently the remains of the canteen that occupied shelf A during the 1840s. The canteen was a two-storey, rectangular building 50 ft. long and approximately 30 ft. wide.

The west and south walls of structure 10 (Figs. 55, 56) were of double construction, consisting of outer and inner components with an air space about 3 in. wide between. Both components were of coursed brick. The entire west wall was built against the face of the vertical bedrock scarp that forms the west edge of shelf A, and, because of its protected position, a large section of the wall was still intact when cleared of overburden in 1966. A section of the south wall where it cornered on the west wall also still stood against the scarp.

The exterior component of the double wall consisted of coursed bricks laid just in front of the scarp face. This com-

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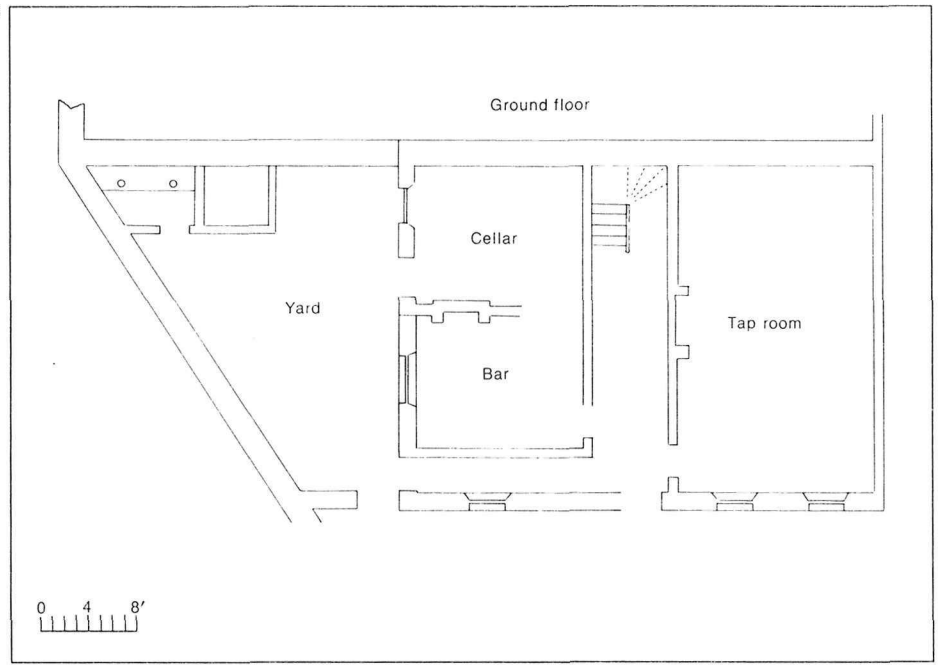

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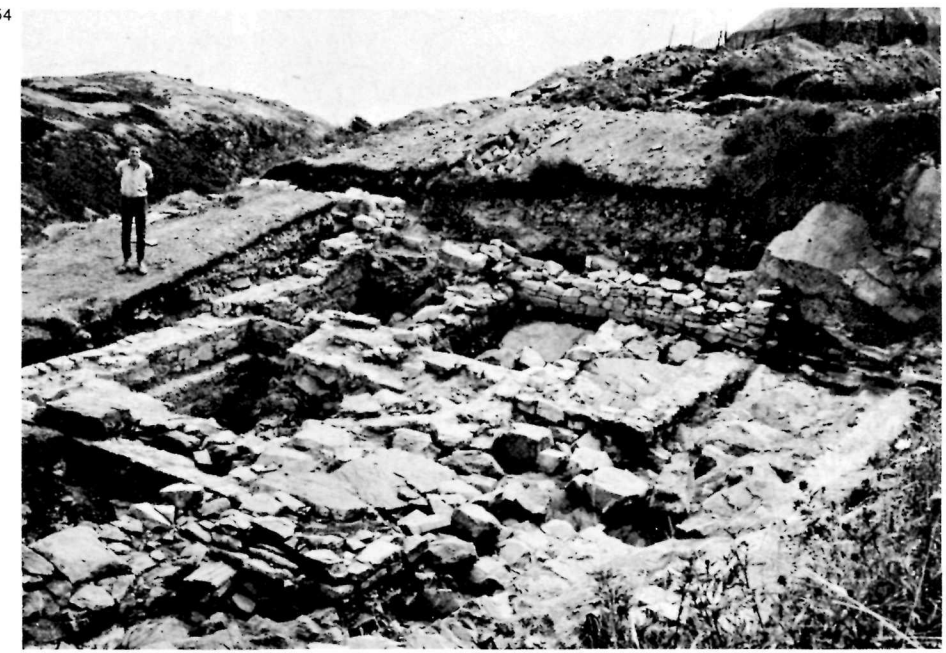

55 View of western part of structure 10, with the northwest corner of structure 16 intruding at lower left. Note structure 10's west wall of brick built against the face of the bedrock scarp.

ponent was one brick length wide (approximately 0.75 ft.), and the narrow space between the wall and the scarp was filled with dirt and stone rubble. The lower courses (up to nearly 4 ft. above the base) of the outer component were of a red brick, 0.75 ft. by 0.35 ft. by 0.20 ft. in size, laid in Flemish bond. Above that had survived up to 18 courses of a yellow brick of the same length and breadth as the red brick, but only 0.15 ft. thick. Most of these yellow bricks were broken into irregular lengths, and they were laid in a quite erratic way. They were soft and had eroded extensively in contrast to the red bricks which were well preserved.

The inner component of the double wall was formed of overlapping stretcher bricks only, no full-length headers being present. Consequently, this component was only as wide as the bricks (that is, 0.35 ft.). The bricks were yellow but different from the yellow bricks of the outer wall, not only in texture but also in size. They measured 0.75 ft. by 0.35 ft. by 0.25 ft. Along the west wall there were irregularly spaced gaps at the base of the inner component which apparently were intended to drain moisture in conjunction with the between-wall space. Abutting against the base of the west wall on the inside was a series of individual yellow bricks (like those of the inner wall) placed on the bedrock about a foot apart: these evidently were supports for a floor joist.

Part of structure 10's south exterior wall had been replaced by the south wall of structure 16 (Figs. 47, 64). The east wall foundation of structure 10 was made of roughly squared blocks of local sandstone (Fig. 57) except for a section made of lime and gravel concrete (Fig. 58). A similar foundation of standstone blocks supported the eastern part of the north wall where the bedrock dipped deeply; the western part of the north wall rested directly on the bedrock.

Three rooms were marked off in structure 10 by interior partition walls. They were designated rooms 1, 2, and 3 and may readily be correlated respectively with the cellar, bar, and taproom of the canteen as shown on the contemporary plan (Fig. 53). The foundation of a major east-west partition wall dividing rooms 1 and 2 was made of rough sandstone blocks laid on bedrock. It probably supported a wooden wall as it was too narrow to have provided adequate support for a wall of masonry.

A second partition-wall foundation, running north-south, was built on bedrock across the western part of structure 10. It separated room 3 (the taproom) from the rest of the lower storey of the canteen. The remains of this partition stood only from 2 in. or 3 in. to a maximum of about 12 in. high. The ends of the partitions abutted against the inside of the exterior walls, but none of the junctures were bonded.

Extending northward from the exterior of the north wall of structure 10 was the foundation of a small stoop about 5 ft. wide by 3 ft. long (Fig. 59). The stone base of a step leading up to the stoop was still intact as were two wooden beams on the tread of the step.

Structure 11

Structure 11, clearly the earlier commissary built in 1811 (building 77 of the historical base map, Fig. 4), consisted of a heavy foundation made of crudely shaped, dry-laid sandstone blocks that underlay the east wall of the original building, together with a short section of the north wall foundation where it cor-

56 Close-up view of the southwest corner of structure 10.

57 East wall of room 1, structure 10, interior view. Note stone footing.

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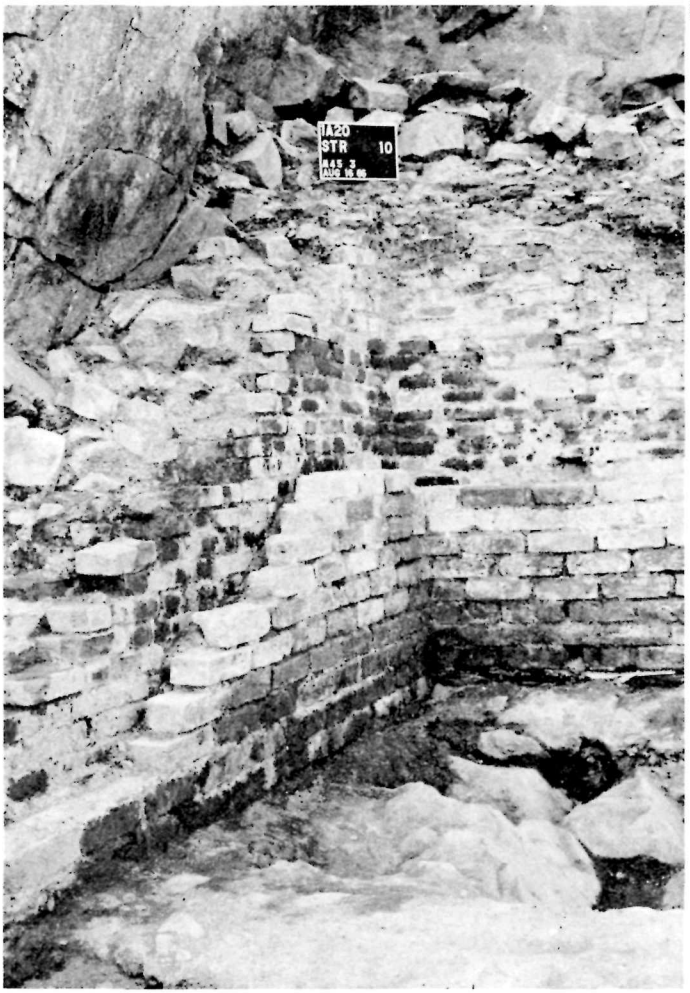

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58 East wall of room 2, structure 10, interior view. Note concrete footing.
59 Close-up view of stoop at centre of structure 10's north wall, looking south.

nered on the east wall (Figs. 47, 50, 51). No traces of the south or west walls survived. Structure 11 occupied the northern part of shelf A, overlapping a bit with structure 10 which lay just to the south. The north wall of structure 10, in fact, was built *over* the east wall foundation of structure 11, establishing positively their relative temporal positions.

At the south end of the east wall of structure 11 the foundation rested directly on bedrock, but no definite corner was present, the wall simply fading out within structure 10. The central part of the east wall foundation was not followed all the way down to the bottom, but excavation at the north end revealed that the wall stood directly on bedrock there also. A carefully squared stone marked the corner of the east and north walls (Fig. 61), and a section of the north wall foundation extended from the corner for a distance of about 5 ft.

The west wall of structure 11 was evidently built right against the vertical cliff at the edge of shelf A, but no foundation stones survived. The south wall was completely missing, too, probably having been destroyed during the construction of structure 10.

There was a small stone foundation about 10 ft. square near the west edge of shelf A, entirely within the confines of structure 11 (Fig. 47, 62). Although designated room 1 of structure 11 in the field notes, there is no way at present to establish its actual relationship to structure 11 as it is entirely isolated from that structure's foundation. It was built directly on bedrock and had a narrow opening, apparently for a doorway, in the middle of its east wall. The foundation was constructed of flattish pieces of local sandstone (many crudely squared) with only a few traces of mortar remaining.

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60 East wall of structure 11, view looking north. Note the bedrock floor (produced by quarrying) behind the wall at left centre.

The stones varied from about 2 in. to well over a foot in thickness, most being in the 4 in. to 8 in. range. Room 1 most likely was not a part of the commissary but a small building erected after the commissary had been razed.

Adjacent to the scarp in the northwestern part of structure 11 was a rectangular pit that had been excavated into the bedrock. It was 8.2 ft. long by 5.5 ft. wide and was between 5 ft. and 6 ft. deep (below the modern surface). Filled with loose rocks, earth, wooden boards, tin cans, and a variety of trash, this feature is probably a latrine built by the United States Army during World War II. In any event, the presence of modern wire nails, Schlitz beer cans, and other quite recent objects indicates that it is of 20th-century vintage.

Structure 12

Structure 12 is the designation given to the archaeological remains of the later commissary building erected in 1835 (building 63, Fig. 4). The east wall of the commissary was built on top of the retaining wall that runs along the east edge of shelf C. It is evident, therefore, that the building, which was about 100 ft. long by 11 ft. wide, occupied virtually the whole extent of shelf C. No trace of the east wall remained, although the retaining wall on which it had stood was still largely intact. In order to determine whether any of the west wall had survived, a few small test trenches were dug just before the close of the 1966 field season. Poorly preserved segments of the west wall were found buried near the south end of shelf C; however, as the southern three-fourths of the shelf was not explored, both the areal extent of the ruins and their significant details of construction must remain unknown until further investigation is made.

Structure 13

Structure 13 consisted of the lower masonry walls of a small trapezoidal room, about 9 ft. long by 5 ft. wide, that is unmistakably a latrine shown on the 19th-century plan of the canteen (Fig. 53). The latrine was attached to the north end of the later commissary (structure 12), its east wall being built on top of the heavy retaining wall that faces the eastern side of shelves A and C. Contiguous to the latrine on the west and sharing a common wall with it was an ash pit assigned the archaeological designation structure 15. The south wall of structure 10 projected eastward all the way to the retaining wall and served not only as the south wall of the latrine and the ash pit, but also as the north wall of structure 12 (Fig. 47).

The latrine wall that originally stood on the retaining wall was missing, but the other three walls of structure 13 were still in a relatively good state preservation in 1966. Roughly dressed blocks of sandstone were mortared together, with an occasional brick included here and there, to form the uncoursed yet carefully fashioned masonry walls (Fig. 63). The walls stood on a jumble of large stones (part of the rubble placed behind the retaining wall for the purpose of levelling the shelf) which provided an uneven but quite solid foundation for the latrine.

Excavation of the fill inside structure 13 produced a quantity of well-preserved artifacts.

Structure 14

Although prior to the archaeological exploration of the east flat there was no historical record of a building on shelf B, an outline clearly visible at the surface

61 Detail of wall foundation, structure 11, at corner of east and north walls, view looking south-southwest.

indicated that the foundation of a building was buried there. During the 1966 season the top of the entire foundation was cleared of the few inches of soil covering it, but time did not permit cleaning out the interior, excavating to the base of the foundation (except for two or three shovel-wide spot tests), or studying the structural details thoroughly.

Designated structure 14, the foundation proved to be approximately 60 ft. long by 15 ft. wide, its long axis running roughly north and south. A small room about 17 ft. long was partitioned off by a cross wall at the north end of the structure. The foundation was made of crudely squared, roughly coursed pieces of local sandstone laid in an irregular manner. At least two or three courses were preserved in most places. The edges of the walls undulated erratically, especially the inside edge of the west wall. Judging from the spot tests, the entire foundation was probably laid directly on bedrock.

Further details regarding structure 14 must await future excavation.

Structure 15

Structure 15 was an ash pit attached to the west side of the latrine (structure 13). It was 5 ft. square. The wall construction was similar to that of structure 13, consisting of mortared sandstone blocks. The walls stood on the stone rubble (zone A) used to level the shelf.

The approximately 4 ft. of fill inside structure 15 consisted of earth intermixed with ash, charcoal, and a number of broken and discarded artifacts including ceramic vessels, glass bottles, and clay pipes.

Structure 16

This slight foundation of small, roughly squared, sandstone blocks (Figs. 47,

62 View of room 1, structure 11, taken from top of bedrock scarp, looking down toward east.
63 Interior view of west wall, structure 13. Note the zone A rubble on which the wall is based.

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64) apparently supported a building 15 ft. square, probably of frame construction. In places its south wall foundation stood to a height of more than 2 ft.; but the foundations of the other three walls consisted of merely one or two courses and averaged only about a foot high.

Structure 16 lay entirely within structure 10 and at first was thought to be part of structure 10. In fact, it was not until the area had been completely exposed that structure 16 was recognized as a separate building. After close study, the relationship of the surviving structural elements showed unmistakably that structure 16 post-dated structure 10 (Fig. 65).

No record of the building represented by this foundation has been found on the maps or in the other 19th-century documents relating to Signal Hill. Its similarity to room 1 of structure 11 suggests that they may represent small coeval buildings erected after structures 10 and 11 had been razed–that is, after the 1840s.

History of the Lady's Lookout Area

The first building in the Lady's Lookout area was a blockhouse that was erected in 1796 at Lady's Lookout proper. On the ridge, just west of the blockhouse, a small officers' barracks and a storeroom were begun the same year. Between 1800 and 1810, officers' and men's barracks were erected in the Lady's Lookout area, along with a number of smaller buildings–guardhouse, forge, cookhouse, and the like (Richardson 1962: 6, 9).

Between 1810 and 1817, materials were stockpiled and construction was begun on an ambitious plan to make the Lady's Lookout area into a virtually impregnable fort, after which Fort Wil-

64 The south part of structure 10. The rectangular outline of the superimposed structure 16 is discernible in the centre of the photograph. View taken from the top of the bedrock scarp, looking east.

64

65 Close-up view of the interior of structure 16's south wall, showing that it was built over one of structure 10's razed partition walls.

liam and the other forts in the town of St. John's were to be abandoned. But peace came in 1815 and the work was promptly suspended. Over the following decades, interest in completing the fortification of Lady's Lookout was periodically revived but was never sustained for long. Consequently when imperial troops were withdrawn from Newfoundland in 1871, the fortifications had never been finished (Richardson 1962: 9-10).

On the flanks of the hill below the crest of the ridge, a series of structures were built during the first half of the 19th century. Included were commissaries, barracks, a canteen, and small outbuildings of various kinds. Batteries were also emplaced at several spots in the vicinity (Ingram 1964).

65

Chronology for Lady's Lookout Proper

?-1796	A signal tower, and possibly other temporary structures, were evidently erected at Lady's Lookout proper prior to construction of the 1796 blockhouse, but no archaeological evidence of them was found.
1796	Blockhouse erected (structure 9 of this report, building 29 of the historical base map)
1796-1871	Numerous buildings, ordnance platforms, and walls, some of them short-lived, were built at Lady's Lookout during this period, but none of them could be identified specifically by the scattered archaeological remains that survived.

Chronology for Lady's Lookout: South Flat

As the soil deposits at the south flat were shallow and unstratified, no close dates can be assigned to the archaeological remains there (including structure 8) on the basis of field evidence. The artifacts from the south flat suggest a date in the 1800-70 range.

Chronology for Lady's Lookout: East Flat

1811	Structure 11 built. Shelves A and C were probably levelled in 1811; however this is uncertain, and possibly the levelling, which created zone A, was done earlier.
1811-1855(?)	Zone B, shelf A, deposited. The midden at the northeastern corner of structure 11 was probably laid down, for the most part, during this period.
ca. 1820	Structure 10 built (?).
ca. 1832	Structure 11 razed (?).
1835	Structure 12 built.
ca. 1855	Structures 10 and 12 razed (?) Zone C, shelf A, deposited (?).
ca. 1855-1966	Zone D, shelf A, deposited (?).
ca. 1860	Structure 16 built (?), room 1 of structure 11 built (?).

It is impossible to date the thin soils of shelves B and C with any precision on the basis of present evidence; and even if further excavation were undertaken in those areas it is doubtful that discrete structural components would be found that could be reliably dated within narrow limits.

Ceramics

In order to have a comprehensive taxonomy for the classification of ceramics, it is necessary that the following factors be taken into account.

I Observable characteristics
- A *Structure*–the structural components which comprise the ceramic artifact: the body, glaze, decoration, etc.; and the way they are put together to create the artifact.
- B *Composition*–the texture, colour, hardness, density, etc. of each structural component.
- C *Form*–shape and size of the ceramic artifact.
- D *Decoration*–the mode and motif of decoration.
- E *Style*–the over-all effect of the structure, composition, form, and decoration (e.g., baroque, rococo, etc.).

II Inferable characteristics
- A *Method of manufacture*–whether coiled, thrown, moulded, etc.
- B *Function*–whether for cooking, storage, serving at table, etc.
- C *Historical context*–place of origin, date of discard, identity of owner, etc.

To the knowledge of the writer, a comprehensive taxonomy designed to take the foregoing factors into consideration does not exist in any form at present. Until one has been devised that is acceptable to most historical archaeologists, the problem of classifying and describing ceramic samples from historic archaeological sites will remain difficult. Faced with the necessity of classifying and describing such a sample, archaeologists at present must resort to individualistic, often whimsical, approaches.

In treating the Signal Hill ceramics, a hierarchal system of criteria was applied as consistently as was practicable. The system is an attempt at an expedient compromise between the rigorous requirements of a scientific approach and the largely subjective classifications customarily employed by art historians in describing ceramics. The criteria, in order of priority, are as follows.

I Criteria of paste
- A Porosity
- B Opacity
- C Colour

II Criteria of structure
- A Presence or absence of a glaze
- B Presence or absence of a free slip
- C Structural relationship of decoration (underglaze, inglaze, overglaze, etc.)

III Criteria of glaze
- A Opacity
- B Colour

IV Criteria of decoration
- A Achromatic
  - 1 Mode (incised, punctated, etc.)
  - 2 Design motif
- B Chromatic
  - 1 Mode (slip decorated, painted, enameled, etc.)
  - 2 Design motif

V Vessel form

VI Inferential criteria

Where appropriate, conjectures regarding method of manufacture, function, and historical context are given. Emphasis in this report, however, is on observable, descriptive attributes of the ceramics, not on criteria inferred from observed attributes. Valid inferences, in most instances, would require extensive comparative studies of data gathered from sources far beyond Signal Hill –studies that greatly exceed the scope of the present report.

In classifying the Signal Hill ceramics (exclusive of clay pipes and marbles, which are treated separately), the entire collection of sherds was first sorted into two major groups, those with porous paste and those with nonporous paste. Each of those groups was split when possible into two divisions, opaque and translucent. Each of the latter was, in turn, subdivided into colour categories; and so on down the hierarchal scale. The following classification resulted.

I *Earthenware*–all ceramics with porous paste. (The earthenware from Signal Hill all has an opaque body.)
- A *Coloured earthenware*–all earthenware with conspicuously coloured (including black) paste.
  - 1 Unglazed
  - 2 Glazed
    - a Free-slipped (This term is used for a technique where slip is used as a coating over a major part of a vessel's surface to provide a homogeneous surface. Slip decoration, in contrast, is a design executed in slip that contrasts in colour with the ground.)
    - b Unslipped
      - (1) Opaque glaze
        - (a) Dark
        - (b) Light
      - (2) Transparent glaze
        - (a) Clear glaze
          - (i) Plain
          - (ii) Slip-decorated
        - (b) Coloured glaze
- B *White earthenware*–all the earthenware with white or near-white paste. (The white earthenware from Signal

Hill all has transparent glaze; none is free-slipped.)

1 Plain
2 Decorated
   a Slip-decorated
   b Painted (underglaze or overglaze)
      (1) Freehand
      (2) Stamped
      (3) Printed
      (4) Textured

II Nonporous paste
A *Stoneware*–nonporous ceramics with an opaque body.
   1 Salt glazed
   2 Lead glazed
B *Porcelain*–nonporous ceramics with a translucent body.
   1 Oriental
   2 European

In many cases, the most specific categories given in the above outline were broken down further in the actual analysis on the basis of vessel shape, colour of decoration, or other pertinent criteria. The observant reader has already noted that despite the author's avowed intention of avoiding inferential criteria he has employed such terms as freehand painted, printed, and European porcelain –terms which reveal that the classifier has not restricted himself to observable attributes of the specimens, but at times has resorted to inferences about technique of manufacture and place of origin. Until a more scientifically consistent ceramic taxonomy has been developed, such comprises between art and science are, practically speaking, unavoidable.

Earthenware

Earthenware has been defined above as ceramics with porous paste. That sounds at first blush like a precise definition; but on reflection it is patent that porosity is a quality of degree, not of kind. *All* ceramics are porous (that is, they will absorb water to some degree): it is just that some are more porous than others. Some ceramic bodies will visibly soak up water like a sponge, while others–porcelain for example–will absorb only infinitesimal amounts of water. And there is a continuous gradation in ceramic wares from one extreme of the porosity scale to the other.

How, then, should porosity be measured? What is the proper porosity range for earthenware? For stoneware? For porcelain? What tests should be applied to determine whether a particular specimen falls in one class or another? These are questions for which neither archaeology nor art history has yet provided acceptable answers, and no answers will be sought here. Yet *some* decision had to be made if the Signal Hill ceramics were to be classified on the basis of porosity.

After considerable thought, it was finally decided to employ the rule of tongue: if a freshly broken sherd edge felt sticky to the tongue, it was classed as earthenware; if not, it was classed as nonporous–either stoneware or porcelain, depending on whether the body was opaque or translucent. (Opacity–or translucency if you prefer the reciprocal aspect of the same quality–is, of course, another quality of degree rather than of kind which poses the same quandary to the classifier as the question of porosity. But further comment on that problem will be deferred until the discussion of nonporous ceramics later in the report.)

One feels compelled to speculate, too, on the possibility that human tongues may vary significantly in ceramic stickability. What variations may exist as a result of differences in diet, in race, in sex, or in age can be determined only through carefully controlled experimentation. Meantime, to meet the immediate demands of Signal Hill, the rule of tongue was invoked.

But when one actually exercises the rule of tongue he discovers that the rule is not infallible: some sherds cling so tightly to the tongue that it is difficult to pull them loose without amputating a few taste buds in the process; some feel sticky but will not cling; others are right at the border of stickiness and might with justification be classed as either porous or nonporous, depending on the whim of the classifier.

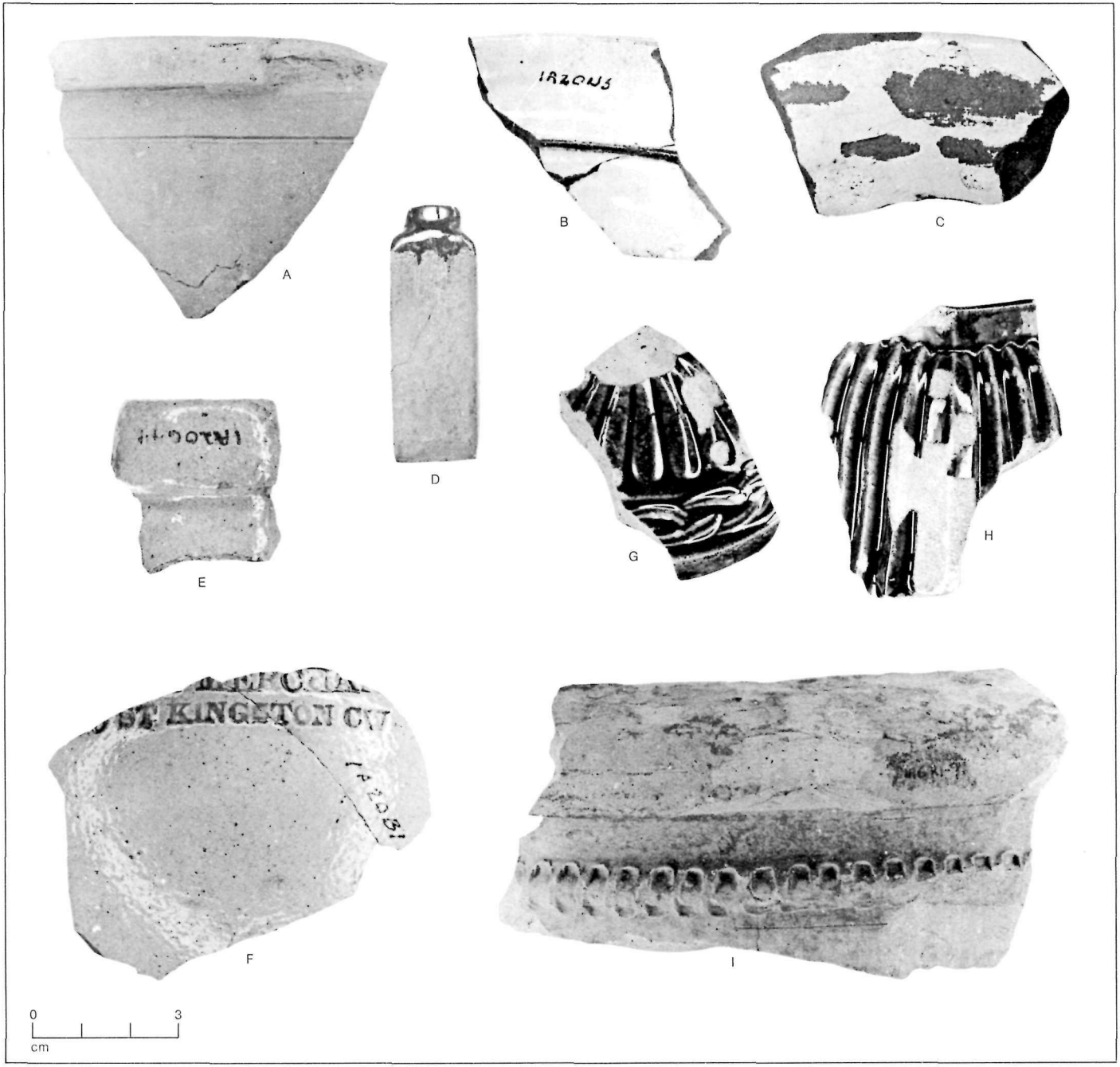
The Signal Hill earthenware was divided into two major classes: coloured and white. A number of subdivisions were recognized within each class. The test of colour applies to the paste only, without regard to any colour that might be in a glaze or in a slip. As in the case of porosity, colour is a matter of degree, and the problem of deciding where to draw the line between white and coloured pastes corresponds to the problem of deciding where porosity stops and nonporosity begins. Taking the easy way out and invoking the justification of expediency, the classifier simply put into the white group all the sherds that, subjectively, looked more white than not. As things came out, the category of white earthenware included specimens that many specialists would class as creamware and pearlware, as well as specimens with chalky white paste and perfectly lucid glaze.

Coloured Earthenware

Unglazed

A few unglazed sherds were found, all having red, fine-textured paste. As nearly

66 Coloured earthenware. *a*, unglazed; *b-c*, free-slipped; *d*, vial; *e-f*, salt-glazed jug fragments; *g-h*, Whieldon-like brown glazed sherds; *i*, punctated decoration.



as could be told from the fragments, the complete vessels were all thrown jars. Two sherds (Fig. 66, *a*) have segments of incised lines on their exterior surfaces; the others are undecorated.

Glazed

Free-slipped

The few sherds in this category have red, fine-textured paste much like that of the unglazed pottery. The vessels represented by the sherds have their interior surfaces covered with white slip (Fig. 66, *b-c*) but not their exteriors. A yellowish transparent glaze was applied over the slip. On some vessels the glaze extended over part or all of the exterior surface, too; however, the exterior surfaces of most sherds are unglazed.

A large rim sherd came from a pan that was approximately 14 in. in diameter. Other sherds apparently came from smaller jars. No decorative designs appear on any of the sherds.

Unslipped

Dark opaque glaze. The paste is brick red, dark grey, or cream. The glaze ranges from chocolate to black in hue. The glaze is glossy on most sherds, but grades off to matte on some. A small vial (Fig. 66, *d*) is thickly glazed on the inside but unglazed on the exterior except for the neck area. The only other vessel shapes surely represented in the small sample of sherds are small, deep jars, all or most of them wheel thrown. Except for several rim sherds having rows of tiny, raised (moulded) dots, there are no decorative designs.

Light opaque glaze. A few sherds of earthenware have the soft, cream-coloured, fine-textured paste and the white to pale blue, opaque glaze that are characteristic of delft. The sherds are too few and too fragmentary for any vessel shapes to be recognized, but horizontal striations on several specimens indicate that they were thrown. Three sherds bear traces of hand-drawn lines in the pale cobalt blue decoration. Another has portions of two dark brown, handpainted letters – one either W or M, the other indistinguishable.

Transparent glaze. Paste colours range from brick red and dark grey to cream and pale grey. One vase has bright blue paste. Paste texture is variable, from rough and grainy to fine and homogeneous. A few sherds are salt-glazed; the majority, however, are lead-glazed. Some of the lead glazes are almost crystal clear, but others are coloured amber, yellow, green, or brown.

Most vessels were thrown, but some were moulded. Common shapes include deep jars, bottles, and a small, straight-sided beaker with a footed base of conspicuously smaller diameter than the mouth, a form which occurs much more commonly in stoneware than in earthenware.

The only decorations appearing on this group of coloured earthenware are moulded geometric patterns and fluting on several vessels, a moulded effigy of Giuseppe Garibaldi on the blue vase mentioned above, a rim sherd bearing a horizontal row of freehand punctations (Fig. 66, *i*), and designs executed in white or coloured slip. There are no painted designs either under or over the glaze.

Fifteen sherds that appear to be from a single vessel (Fig. 66, *e-f*) were found at the east flat, Lady's Lookout. Evidently a narrow-mouthed, handled, thrown jug – perhaps for holding rum or some other kind of spirits – its exterior was salt-glazed, its interior sealed with a dark brown opaque lead glaze.

Trailed slip decoration: Two sherds from the same vessel, found at the south flat of the Lady's Lookout area, have the same kind of red paste and yellowish glaze as the free-slipped sherds described above. However, their interior surfaces, instead of being completely covered with slip, are decorated with squiggles executed in trailed white slip. The sherds are too small for the overall design to be made out.

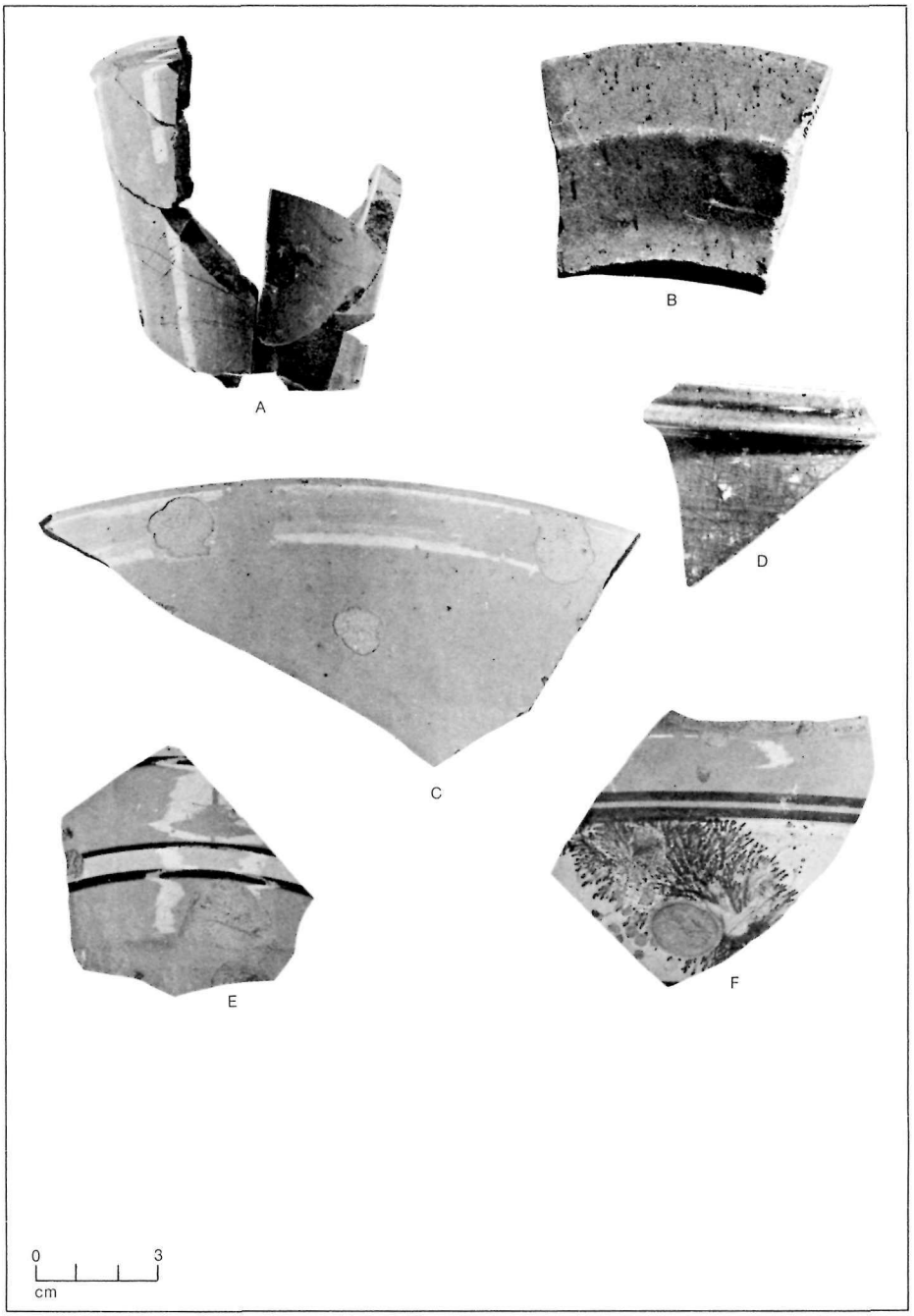
Banded slip decoration: The yellowish paste of this group of sherds (Fig. 67, *e-f*) is fine-grained and homogeneous in texture. The decorations are chiefly bands of white or coloured slip that were seemingly laid on while the vessel was turning in a lathe. The so-called *mocha* design, which resembles moss agate, is present on some specimens. Similar designs that occur on white earthenware are described later in the report. As with the white-paste variety, bowls appear to be the only vessel form present; the coloured-paste bowls, however, seem to have been somewhat larger as a rule than the white-paste ones. They also differ from the white-paste variety in the following ways.

a Blue is the most popular colour for the mocha design, although both black and brown occur also.
b No examples of marbling occur.
c The broad panels on which the mossy designs appear have a white-slipped instead of a coloured ground.
d There are no impressed rim decorations.
e Unslipped surfaces show up as yellow-brown as that is the colour of the body.

White Earthenware

The majority of ceramics from Signal Hill is earthenware with white or near-white paste. Both plain and decorated vessels are represented. All the vessels

67 Coloured earthenware. *a*, footed beaker; *b-d*, plain lead-glazed sherds; *e-f*, slip-banded decoration (*f* with mocha design).



were lead-glazed on both interior and exterior surfaces.

Plain

A number of plain white earthenware sherds were found, some from completely plain vessels, others from plain areas of decorated vessels. Most of the plain vessels had a glaze with a yellowish cast that, in over-all effect, imparted a pale cream colour to the vessel. This falls into the class often labelled creamware but is lighter in colour than most so-called creamware observed by the writer. Plain sherds with a slightly blue-tinted glaze and others with crystal-clear glaze are present in the sample; some of both kinds are from undecorated vessels.

Decorated

Slip-decorated

Slip-banded. Paste of this group is chalky white, and glaze is clear or faintly blue-tinted except as noted below. Vessel forms seem to be entirely bowls and cylindrical mugs, jars, or vases. Decorations (Fig. 68) are executed in coloured slip, or by incising, or by the unique process that produces the so-called mocha design.

The most common decoration consists of a broad coloured panel, usually one to three inches high, encircling the body, and several narrow, horizontal bands setting off the panel above and below. The panel is reddish brown, bright blue, tan, or light olive, and it may bear mossy (mocha) figures or marbled effects. The horizontal bands are dark brown or bright blue. In another form of decoration the body is covered with a series of horizontal bands, every second band broken into dashes.

The colours that make up these decorations are embodied in thin elements of slip that underlie the clear glaze.

In many instances depressions were imposed into the surface of the vessel body where bands were desired, and then the depressions were filled with coloured slip to produce the bands. This left the surface of the vessel (after decorating but before glazing) smooth and even all over. In other cases the bands of slip were laid directly on the smooth body surface so as to stand out in low relief. On some specimens a moulded geometric design runs in a band around the rim area. Rarely this kind of design is in relief (Fig. 68, *g*), but usually it is depressed in the surface of the vessel, in which case the depressions may be (a) filled flush with coloured slip (Fig. 68, *f-q*) or (b) glazed over without the addition of slip (Fig. 68, *j-k*). All sherds fitting the latter description have green transparent glaze covering the impressed design area, even though the rest of the vessel was covered with clear glaze.

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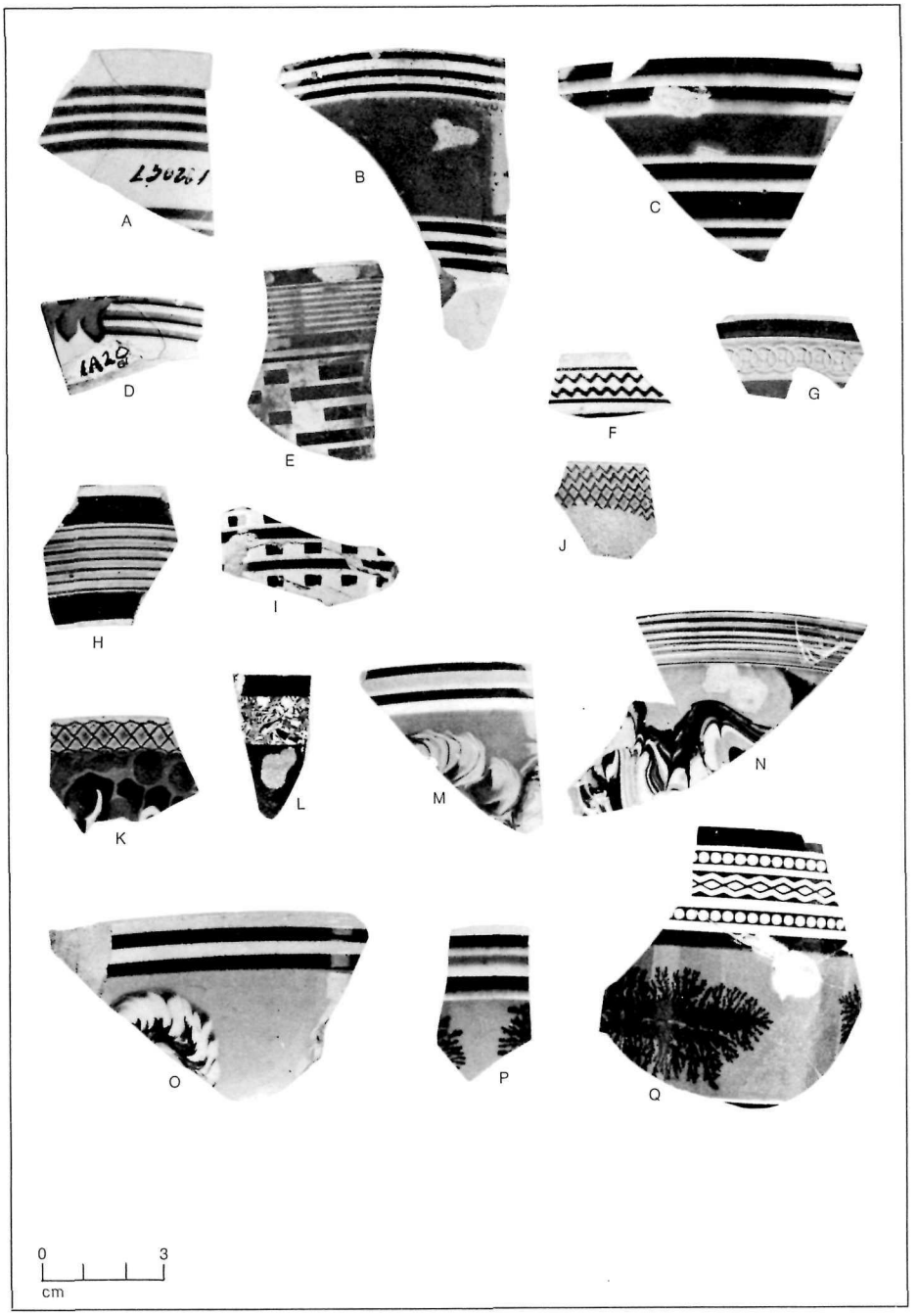


Painted

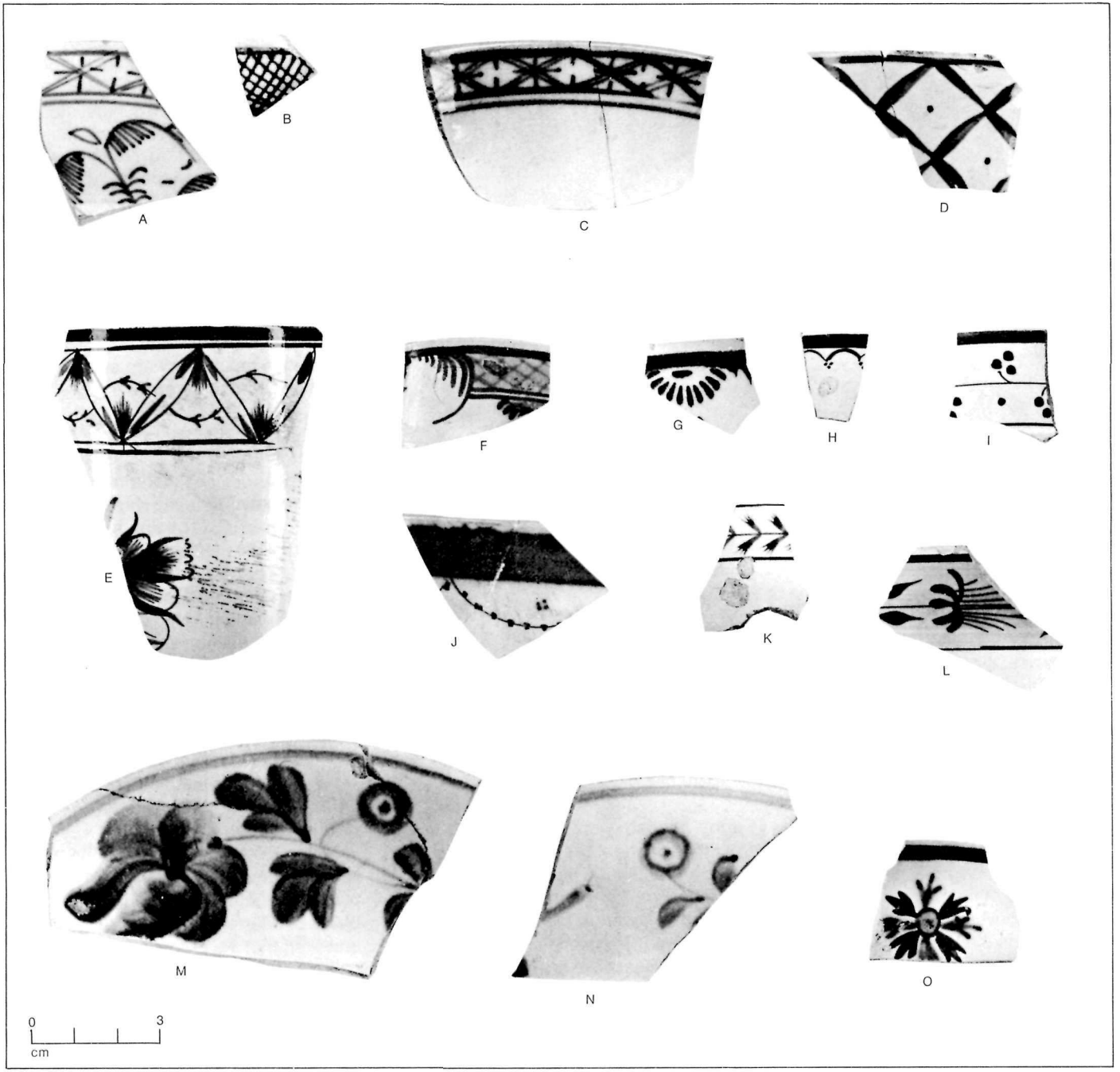
Freehand. The paste is generally chalky white, but occasionally a specimen may show a faintly yellowish cast. The underglaze designs (Figs. 69, 70) run mostly to bold leafy branches and flowers; although there are also sherds with geometric patterns, a few oriental scenes, and an occasional bird figure. Border decorations consist of simple bands, crosshatched bands, or geometric figures of various kinds. Shades of blue, green, yellow, and red (especially purple-red) are the predominant colours. Judging from the sherds, the vessel shapes are chiefly small bowls, cups, and saucers. The decorations may be either on the exterior or the interior of a vessel, often on both.

A special kind of freehand-painted design, here termed *edge-banded,* con-

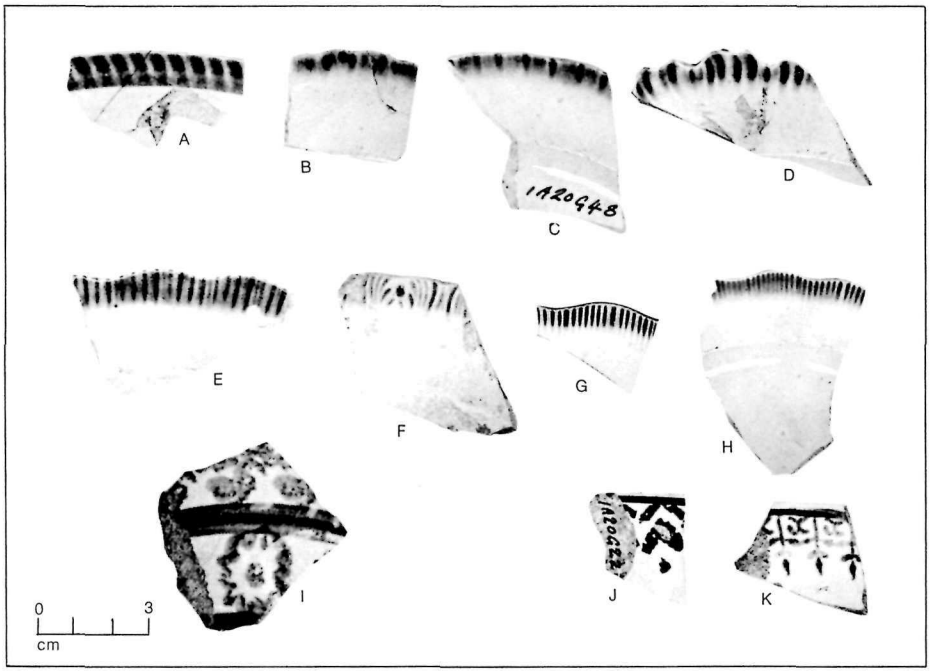
69 White earthenware with freehand painted decorations.

69

70 White earthenware with freehand painted decorations.



71 White earthenware, *a-h*, edge-banded decorations; *i-k*, stamped decorations



sists of a coloured band on the lip, apparently applied while the vessel was turning in a lathe. The edge-banded sherds all have chalky white paste and a clear glaze that often shows a faint tinge of blue. The only shapes represented in the sample are plates and platters: there are no bowls, pitchers, cups, or saucers.

The decoration consists of a blue, or occasionally green, band, usually 5 mm. to 15 mm. wide, running around the edge (Fig. 71, *a-h*). With rare exceptions there is also a series of shallow, closely spaced, radially aligned grooves moulded into the edge of the piece on its upper side. The grooves are generally of variable length on the same specimen, from 4 mm. or 5 mm. to perhaps 15 mm. long. The pigment applied around the edge flowed down the grooves, thus imparting a feathery appearance to the inner edge of the band. On the few smooth-surfaced, ungrooved sherds, the inner edge of the band was feathered by brushing to create an effect similar to that of the grooved specimens.

The edges of most examples are wavy; many also have what seems to be a small, stylized, leafy branch moulded at intervals into the band of decoration (Fig. 71, *f*). An occasional specimen has a more elaborate design.

Approximately 85 per cent of the edge-banded sherds are bright blue; the balance is bright green. No other colours are present. The painted band occurs only on the upper side of the plate or platter, never on the under side.

Stamped. The paste is chalky white, the glaze clear. The decorations (Fig. 71, *i-k*) evidently were applied by stamping with a cut-out sponge in the same way a rubber stamp is used to ink a design on paper. The stamped figures are leafy branches and geometric forms, and there is usually a single band along the lip of the vessel. Blue is the predominant colour, but dark brown, red, green, and purple occur also. Saucers and small bowls are the principal vessel forms.

Printed. This group constitutes by far the most popular kind of decorated ceramics at Signal Hill. Chalky white paste and perfectly clear to bluish clear glaze characterize a vast majority of the specimens. A few, however, have cream-coloured paste and yellowish glaze, or both, and would be classed as creamware or Queensware by many. Designs on the latter are in overglaze black.

Exclusive of the black-printed creamware, more than 90 per cent of the sherds bear designs that are executed in bright blue. There are three especially popular patterns: (1) the so-called willow design (Fig. 72, *a-d*); (2) ornate floral patterns (Figs. 72-75), and (3) scenes featuring landscapes, buildings, people, and animals (Figs. 74-76). The willow and floral designs tend to be deep blue; the scenes are usually pale blue. A few sherds of "flow blue" were found.

Other than blue, printed colours are green, red, pink, purple, and several shades of brown. Almost all of the designs done in those colours are floral, the willow and other scenic patterns being quite scarce.

The printed vessels came in a wide variety of shapes and sizes: plates, platters, saucers, cups, pitchers, and bowls of different sizes. It is noteworthy, however, that the willow pattern, with rare exceptions, appears only on plates and platters.

Apparently some matched sets of dinnerware were used on Signal Hill; a set perhaps including plates, cups, saucers,

72 White earthenware with printed decorations.

serving bowls, platters, and pitchers, aii decorated with the same printed floral or scenic design.

Textured. The paste is chalky white, the glaze clear. The decoration (Fig. 77, *a-b*) is a kind of speckling over sizeable areas, evidently produced by applying pigment with a sponge. The speckles vary considerably in size and closeness of spacing from one specimen to another. Blue predominates in popularity over brown, red, green, and purple. Saucers and small bowls are the principal vessel forms.

Stoneware

By definition, stoneware comprises those ceramics having nonporous, opaque bodies. All the stoneware from Signal Hill is glazed save one sherd of black basalt.

Two major classes of glazed stoneware are recognized here: salt-glazed and lead-glazed; and each of those classes has two principal subdivisions: white and coloured. As one should have come to expect by now, the classifier, in dealing with stoneware, is faced with the same kind of quandary encountered in classifying earthenware: how does one distinguish between salt glaze and lead glaze? Exactly where is the dividing line between white and significant colour in the paste?

The colour problem was solved in the same way as with earthenware. If a specimen seemed, subjectively, to be more white than not, it was called white; if it seemed more coloured than white, it was called coloured.

Literature on the classification of ceramics sometimes mentions that one can recognize salt glaze by its bumpy or pitted surface that resembles the topography of an orange peel. The implication is that after seeing a few exam-

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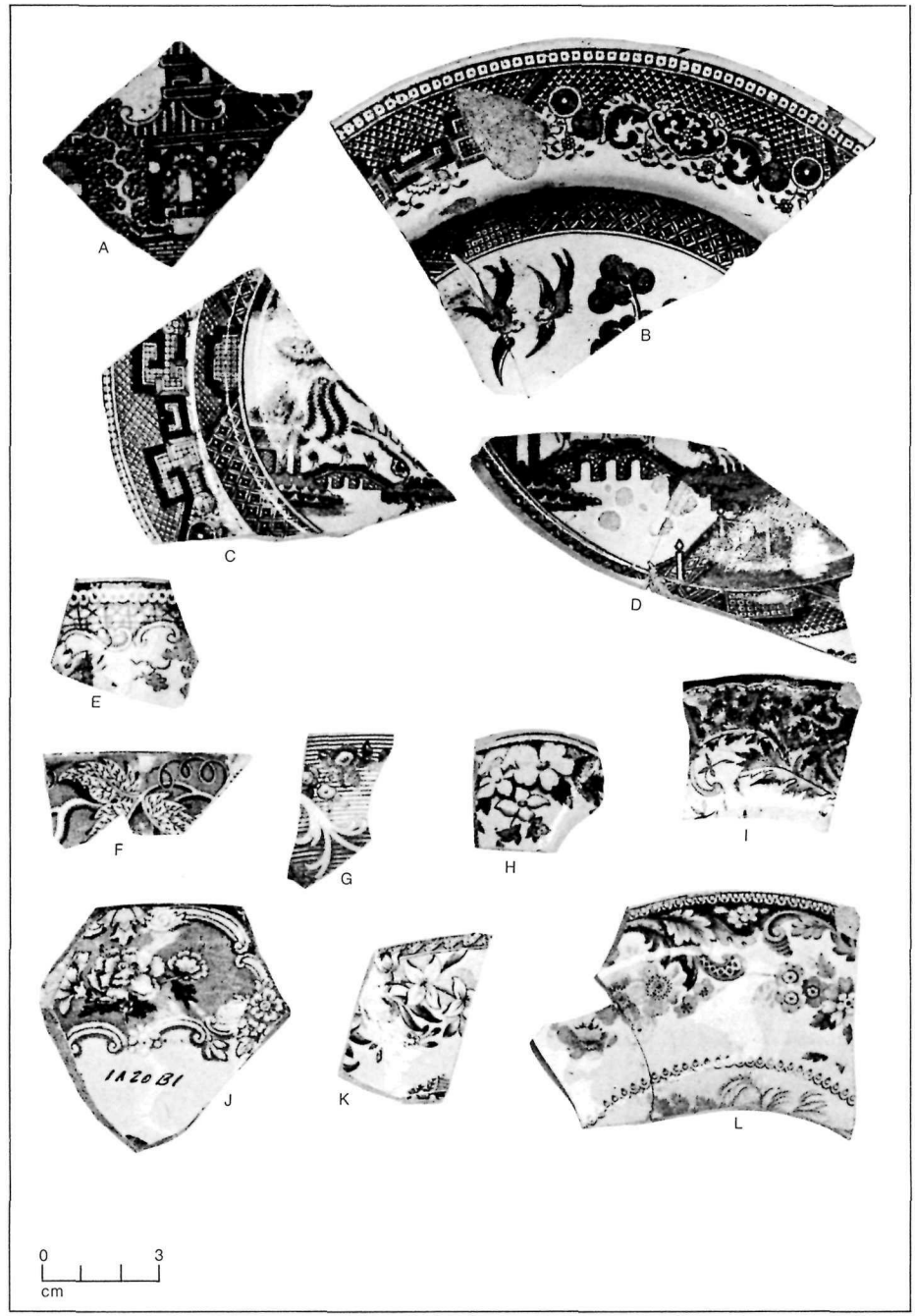
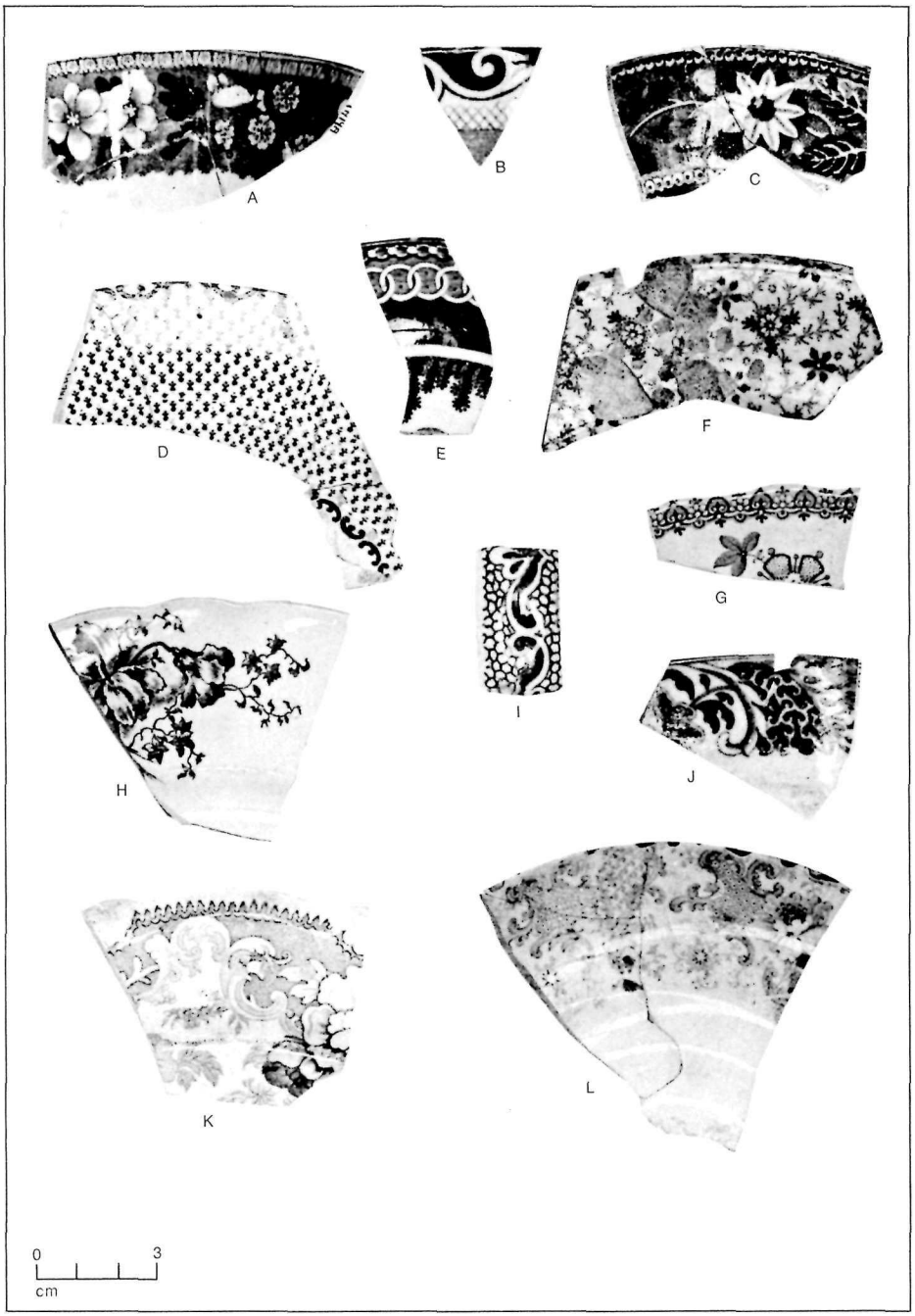


73 White earthenware with printed decorations.



ples of salt glaze any fool can instantly recognize a salt-glazed ceramic body when he sees it. Some specimens are easy, it is true; but upon close inspection of a sizeable sample it is apparent that, while some glazes on stoneware have the classic appearance of salt glaze, others are perfectly smooth and do not resemble the texture of an orange peel in the slightest. These are here called lead glaze, although none were tested chemically to see if they do indeed contain lead.

The problem is that there is a continuous gradation between the two extremes, and the classifier is faced with the same old quandary of classing into discrete categories a series of specimens that actually form a continuum. So, in the absence of precise quantitative criteria, the salt-glaze versus lead-glaze question was settled, as before, intuitively: if a specimen *appeared* to be more like salt glaze than lead glaze, it went into the salt-glaze box; if the opposite, it was called lead-glaze.

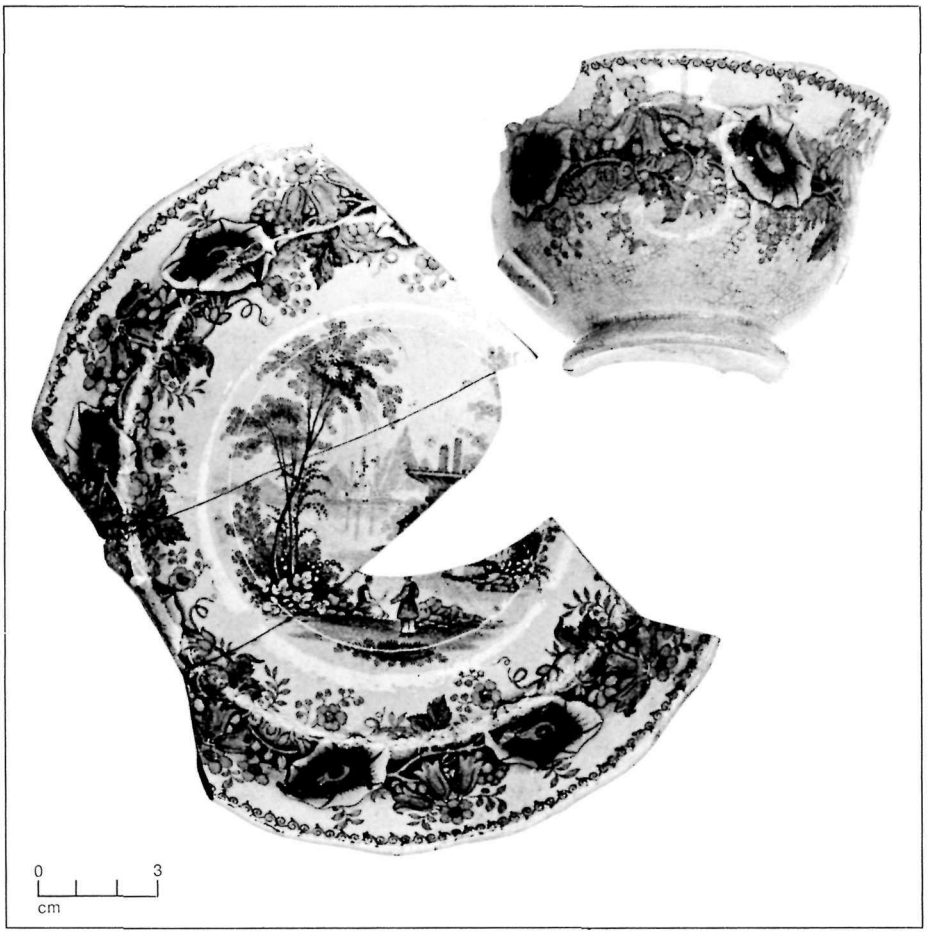
Salt-glazed Stoneware

Coloured

The paste colours are mostly browns and greys, varying from very light to quite dark tones. The most common vessel shapes are small bottles (some with handles), estimated to have held from 1 to 3 gills and straightsided, footed beakers with a mouth conspicuously larger than the base (Fig. 80). The beakers usually have a groove running around the body just below the lip; their estimated capacity ranges from 3 to 10 oz. Similar beakers of coloured earthenware have been described previously. Other less common forms of coloured stoneware include cylindrical jars and wide-mouthed globular vessels.

74 Matched cup and saucer of white earthenware with printed decorations. The flowers are touched up with freehand overglaze paint.

74



White

A single sherd of white salt-glazed stoneware (Fig. 80) is from a plate or platter and has a typical moulded basketry design in the upper surface.

Lead-glazed Stoneware

Coloured

A few sherds of lead-glazed, coloured stoneware were found. Most or all of them appear to be from small bottles and bowls.

White

Most of the lead-glazed stoneware has a whitish paste, although generally not as white as the white earthenware. There are several sherds from small cylindrical jars with vertical flutes in the sides (marmalade jars?) and some from chamber pots; but most are fragments of plates, cups, saucers, and bowls for table service. The latter, by and large, are in the general class that is sometimes called ironstone. It is undecorated except for an occasional piece with a moulded floral or geometrical design.

Porcelain

A few sherds of porcelain were unearthed at Signal Hill. As the writer's knowledge of porcelain is exceedingly scanty, this ware was separated into two classes only, oriental and European, and it is by no means certain that those identifications were accurate. As translucency is the only characteristic distinguishing porcelain from white stoneware, it was even difficult for the unpracticed eye to decide in some cases whether a sherd was white stoneware or a thick piece of porcelain. So the reader is warned not to place too much confidence in the classification of porcelain in this report, as gross as it is. But as the entire collection of porcelain is quite small, it can be glossed over without great loss.

Clay Tobacco Pipes

Except for one stem fragment of red earthenware, the pipes are of fine-textured, white earthenware paste. None are glazed. No complete pipes were found, but judging from the hundreds of broken pieces the complete ones had stems approximately 15 cm. long and bowls of approximately 7 cc. to 10 cc. capacity. The angle between stem and bowl ranged between 90 and 120 degrees. Small spurs projected downward from the bottom of the bowl on most of the pipes, only four definitely nonspurred specimens having been noted. Rarely there is a letter or other symbol on the bottom or side of a spur.

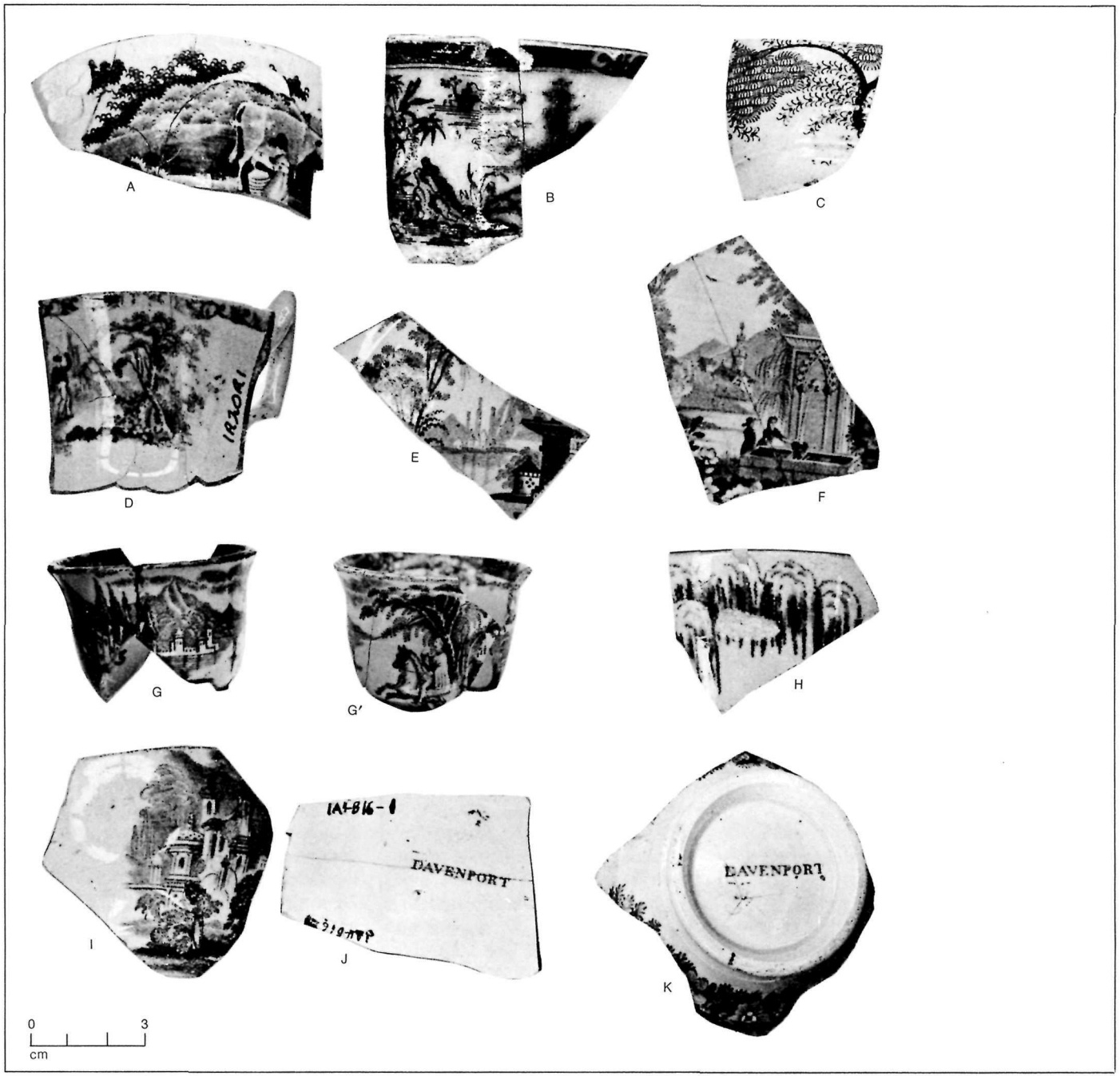
The stems tapered from an outside diameter of 5 mm. or 6 mm. at the proximal end to a maximum of some 8 mm. or 10 mm. just in front of the bowl. (One atypical specimen has a

75 Side and top views of white earthenware cup with printed decorations.

75

0 3
cm

76 White earthenware with printed decorations. *a-i*, scenic views; *j-k*, DAVENPORT mark.



77 White earthenware. *a-b*, textured decoration; *c*, black overglaze printed decoration.

77

stem with a maximum diameter of 14 mm.) Stem hole diameters vary from 4/64 in. to 6/64 in., with the large majority measuring 5/64 in. (*see* Tables 4-11).

Mouthpieces were often coated with what appears to be varnish, evidently to keep the unglazed, porous surface from sticking to the lips.

Of the pipe bowls complete enough to show over-all design, 18 are entirely undecorated, 10 bear only some kind of nondecorative mark (presumably intended to identify the maker or possibly the distributor), and 39 have some kind of decorative design.

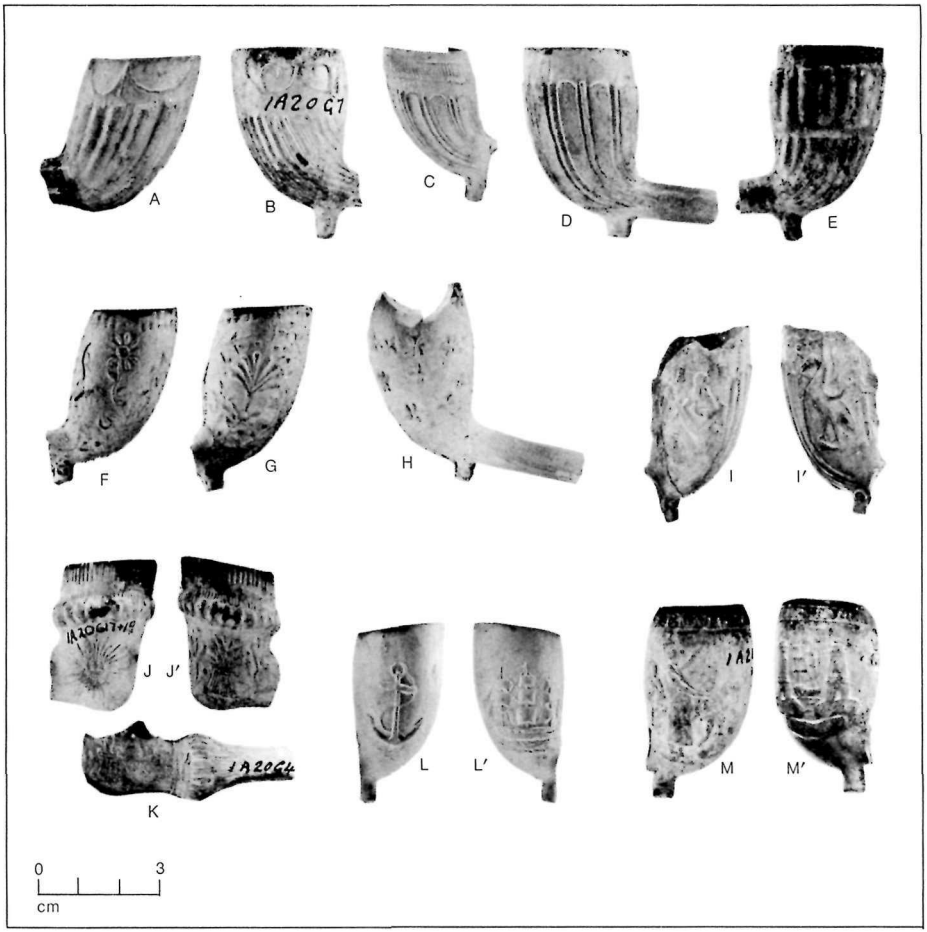
For purposes of description the pipes have here been classified into several different groups which are described below. Some of the designs have historical significance–temporal, social, political,–but the tracing out of historical details relevant to the pipe designs is far beyond the scope of the present paper.

Simple rouletted (1 specimen)
One incomplete pipe bowl is encircled just below the lip by a thin line of closely spaced, tiny punctations. It appears that these were pressed into the plastic surface of the unfired pipe by a fine-toothed roulette.

Fluted or ridged (13 specimens)
There are several variations within this group, but all are similar in having vertical flutes and ridges, or both, covering almost all of the bowl exterior (Fig. 78, *a-e*). On most specimens, there is a nonfluted area just below the lip, often with a curvilinear or other device in it. Fluting and ridging also occur as secondary decorations on pipes having other designs (for example, Masonic emblems) as the central motif.

78 Clay tobacco pipes. *a-e*, fluted; *f-h*, foliated; *i-i*[1], Masonic; *j-k*, sheaf-and-sunburst; *l-l*[1], nautical; *m-m*[1], Mathew.

78



Foliated (6 specimens)
These are decorated variously with leafy foliage, floral elements, fernlike sprays, clusters of grapes, and the like (Fig. 78, *f-h*). The designs appear in relief and evidently were formed by the same mould that shaped the pipe.

Masonic (5 specimens)
On one side of these pipe bowls is the familiar Masonic emblem of dividers and square (Fig. 78, *i*). The opposite side has a different figure–often a standing, long-legged bird with uplifted wings (Fig. 78, *i*[1]). Fluting, foliage, and other elements set off the Masonic symbols. The designs are moulded in relief.

Sheaf-and-sunburst (2 specimens)
On these pipes are a sheaf of grain on one side of the bowl and a sunburst symbol on the other (Fig. 78, *j-j*[1]). A raised, segmented band encircles the bowl just above the sheaf and the sunburst, while above that, just below the lip, is a band of hatching. There is another raised, segmented band around the stem a short distance from the bowl (Fig. 78, *k*). The bowls of the sheaf-and-sunburst pipes have a different shape from the others. The heel, in profile, is pronounced and almost angular instead of being receding and broadly rounded as are the others. There is no spur. The decorations are moulded in relief.

Nautical (2 specimens)
The pipe bowls of this group are decorated with ships and anchors moulded in relief (Fig. 78, *1-1*[1]).

Mathew (2 specimens)
On these pipes (Fig. 78, *m-m*[1]) the words TEMPERANCE V.R.T. MATHEW appear in raised letters around the top of the bowl just below the lip. One side of the bowl is dominated by a scene showing a standing man with left hand upraised and right hand resting on the head of a kneeling man or woman. There are several other people standing in the background. On the opposite side of the bowl are two buoys in the foreground with a distant sailing ship between them. There is a scroll beneath each buoy and another under the whole scene on which dim lettering can be discerned, possibly a Latin motto, although the legend is indistinct. On the proximal (stem) side of the bowl, between the two scenes, is impressed a small circular figure, and just beneath that, in raised letters, is the word CORK.

Repeal (3 specimens)
This kind of pipe (Fig. 79, *a*) has the word REPEAL impressed on the bowl, more or less equidistant between lip and stem, on the proximal side of the bowl. The word was evidently impressed on the plastic clay with a stamp that left the letters standing in relief within a de-

79 Clay tobacco pipes; marbles. *a*, repeal pipe; *b-c*, human effigy pipes; *d-e*, TD pipes; *f-h*, plain pipes; *i-j*, pipe stems with makers' marks; *k-o*, clay marbles.

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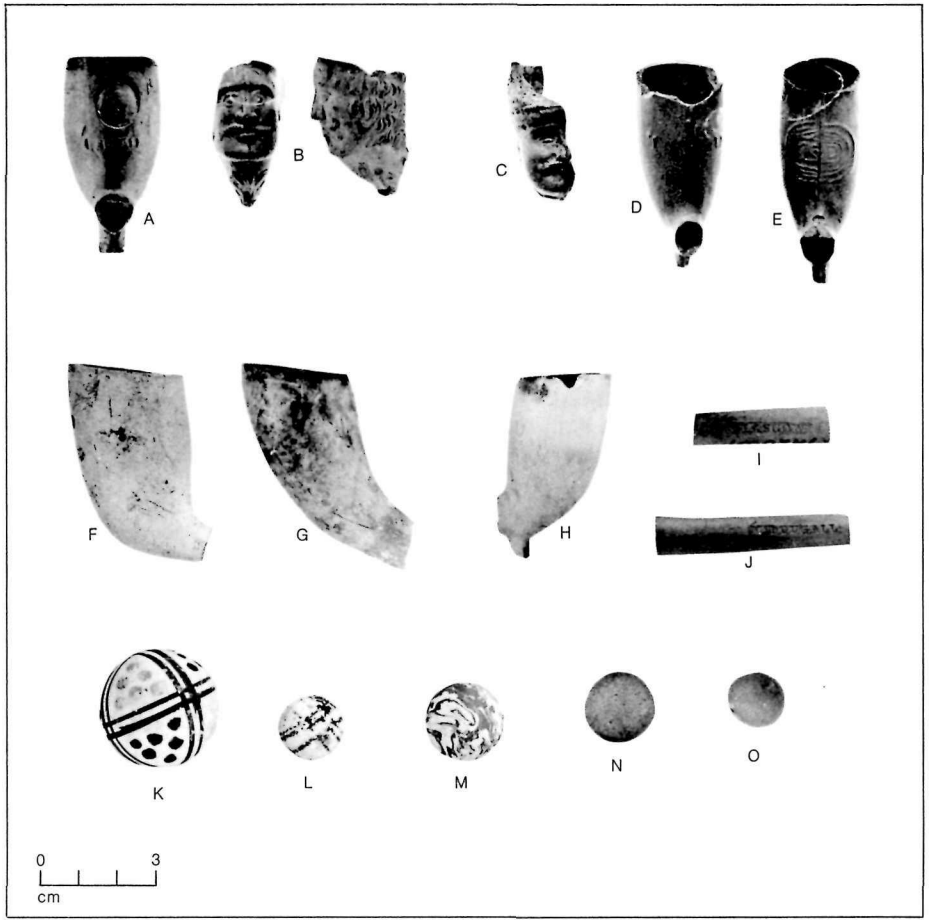

pressed, rectangular panel. There is a faint corded design around the perimeter of the panel. A single line of tiny, closely spaced punctations, probably applied with a fine-toothed roulette, encircles the bowl just below the lip. Above the word REPEAL on one specimen is a round impression containing a design of some kind, but it is too faint to be made out accurately.

Human effigy (2 specimens)
Two pipe bowls are moulded in the shape of a human head (Fig. 79, *b-c*). They appear to have been intended as likenesses of particular individuals, but as there are no names on them the persons represented were not identified. Both specimens are incomplete; perhaps names were present originally but have broken off. Someone familiar with the appearance of leading public figures of the period might be able to identify the persons portrayed by their features; that, however, is far beyond the capabilities of the writer.

Union (1 specimen)
Two large panels, one on either side of the bowl, contain the principal decorations on this pipe bowl. In one panel are a man's bust in profile and the letters DOGON_____LLESO forming a U around the lower part of the bust. In the opposite panel are a crown in the centre, two clasped hands above the crown, and along the right edge of the panel, reading from bottom to top, the words THE UNION. All of the elements described above are in relief. Around the panels are secondary fluted, foliate, rouletted, and other designs, some in relief, others impressed.

Marked, undecorated (10 specimens)
These pipe bowls have initials or other markings that evidently were intended to identify the maker or distributor but were not primarily for decoration. Seven bear only the initials TD on the proximal side of the bowl roughly a third of the way down the length of the bowl (Fig. 79, *d*). The two letters are rather widely spaced, 9 mm. to 16 mm. apart, measured from the approximate centre of each letter. In some cases the letters are raised, but in most they are impressed on the body of the pipe.

Two other specimens are marked on the proximal side with an oval wreath enclosing the same initials, TD (Fig. 79, *e*). The letters are much closer together (4 mm. - 5 mm.) than on the unwreathed TD pipes.

The last specimen has what appears to be an oval maker's or distributor's mark on the proximal side of the bowl. Part of the mark has broken off, but it can be seen that there was originally a sunburst centred inside the oval, a name that began J.H. S. around the top, and HALIFAX N.S. around the bottom.

Marked and decorated stems

Only six pipe stems embellished with decorative designs were found. Three have a rouletted line of asterisks spiraling around the stem. The other three are decorated with a leafy vine design that undulates along the stem.

A number of the pipe stems have maker's or distributor's names stamped on them. The most common name is McDOUGALL, which occurs most often on one side of a stem that has the word GLASGOW on the opposite side (Fig. 79, *i-j*). A few stems have McDOUGALL GLASGOW on one side and VOLUNTEER on the other. Still others have McDOUGALL on one side and WOODSTOCK PIPE on the other. The letters on the McDougall pipes are usually impressed into the body of the stem rather than being raised; they run in the neighborhood of 2 mm. high.

Three rare names are: (1) MORGAN, which occurs on stems opposite the word LIVERPOOL, (2) MURRAY, which occurs opposite GLASGOW, and (3) W. WHITE, which occurs opposite GLASGOW.

The only example of a pipe with a coloured body is a section of a brick-red earthenware stem which bears the name GOUDA on one side and J & G. PR on the other. The stem is broken right after the R of PR, so presumably a complete name was present before breakage. The stem is broken also at the G in GOUDA; possibly there were other letters or words preceding that name. The letters on this specimen are raised. Those forming GOUDA, together with the R in PR, measure about 2 mm. high; the letters of J & G. P are nearly 3 mm. high.

Marbles

Eighty-five marbles were found at Signal

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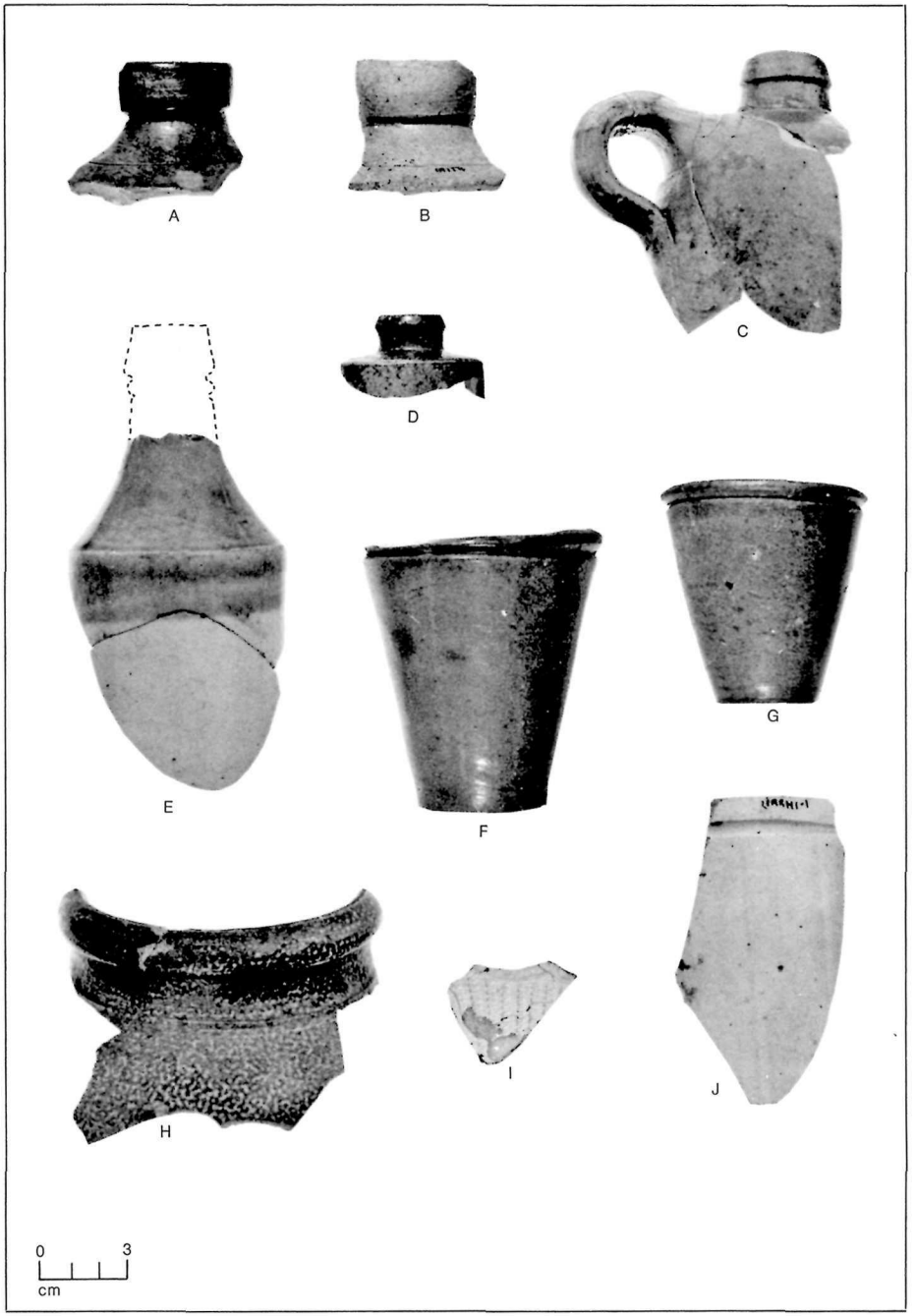

81 Wine bottle necks. *a-j*, double collar; *l-r*, single collar.

Hill, 78 ceramic and 7 glass. One ceramic marble is porcelain; the others are unglazed earthenware. Some are well-fired and hard, while others are poorly fired, soft, and friable. Diameters of the ceramic marbles range from 11 mm. to 29 mm., with the majority between 12 mm. and 18 mm. Three have designs painted on them–stripes in two instances, stripes and dots in the third (Fig. 79, *k-l*)–and several others bear badly weathered traces of pigment, probably the remains of an over-all coat of paint. Two ceramic marbles have a marbled appearance produced by swirling together light- and dark-coloured clays in preparing the body (Fig. 79, *m*).

The three largest glass marbles have twisted strands of brightly coloured glass inside a clear matrix. Three others are of homogeneous glass. The seventh was given a faint marbled effect by swirling together dark blue and pale blue glasses. Diameters of the glass marbles run from 14 mm. to 23 mm.

Glass

A large quantity of glass sherds was collected from various parts of Signal Hill, mostly fragments of "wine" bottles made of dark green, or occasionally light green glass. Following standard usage, the term *wine bottle* here refers to bottles with distinct body areas, relatively long, slender necks, and mouths that are usually between 2 cm. and 3 cm. in diameter; capacity generally is from a pint to a quart. A ridge or a broad thickened area on the upper neck was to provide purchase for a string or wire to hold the cork in place. Such bottles, of course, were sometimes used to hold substances other than wine: brandy, whiskey, and rum for example.

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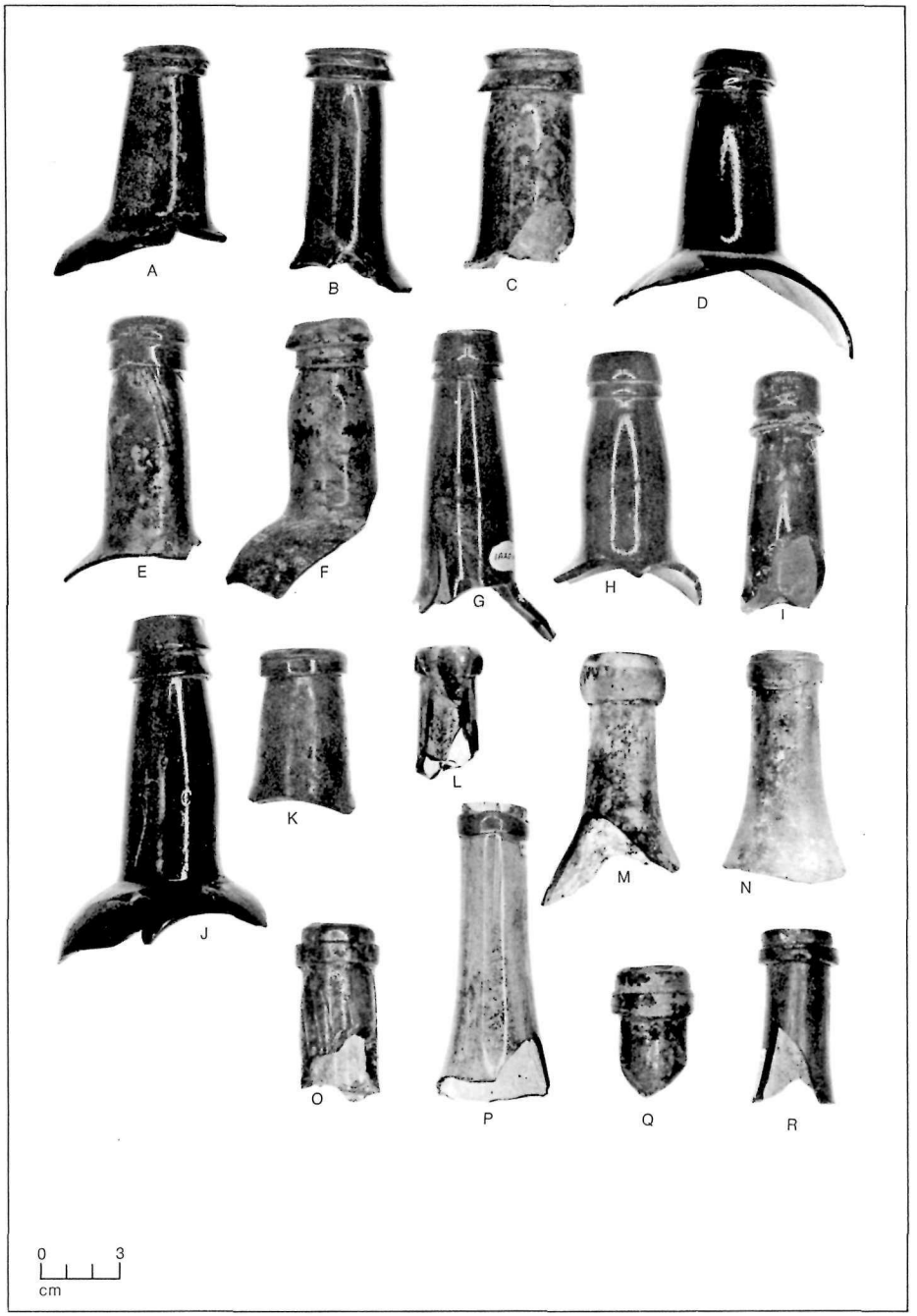

82 Wine bottle bases. *e*, regular pontil; *f*, improved pontil; *d*, *g-h*, snapcase.

Wine Bottles

The largest group of bottles comprises two complete bottles (Fig. 83, *a*, *d*) and thousands of fragments. The bodies are cylindrical and the necks, when viewed in silhouette, tend to have conspicuously convex edges. The bases are externally concave. A base with a shallow concavity is here termed an *indented base;* a relatively deep concavity is called a *kickup.*

The wine bottles with rare exceptions appear to have been blown into moulds. The body was formed by a one-piece mould having no seams; the neck and shoulder were formed by a two-piece mould that produced two vertical marks on the shoulder of the completed bottle. A horizontal mould mark separating the body and shoulder areas is also visible on many specimens. The lip was finished with a collaring device which, because it was rotated, left no mould marks. The rotation of the collaring tool often also imparted a mildly twisted appearance to the neck.

Good samples of both necks and bases of wine bottles were garnered from Signal Hill, but as the neck and base from a particular bottle could rarely be matched, the necks and bases will be described as two separate groups.

Necks

The necks (Fig. 81) range in length from about 7.5 cm. to 10.5 cm. and in maximum diameter from about 3 cm. to 5 cm. Most of them are roughly cylindrical in their lower half to two-thirds; many of them, however, expand slightly around the middle part. Above the lower cylindrical or expanded section the neck usually tapers rather strongly toward the mouth.

The top of the neck is thickened to form what is here termed a *collar.*

82

83 Glass bottles. *a, d,* wine bottles; *b,* sauce (?) bottle; *c,* soda water bottle.

Collars may be of double (Fig. 81, *a-j*) or, less often, of single form. Single collars are located either at the lip (Fig. 81, *k-m*) or a few millimeters below the lip (Fig. 81, *n-r*). In vertical section the double collars are wedge-shaped; the single collars are rectangular if located below the lip, but if at the lip, they have one or both edges rounded off. Most of the light green wine bottles have a single collar. On the double-collared necks the lower collar is frequently quite narrow; the upper collars, however, vary greatly in width. Specimens with relatively wide upper collars tend to be more carefully finished than those with narrow upper collars.

Bases

As nearly as could be determined, the wine bottle bodies were all blown in a one-piece mould. Some were held on a pontil for finishing the neck; some were held by a snapcase. The former have pontil marks of two different varieties: (1) a small, rough mark a centimeter or two across, typical of a regular pontil (Fig. 82, *e*), and (2) a thin, rough circle 4 cm. or 5 cm. in diameter, characteristic of a so-called improved pontil (Fig. 82, *f*). Most bases with pontil marks have kickups. Those finished in a snapcase (Fig. 82, *d, g-h*) usually have a moulded, indented base, often with a flat foot (Fig. 82, *h*) and sometimes with moulded lettering or some kind of design (Fig. 82, *d*). Some of the words appearing on bases are: PATENT, WOOLFALL MANOR, and 6 TO THE GALLON.

Wine bottle bodies measure, for the most part, between 70 mm. and 100 mm. in diameter and are estimated to have stood between 130 mm. and 200 mm. high (from bottom of neck to base of bottle).

83

Miscellaneous Glass

A whole soda water bottle with a convex base (Fig. 83, *c*) and sherds from several others were found. A reconstructed bottle with a short, broad neck (Fig. 83, *b*) was perhaps a sauce bottle. There are sherds of bottles that had square, octagonal, and round bodies. They probably held patent medicine, oil, and other commodities. Most of them were smaller than the wine bottles, and as a rule they were made of transparent glass, usually with a pale green cast.

In addition to bottles, fragments were found of blown stemware, blown tumblers, pressed glass containers of undetermined shape, and flat glass. Some of these specimens are of a pale amethyst colour, but most are of clear glass.

Table Knives, Forks and Spoons

Table knives and forks were all of iron with bone handles. Possibly some had wooden handles which have completely disintegrated.

Only one specimen can be certainly identified as a table knife. It has a plain sandwich-type handle with the two bone halves presenting convex, polished surfaces. Measuring 82 mm. long, the handle tapers from a width of 18 mm. at the proximal end to 14 mm. at the distal end and has an average thickness of 14 mm. to 15 mm. A short section of the broken blade projects from the handle, but there is not enough to reveal the blade's original size or shape. Three other sandwich-type bone handles may be either knives or forks: they are

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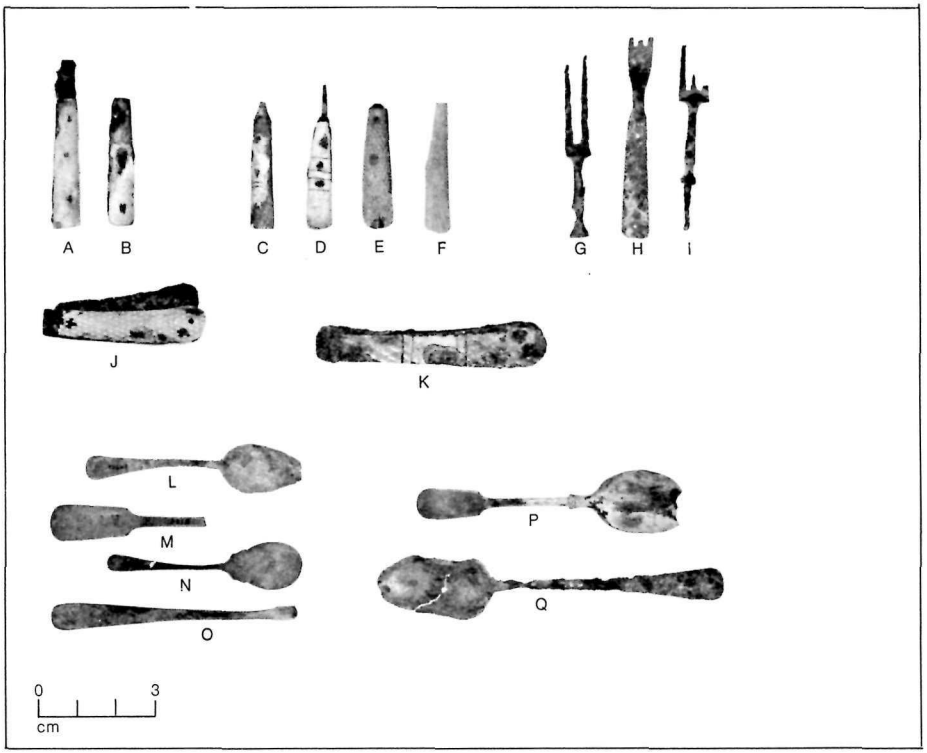

too incomplete for positive identification. On one of the latter the handle is covered with crosshatched incising; the other two are plain.

There are 13 table forks. Three have two tines and four have three tines; the other six have the tine portion missing. Six forks are equipped with plain bone handles. Two have light, crudely cut grooves running transversely across one face: two grooves in one case, four in the other. Another has the letters RP carved on it. Apparently these were identification marks put on by the owners. Another bone handle is covered with crosshatching.

The bone fork handles taper slightly toward the distal end. Three are of the sandwich type with convex surfaces on either side. The others have a socket drilled into the distal end into which a round iron extension off the body of the fork was inserted and fastened. The latter handles, which have a rectangular cross-section with rounded edges, gave the following respective measurements: length, 82 mm. and 83 mm.; width at proximal end, 16 mm. and 14.5 mm.; width at distal end, 13 mm. and 7 mm.; average thickness, 13 mm. and 7 mm. Dimensions of the two complete sandwich-type fork handles are: length, 71 mm. and 69 mm.; width at proximal end, 16 mm. and 16.5 mm.; width at distal end, 13 mm. and 11 mm.; average thickness, 11 mm. and 10.5 mm.

Fifteen spoons were found at Signal Hill; six made of iron, three of pewter or similar white metal, four of brass, and two of iron or brass that has been plated with silver. Five of the iron spoons are of tablespoon size, the only complete one being 222 mm. long. All of the iron spoons are heavily oxidized.

One pewter spoon is of teaspoon size (137 mm. long). The other two are fragmentary, but both appear to be of tablespoon size.

Of the four brass spoons, only one – a small sugar spoon 123 mm. long – is complete. The others consist of handles that were once soldered to the spoon blade but which have become detached. All the spoons except the three detached brass handles are of one piece construction. Two of the brass handles are quite small and must have come from spoons smaller than a standard teaspoon. The third, 156 mm. long, probably came from a tablespoon.

The two silver-plated spoons, one a tablespoon, the other a teaspoon, probably date after 1870.

Clasp Knives

Five clasp knives and one clasp-knife blade were found. Handles still present on three are of bone with crosshatched incisions on them. The five specimens complete enough to tell about are one-bladed. Their overall length with blades folded into handles ranges from 86 mm. to 145 mm. The unattached blade is 102 mm. long.

Case Knives

Following Harris et al. (1965: 348-50), two types of case knives are recognized at Signal Hill, the distinction being based on the way the handle was attached. Type 1 knives have a flat extension of the blade to which a sandwich-type handle of wood, bone, or metal was pinned. Type 2 knives have a rod-like

85 Iron tools. *a-c*, axes; *d*, punch; *e-g*; chisels; *h*, nail puller.

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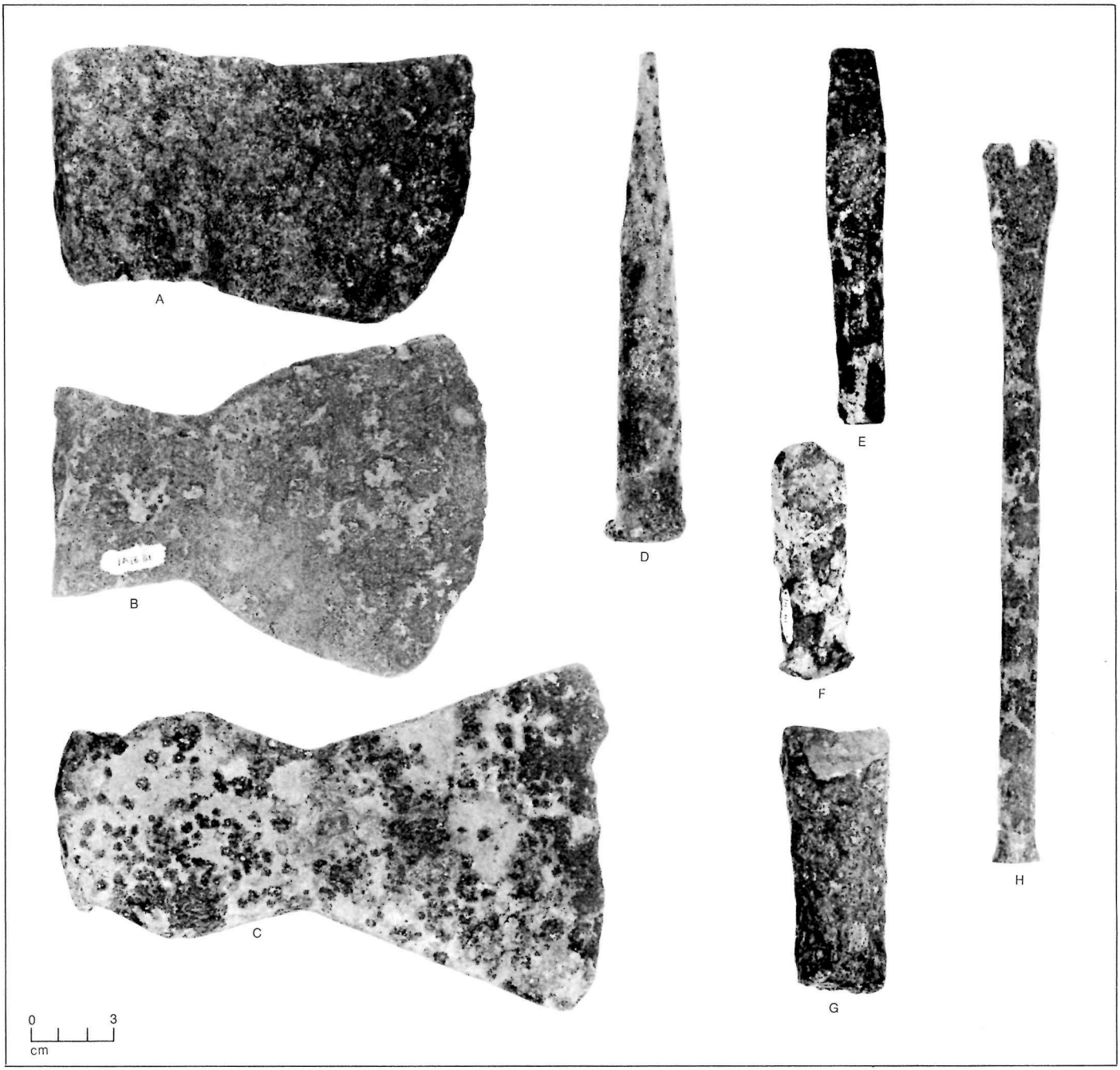

element extending back from the proximal end of the blade which is inserted into a socket drilled into the distal end of a solid handle of bone, wood or other material. Type 2 knives customarily have a flange or frog at the proximal end of the blade. Some type 1 knives have such a frog, but many do not.

Miscellaneous Iron Artifacts

Iron tools include axes of several shapes (Fig. 85, *a-c*), shovels, a pickaxe, a punch (Fig. 85, *d*), chisels (Fig. 85, *e-g*), files, and what appears to be a nail puller (Fig. 85, *h*). Among the iron building hardware items are hinges, door latches, shelf supports, and thousands of nails. Most of the nails are machine cut, but a few are hand forged and some are wire nails. Also made of iron are keys (Fig. 88, *a-b*), fragments of cast iron pans and stoves, ice creepers for attaching to the shoe soles when the ground was iced over, heel taps (Fig. 88, *c-d*), staff tips, flatirons, chains, wood screws, wire, strap iron, cannonballs, grapeshot, and other objects, many unidentified as to function. Some iron artifacts (knives, forks, spoons, buttons) are described in other sections.

Buttons

Buttons were found at most places where excavations were carried out at Signal Hill. Included are specimens made of brass, white metal, iron, bone, glass, and shell in a variety of shapes and sizes. In the following pages are described the basic forms of button structure, the different methods of attaching, eyeing, and the decorative designs appearing on the button faces. Detailed data on each category of buttons (the number of specimens, size, maker's name, and other pertinent information) are summarized in Table 2.

Form I

This button form consists of a flat metal disk with a wire loop or eye attached to the centre of the back.

Form II

Form II buttons have a metal body that is convex when viewed from the face side. As on form I, there is a wire eye attached to the centre of the back. In order to give some indication of the degree of convexity, an arbitrary formula was applied: if the body diameter was at least four times the body height (height being measured from the plane of the edge to the centre of the face), a button was considered mildly convex and was designated form II (x); buttons with a diameter-height ratio of less than 4:1 were called strongly convex and labelled form II (y).

Form III

Form III has a hollow two-piece body, both pieces being cut from thin sheet metal. The piece forming the face is convex (face view); the back piece may be either convex (but less so than the face) or flat. The two pieces are joined so as to create a hollow body, the edge of the face piece being crimped over the edge of the back. A wire eye was fastened to the centre of the back. In making most form III buttons the face piece of the two-piece body was formed by pressing a sheet of metal between positive and negative dies, leaving a raised design on the face.

Form IV

Half of this compound form is made of sheet metal like that of form III, but instead of having a metal back, the face is crimped around a bone disk. On the one specimen of this form found at Signal Hill, the bone disk has two holes in it. Judging from the rust stains that remain, an iron wire eye was originally fastened through the holes.

Form V

This kind of button has a hollow metal body that was moulded in one piece. The face is convex, the back very slightly concave. A wire eye is attached to the centre of the back. A distinguishing feature is a small hole (about 2 mm. in diameter) in the back that communicates with the interior cavity. This probably was to allow expanding gases to escape during moulding. The exact process by which this kind of button was made is not clear.

Form VI

Form VI buttons are simply perforated disks (Fig. 86, *u-ee*) made of metal, bone, glass, and shell. The number of holes varies from one to five. Those made of metal usually have faces that are either (1) evenly concave, or (2) concave in the centre. The latter form has a little ledge running around the button between the central concavity and the button's edge. The ledge is usually flat but occasionally is convex; if a legend is present it appears on the ledge area. A common decorative motif is a circular line, often beaded, around the perimeter of the interior concavity. Sometimes the edge of the button is beaded also. Some legends are moulded in relief; others are impressed into the body of the button.

The backs of metallic form VI buttons are usually plain, but sometimes there is the manufacturer's name or other inscription. Some backs are evenly convex; others have a convex area in the middle. The convex area on the latter variety often corresponds with a central concavity on the face.

The form VI buttons made of bone come in two principal varieties: (1) poorly finished disks, perfectly flat on both sides, with one centrally located hole, and (2) multi-hole buttons with a round depressed area on the face and a weakly convex, or occasionally flat, back. The former probably were cut out of flat bones locally. They were all found at the east flat, the same area where a quantity of bone blanks was also found from which similar buttons had been cut (*see* the description and illustrations of the blanks, and Fig. 89, *h-i*). Apparently the one-hole buttons were attached to clothing by passing a cord through the hole and knotting the cord so as to hold the button fast. They resemble bone backs for metal-faced buttons (form IV), but none have metal stains around the edges as would be expected had they been so used.

The multi-hole buttons all have a round depressed area in the middle with 3, 4, or 5 holes in it. The space between the depressed area and the button's edge is usually rounded to produce a convex surface. There is often a groove around the perimeter of the depressed area. Most of these buttons have been well finished and polished.

Form VII

The body of form VII buttons is of moulded glass; the eye, made of iron wire, is moulded into the body.

Form VIII

Form VIII buttons are disks of bone or shell with a wire eye anchored in an undercut hole in the back. There are only three specimens from Signal Hill, two of bone and one of shell. The exact means of fastening the eye to the button is not certain, as only one specimen has the eye left and it is badly corroded.

Form IX

The body of this form consists of about three-fourths of a hollow metal sphere, the exterior of the sphere forming the face of the button. A wire eye with a relatively long shank is inserted through the opening in back and is attached to the inside surface of the sphere directly behind the midpoint of the face. The eye most likely is soldered to the body, but this is not certain as its point of attachment, deep inside the sphere, is not visible on the one form IX button from Signal Hill.

Form X

In this form, a one-piece, convex, metal body similar to that of form II had a short length of wire fastened by one end to the centre of its back; then a centrally perforated shell disk was attached by passing the wire through the perforation and bending it into an eye. The eye was set up as closely as possible to the shell disk, jamming it up tightly against the back of the metal body.

Form XI

This form has a hollow body that was created by joining two cupped elements made of thin sheet metal. Their union was secured by crimping the edge of the face element around the edge of the back element. In the middle of the back the sheet metal is thrust out into a steep-sided little mound, and four equally spaced holes in the sides of the mound provide the means of sewing the button to clothing.

Eye Forms

Most of the body forms have a wire eye fastened to the back by which the button was sewn onto the clothing. In cross-section the wire is sometimes round, but more often it is roughly hemispherical. The wire may be either brass or iron. Wire eyes were attached to the button body by the following methods.

Eye Attachment A. The eye was formed by taking a short length of wire and bending its middle section around so as to form an approximately circular loop. The short segments at each end of the wire not incorporated in the loop were bent so as to project away from the loop, side by side. This was placed in the centre of the button back (with the wire ends against the back, thus raising the loop itself off the body a little way) and was fastened there with a drop of solder. As only the small surface of the two wire ends actually was in contact with the button body, the attachment was not a strong one, and many attachment A buttons are missing their eyes.

Eye Attachment B. The eye was formed in the same manner as for attachment A except that the two wire ends, after being turned outward, were flared apart (at least on many specimens) instead of being aligned side by side. The eye was secured by placing it in the button mould and casting the button around it. A sort of conical boss was moulded around the lower part of the eye to give it greater strength. While mould marks remain on the back of some specimens, in most cases they were removed, evidently by spinning the button on a lathe and smoothing the back surface with an instrument.

Eye Attachment C. The shape of the wire eye is the same as in attachment A. Moulded onto the centre of the button's back, however, is a small platform onto which the eye was soldered, presumably in the belief that the platform provided a better purchase for the solder and made the union of eye and body more secure. The little platforms are (approximately) from 5 mm. to 9 mm. long, 1.5 mm. to

86 Buttons. *a-d*, design 1; *e*, design 2; *f*, design 3; *g-i*, design 4; *j-k*, design 6; *l*, design 11; *m*, design 14; *n*, design 15; *o*, design 18; *p*, design 19; *q*, design 20; *r*, design 21; *s*, design 22; *t*, design 23; *u-ee*, form VI; *ff*, face view of form VIII button.

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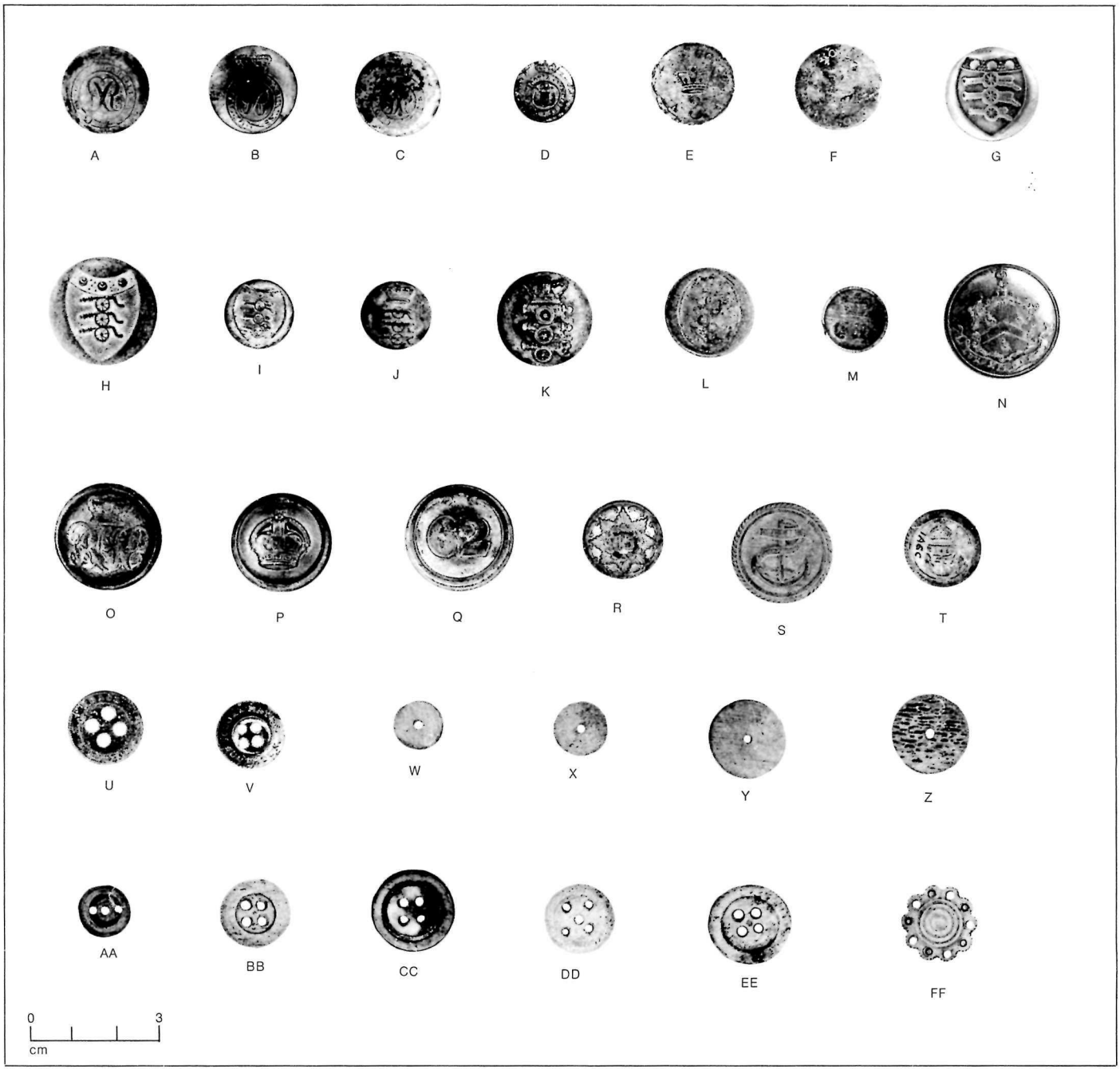


3 mm. wide, and 0.3 mm. to 2 mm. high.

Eye Attachment D. On many of the form III (two-piece, hollow) buttons the eye was attached by thrusting the ends of a wire eye shaped like form A through a small hole in the back of the button and bradding them down on the inside as one would set a cotter pin.

Designs

A large proportion of the metal buttons and some of the nonmetallic ones have designs on their faces. The designs were executed by several different techniques including moulding, die stamping, and engraving. In order to facilitate reference, some of the more common designs were assigned arabic numeral designations as follows. Unless otherwise stated the designs described here are in relief, presumably produced by moulding in some cases and by die stamping in others.

Design 1. The basic motif is a garter surmounted by a crown, so placed that the centre of the garter falls well below the centre of the button (Fig. 86, *a-d*). The garter is closed with a buckle at the bottom. Within the circular to oval area enclosed by the garter appears a device of one kind or another. There is a legend (regimental identification, motto, or the like) on the garter riband.

Design 2. A relatively large crown dominates the centre of the face (Fig. 86, *e*). Beneath it is an arabic numeral, evidently the number of a regiment. A legend runs along the edge at sides and top.

Design 3. Centred slightly above the midpoint of the face is a crown (Fig. 86, *f*), beneath which are two crossed, leafy branches. A legend runs along the edge all the way around the button.

Design 4. This design consists of three cannon aligned vertically on a shield, their muzzles to the left (Fig. 86, *g-i*). The cannon stand in relief; the shield is depressed, its surface covered with closely spaced horizontal lines. Spaced across the top of the shield are three raised, solid circles, and between them there are usually tiny pips clustered in groups of from three to six. Sometimes the latter are arranged into a pyramid resembling a stack of cannon balls.

Design 5. There are three cannon aligned vertically, muzzles to the left. Above them is a crown, below them a scroll bearing a legend. Around the border is a kind of interrupted scallop motif.

Design 6. This design, like designs 4 and 5, has three vertically aligned cannon with their muzzles to the left (Fig. 86, *j-k*). They are surmounted by a crown, but there is no other decoration nor is there any inscription.

Design 7. This is another design that features three vertically aligned cannon with muzzles to the left. Above the cannon is a crown, and below it is a scroll bearing a legend. The design is enclosed within a circle that runs just inside the button's edge.

Design 8. Near the centre of the button stands an elephant on a sort of platform, facing to the left. Above the elephant is a crown. There is lettering along the edge at the top; below the level of the crown the edge is bordered with leafy branches.

Design 9. This simple design consists of a corded effect around the edge of the button and numerals centred on the face. The numerals evidently are the regimental number of the wearer.

Design 10. This design has arabic numerals in the centre like design 9, but there is no decoration on the edges or anywhere else.

Design 11. The main element is an anchor with a fouled line twined about it (Fig. 86, *l*). Above the anchor is a crown. The anchor and crown are inside a depressed oval panel with a ground of closely spaced, horizontal lines. The edge of the panel and the button edge itself have a corded effect.

Design 12. This design consists of an American eagle with upraised wings clutching an olive branch in his right claw and four arrows in his left claw. Around the eagle's head are nine stars arranged in two rows.

Design 13. The edge is corded. In the centre is a flower-like, engraved design that has eight slender petals radiating from a central point.

Design 14. A depressed circular area covering most of the face has a ground of closely spaced horizontal lines (Fig. 86, *m*). In the circle are a crown and, beneath that, the letters GR.

Design 15. An unidentified coat of arms with the motto LUX MINI DEUS occupies the major part of the face (Fig. 86, *n*). Around the button's edge are two closely raised lines.

Design 16. An antelope that is facing left stands in the centre of the button. Beneath him is the arabic numeral 6. Surrounding the antelope and the 6 are two concentric, beaded, circular lines. Between the two lines are a crown (at the top) and the legend HONI SOIT QUI MAL Y PENSE.

Design 17. In the centre is a coat of arms. Around it are two concentric circles. In the space between the two lines appear the words NOVA SCOTIA. Between the outer line and the edge of the button are a crown at the top and the word FENCIBLES at the bottom.

Design 18. This design consists of the royal cipher surmounted by a crown, on a smooth ground (Fig. 86, *o*).

Design 19. Design 19 is a crown

87 Uniform decorations. *a-g*, shako chinstrap leaves; *h-i*, shoulder-belt buckles (*j* is the back of *i*).

centred in a depressed round field having a ground of closely spaced, horizontal lines (Fig. 86, *p*).

Design 20. This is the so-called "French broken circle" design (Fig. 86, *q*). A short distance in from the button's edge is a heavy line that forms a circle with a gap at the top. The ends of the line at either side of the gap separate into curls, and there is a pip in the middle of the gap.

Design 21. The face is dominated by an eight-sided star, each point composed of radially oriented, closely spaced lines (Fig. 86, *r*). A round area in the middle of the star, encircled by a wreath, contains arabic numerals, presumably a regimental number. There is a crescent-shaped element, with convex edge to the outside, in each space between the points of the star.

Design 22. A round, depressed field with a ground of closely spaced, horizontal lines encompasses a large anchor with a fouled line attached (Fig. 86, *s*). The edge of the button is corded.

Design 23. This design and fouled line in a round field with hachured ground is the same as design 22 except that there is a crown above the anchor (Fig. 86, *t*). In order to accommodate the crown, the artist who created this design sacrificed function for expediency and shortened the shank of the anchor so drastically that the cross-piece at the top of the shank rests on the tips of the flukes.

Design 24. The design consists of a large anchor with fouled line. The entire surface of the face has a stippled effect which serves as a ground for the anchor.

Coins

Data on the 14 coins found at Signal Hill are summarized in Table 3.

Shako Chinstrap Leaves

Most chinstrap leaves are more or less semicircular platelets of sheet brass that are perforated along the straight edge (Fig. 87, *a-f*). However, one of the 28 specimens is lunate, and three others are oval with stepped lateral edges toward one end (Fig. 87, *g*). The shako leaves occur in graduated sizes from 19 mm. to 34 mm. wide and from 17 mm. to 38 mm. long. Early 19th-century British shakos had a chinstrap that was decorated with a graduated series of such plates strung together like shingles.

Shoulder-belt Buckles

One plain and two decorated shoulder-belt buckles were found. They are oval brass plates, convex on the face and concave on the back. On the back of one (Fig. 87, *j*) are two knobs soldered to one end and two hooks soldered to the other for fastening the buckle to the belt. The other two specimens have the same arrangement except that there is only one hook (medially positioned) instead of two.

One of the decorated buckles (Fig. 87, *h*) has a crown at the top; the letters G and R flank the crown at its base, and below are the letters NSR. This specimen is 71 mm. long, 54 mm. wide, and 2 mm. thick. The other decorated buckle (Fig. 87, *i*), 81 mm. long, 61 mm. wide, and 1.0 mm. thick, has a garter and crown with three vertically aligned cannon in the middle. In the garter is the inscription: HONI SOIT QUI MAL Y PENSE. The plain buckle is 68 mm. long, 52 mm. wide, and 2 mm. thick.

Military Insignia

On the front of the shako worn by British soldiers in the early 19th century was a large insignia stamped out of thin sheet metal. Fragments of such insignia made of brass were found, but there were no whole or reconstructable ones.

David A. Webber, Curator of the Newfoundland Memorial Museum, St. John's, examined the scraps and made the following identifications: British Army Officer's shako plate, universal issue, 1800-1812; British Army Officer's shako plate, universal issue, 1812-1816; British Army shako plate, 1829-1839.

There are other pieces of insignia of various kinds made of brass and white metal, probably from patch boxes and other accoutrements.

Jewelry

Bracelet

A plain brass bracelet resembles those traded to Indians during the early 19th century. The body of the metal is oval in cross-section and averages about 4.5 mm. wide by 2.5 mm. thick. The bracelet is roughly circular and has an average diameter of some 64 mm.

Signet

A small intaglio signet portrays a bird that looks like a hawk but carries an olive (?) branch in its mouth as doves are reputed to do. This pacifist hawk is carved in the surface of an oval piece of what looks like amethyst set in a plain brass mount. Probably this is part of a ring, or possibly a locket. The oval piece of amethyst (?) is 15 mm. long, 12.5 mm. wide, and 3 mm. thick. The bird stands 11 mm. high.

Wrist Rosary

A rosary designed for wearing on the wrist as a bracelet consists of a brass chain, 15 glass beads, and a silver-plated brass medal. The beads are wire-wound of opaque, pale blue glass; each has 3 white glass dots spaced about equidistantly around the circumference. The beads are 5 mm. to 6 mm. long and 6 mm. to 7 mm. in diameter.

The oval body of the medal is 17 mm. long, 8.5 mm. wide, and 0.5 mm. thick. It is attached to the chain by a perforated tang 3 mm. long that was moulded onto the medal. On one side of the medal is a figure of the Virgin with this legend running around the sides and across the top: O MARIE CONÇUE SANS PECHE PRIEZ POUR NOUS. The date 1830 appears at the bottom. A second row of tiny letters inside the above inscription reads: QUI AVONS RECOURS A VOUS. In the centre of the opposite side is a symbol combining a cross and the letter M; around it are 12 stars.

Glass Beads

Two glass beads were found in addition to the rosary beads described above. One is a simple, translucent, blue bead of wire-wound construction that is 5.5 mm. long and 7 mm. in diameter. The second bead is an equatorially symmetrical disk of clear glass with a high peak on each face. It looks, in other words, like two low cones joined together base-to-base. Both sides are heavily faceted, and instead of a central perforation there are two small holes on opposite sides of the peaks. This bead is 20 mm. in diameter and 11.5 mm. thick.

Lead Artifacts

Musket Balls

The musket balls are all approximately the same size, near 17 mm. in diameter. An occasional one has a rough spot or a faintly visible mould mark, but most specimens are well-formed and almost perfectly spherical.

Lead Weights

Three lead weights were recovered during the excavation at Signal Hill. The largest is of the kind currently used on cod nets and is probably of quite recent origin. Of the same slender, conical shape as the large one, the other two are much smaller and quite possibly are considerably older. The large one weighs 336.5 gms., and the others 71 gms. and 54.8 gms. respectively.

Lead Pencils

These are lengths of lead that are pointed at one end. The smaller one, 52 mm. long and 6.5 mm. in diameter, has been carefully shaped into a symmetrical cylinder. The other one was hammered into a rough bar that is subrectangular in cross-section, about 93 mm. long, 11 mm. wide, and 7 mm. thick. Both pencils have carefully pointed writing tips.

Sheet Lead

Several scraps of sheet lead were found. Probably used for various purposes, the scraps are of irregular shape and vary in thickness between 1.0 mm. and 3 mm.

Miscellaneous Lead Objects

A few small objects made of lead were not identified as to function. Although of different shapes and sizes, they are lumped together for convenience and tabulated under the label "miscellaneous lead objects."

Bone and Antler Artifacts

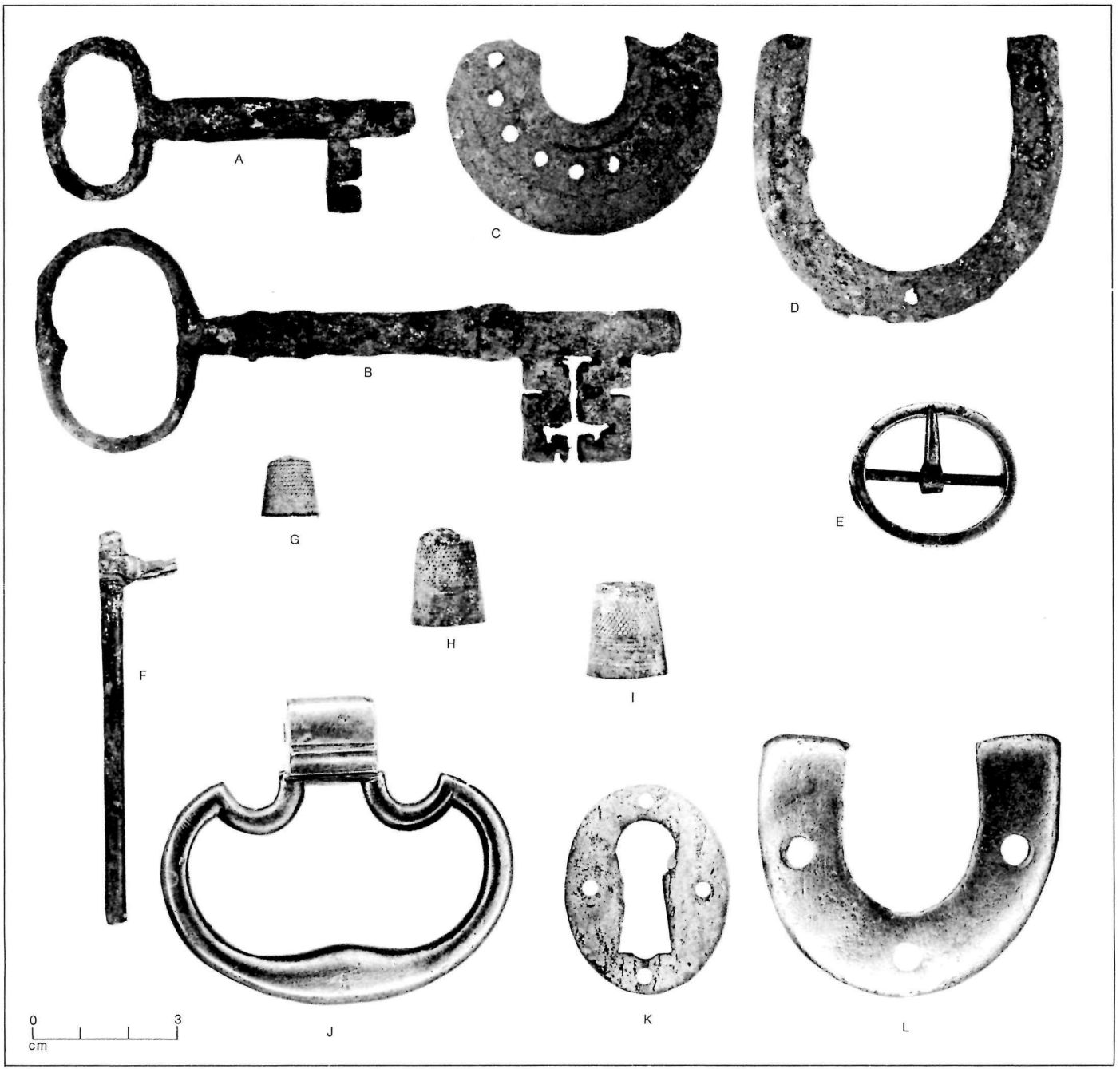
Bone buttons and bone handles for knives and forks have already been described. Other artifacts made of bone include combs, brush backs, a whistle, dominoes, and other items.

Whistle

A bone whistle (from which the writer could coax no sound other than a dull whoosh) is round in cross-section and appears to have been turned on a lathe

88 Miscellaneous iron and brass articles. *a-b*, iron keys; *c-d*, iron heel taps; *e*, brass buckle; *f*, brass friction tube (for igniting cannon charge); *g-i*, brass thimbles; *j*, brass drawer pull; *k*, brass keyhole plate; *l*, brass heel tap.

88



89 Miscellaneous bone and antler artifacts. *a*, antler cane head; *b*, bone whistle; *c*, unidentified bone object; *d*, bone dominoes; *e*, unidentified bone object; *f*, bone combs; *g-h*, bone brush backs; *h-i*, button manufacturing debris.

(Fig. 89, *b*). It is 65 mm. long and has a diameter at its thickest point of 10.5 mm.

Dominoes

Three gaming dominoes made of bone were found (Fig. 89, *d*). They are flat, rectangular tablets 28 mm. to 32 mm. long, 14 mm. to 16 mm. wide, and 1.5 mm. to 3 mm. thick. The face is divided into two equal areas by a transverse groove, and there are varying numbers of pips in each area. The pips were made by drilling small holes part way through the bone. One specimen has two tiny holes all the way through the domino with copper stains around them, revealing that a backing piece (perhaps made of wood) was originally pinned to the bone piece.

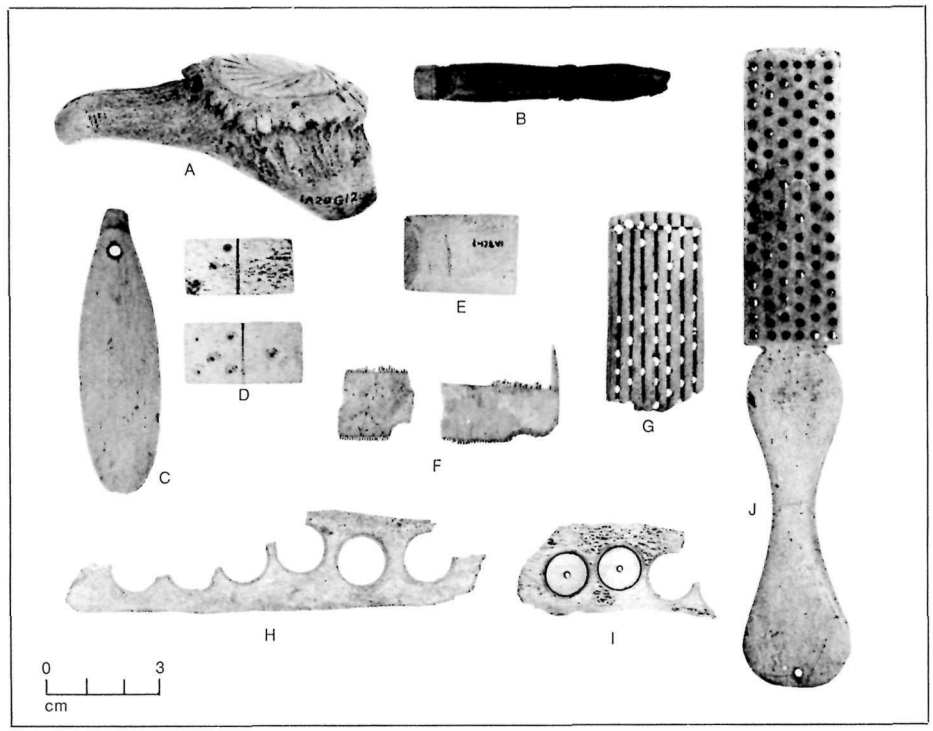
Combs

Fragments of two fine-toothed, double-edged combs were found (Fig. 89, *f*). All the teeth are missing except one heavy end tooth which measures 11.5 mm. long. There is an average of about 14 teeth to a centimeter on one specimen, about 16 to a centimeter on the other. The solid area between the two rows of teeth is 14 mm. wide on one comb, 17 mm. on the other. Thickness is 1 mm. to 2 mm. for both specimens.

Brush Backs

Two brush backs, one complete, the other fragmentary, were carved from bone. The bristled area of the complete specimen (Fig. 89, *j*) is rectangular, 77 mm. long, 25 mm. to 26 mm. wide, and about 5 mm. thick. A flat, hourglass-shaped handle extending off the bristled area is 88 mm. long. The broken specimen (Fig. 89, *g*), consisting of the distal part of the bristled area, is about 25 mm. wide and 5 mm. thick.

89



Miscellaneous Bone Artifacts

A rectangular bone object (Fig. 89, *e*) is flat on both sides, but one side is bevelled along the two long edges and one of the short edges. There are saw or rasp marks on all surfaces. Of unknown use, this artifact is 30 mm. long and 20 mm. wide. In thickness it tapers from 8 mm. at one end to 6 mm. at the other.

One flat piece of bone of elongated oval shape (Fig. 89, *c*) has a hole about 3 mm. wide near one end. This specimen is 75 mm. long and has a maximum width of 21 mm. Thickness decreases from 5.5 mm. at the perforated end to 3 mm. at the other.

A flat, polished bone disk about 29 mm. in diameter and 2 mm. thick has a hole 8.5 mm. wide in the centre. How this artifact was used is uncertain.

Three fragmentary bone cylinders are of unknown use. One specimen, when complete, had an estimated diameter of 25 mm. and was of uncertain length (but longer than 41 mm.). The wall thickness was about 2.5 mm. The other two cylinders were both about 22 mm. long and an estimated 19 mm. to 22 mm. in diameter. Wall thickness varies from 2 mm. to 4 mm. Each of the two latter specimens is threaded on the inside at one end. These cylinders were fashioned on a lathe from mammal long bones, probably pig.

A quantity of flat bones unearthed at the east flat were riddled with round holes where buttons had been cut out (Fig. 89, *h-i*). A button was detached by grooving both sides of the bone with a device that left a small hole in the

centre of the button. Almost all of the holes are either about 10 mm. or about 11.5 mm. across, but one measures 16 mm. and another 19 mm. These dimensions do not correspond exactly to the one-hole form VI bone buttons described in another section of this report.

Antler Cane Head
The head of a cane, swagger stick, riding crop, or similar object was carved from deer antler (Fig. 89, *a*). It is socketed to receive a cane end that was about 10 mm. in diameter. A small iron pin was inserted laterally into the socket to secure the head to the cane.

Brass and Copper Artifacts
Brass and copper artifacts found at Signal Hill include such items as nails, hinges, keys, drawer pulls (both the knob and the hinged varieties), buckles, thimbles, horseshoe-shaped heel taps, a sleigh bell, a ramrod thimble off a musket or rifle, a bracelet, cartridge cases, percussion caps, friction tubes, and other things. Brass and copper buttons, military insignia, and coins have been treated in previous sections.

Most of the copper and brass artifacts will not be described in detail. Specimens of interest are illustrated in Figure 88 where their size and design may be seen. A brief description of the friction tubes is given immediately below, however, as published descriptions are not available in archaeological literature to the writer's knowledge, and they are especially useful for close dating.

Friction Tubes
These devices for igniting the charge in a cannon consist of a brass tube 78 mm. to 79 mm. long and 5 mm. in diameter that has a short tube (10 mm. to 11 mm.) attached near one end at right angles (Fig. 88, *f*). The longer tube was made by rolling a rectangle of sheet brass into a cylinder, the two abutting edges forming a flush seam. The cylinder was perforated 5 mm. to 6 mm. from one end, and the short tube was wired on tightly at that point so the interior of the two tubes communicated through the perforation. The shorter tube has two extended strips which are bent around the longer tube to make their junction more secure. The shorter tube is made of sheet brass too, but its seam is overlapping instead of flush. The top of the shorter tube was crimped down in such a way that a transverse dent was left running across it.

The following explanation of how a friction tube works refers to the American tube of 1864, but the British version worked in the same way.

The primer is a small tube filled with rifle powder and inserted in the vent at the moment of firing. It is ignited by the friction produced in drawing a rough wire briskly through a friction composition, consisting of 1 part of chlorate of potassa and 2 parts of sulphuret of antimony, moistened with a weak solution of gum arabic, and mixed together in a wet state. This composition is contained in a smaller tube which is inserted at right angles in the priming tube, near the top. . . . A lanyard, *with a hook attached, is used to pull out the wire* (Board of Artillery Officers 1864: 14).

Stone Artifacts
Under this heading are included sharpening stones, quartz crystals, slate pencils, and gunflints.

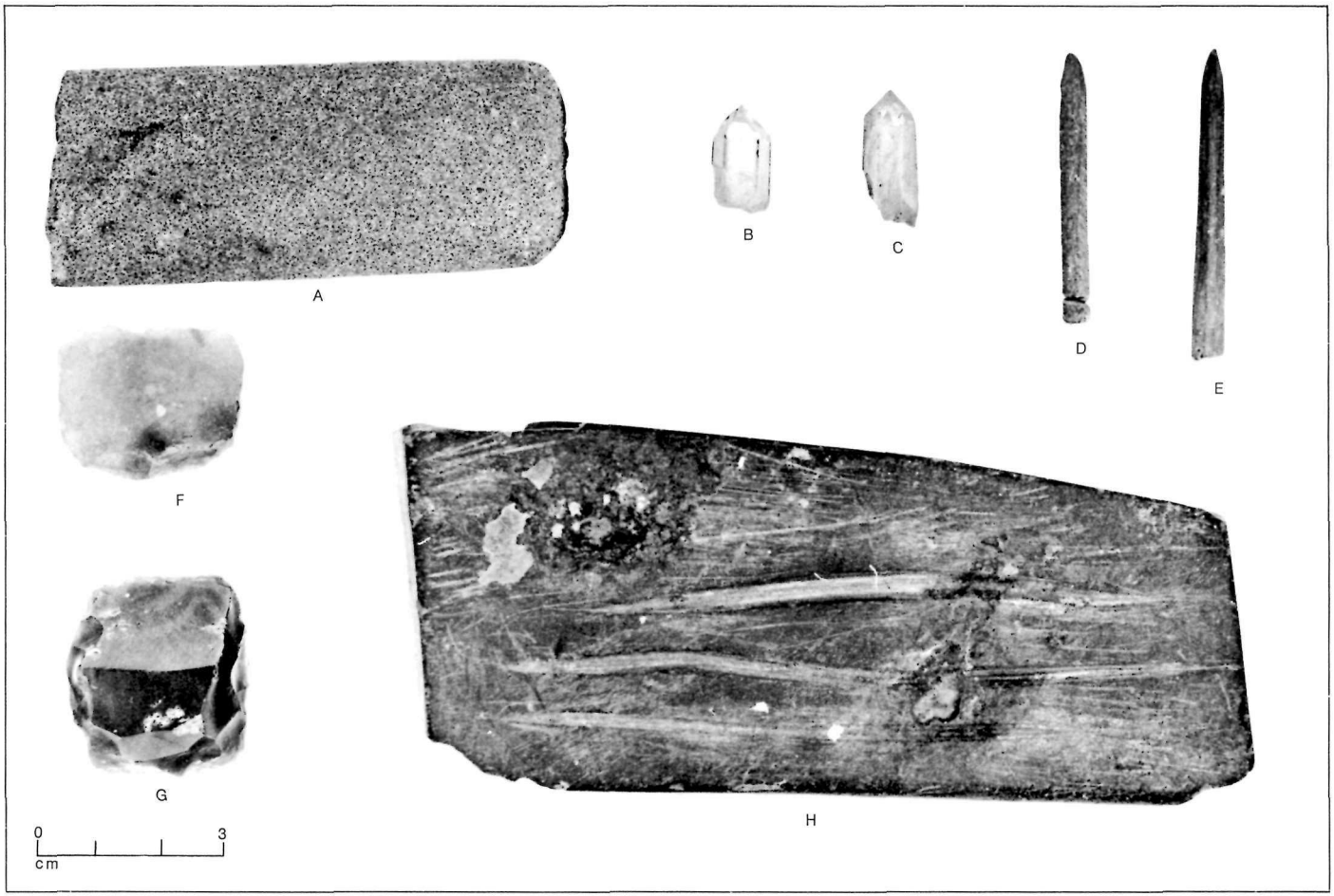
Sharpening Stones
Two whetrocks of fine-grained sandstone have been squared up into rectangular shape (Fig. 90, *a*). Both are broken and their original length cannot be determined; but average width is 35 mm. and 41 mm., average thickness 18 mm. and 30 mm. respectively. A third specimen made of dark grey slate (Fig. 90, *h*) has been only roughly shaped. It is 133 mm. long, has an average width of some 53 mm. and is 17 mm. to 27 mm. thick. One side is polished as though used for sharpening knives. The other side has numerous scratches and three deep, V-shaped grooves. The grooves presumably were for sharpening awls or other pointed implements.

Quartz Crystals
Small, naturally pointed quartz crystals, 17 mm. to 24 mm. long, show no modification save evidence of wear on the point (Fig. 90, *b-c*). They evidently were used for marking objects made of glass, metal, or some other hard substance.

Slate Pencils
Several pencils of dark grey or reddish grey slate were found (Fig. 90, *d-e*). They were used for writing on a slate surface. Shaped roughly into cylinders, they are ground to a writing point at one end, and in one case, at both ends. The only unbroken specimen, which has a groove around its proximal end, is 44 mm. long; the longest broken section measures 64 mm. Diameters vary from 4 mm. to 6 mm.

Gunflints
Two forms of gunflints are present: the spall type (1 specimen) and the conventional type (4 specimens). All are made of flint, light to dark grey in colour, and all are of a size appropriate for use on a musket. The spall flint (Fig. 90, *f*), struck from a prepared platform and shaped by unifacial retouch, is 24 mm. long, 30 mm. wide across the striking

90 Miscellaneous stone articles. *a*, sandstone sharpening stone; *b-c*, quartz crystals; *d-e*, slate pencils; *f*, spall type gunflint; *g*, conventional type gunflint; *h*, slate sharpening stone.



edge, and 8 mm. thick at the heel. The conventional flints (Fig. 90, *g*) are sections of lamellar blades. Rather severely battered as a rule, they are 25 mm. to 32 mm. long, 22 mm. to 25 mm. wide across the striking edge, and 9 mm. to 12 mm. in maximum thickness.

Shell Artifacts

Other than buttons, which are described in another section, the only artifact made of shell is a circle cut out of mother-of-pearl that almost surely was part of some kind of ornament, perhaps a brooch. The body averages some 9 mm. wide, while the total diameter of the circle is 38 mm. This object was evidently attached to something by means of two small holes placed opposite one another.

Provenience data for the various categories of artifacts are given in Tables 4 through 11. Differences in the distribution patterns of some categories are apparent. Some of the differences probably reflect slightly different dates for certain parts of the site. Others, perhaps, are a factor of function: one would expect to find different kinds of artifacts around a men's barracks than around an officers' barracks; different things around a battery than around a canteen.

The depositional units at Signal Hill, by and large, could not be dated closely. In some parts of the site such as Lady's Lookout proper there was no more than an inch or two of soil overlying the bedrock. At other places, such as the south flat at Lady's Lookout, there was a foot or so of soil, but it was unstratified. At the lower Queen's Battery and at shelf A of the east flat at Lady's Lookout, the building foundations were laid on bedrock or on piles of stone rubble that had been hauled in and used to level the ground where the buildings were to be built. Eventually the buildings were razed, leaving only the lower courses of the stone foundations intact for the archaeologist to find and study.

The dates of some depositional components were estimated, but except for the zones of rubble fill, the components had to be dated quite grossly. Furthermore the dates for the richest artifact-bearing zones, being estimates, are necessarily somewhat tenuous. But despite these difficulties, date estimates for the major depositional components have been made.

Lower Queen's Battery
Zone E: 1796
Zone D: 1796-1840
Zone B & C: 1840-1870
Zone A: 1870-1965

Upper Queen's Battery
Structure 2, room A: 1880-1955
Structure 2, room B
  Lower level: 1850-1930
  Upper level: 1930-1940
Structure 2, room C
  Miscellaneous: 1820-1955
  Latrine deposits: 1820-1860
Structure 2, room D: 1890-1955
Structure 2, room E:
  Lower level: 1831-1860
  Upper level: 1860-1955

Lady's Lookout
Proper: 8,000 B.C.-1965
South flat: 8,000 B.C.-1965
East flat
  Zone A, shelf A: 1811
  Zone B, shelf A: 1811-1855
  Zone C, shelf A: ca. 1855
  Zone D, shelf A: 1855-1966
  Midden at NE. corner of structure 11: 1811-1860
  Latrine & ash-pit deposits (structures 13 & 15): 1820-1860

The only zones that can be dated with any degree of precision are zone C of shelf A at Lady's Lookout, east flat, and the zones of rubble fill (zone E at the lower Queen's Battery and zone A at east flat, shelf A, Lady's Lookout). The rubble zones were virtually sterile save for a few artifacts that apparently had worked down from the zones above into the interstices between the stones. The mortar in zone C at the east flat is believed to have come from the rating of structure 10, which probably took place about 1855, but the artifacts found in the zone could hardly all date from the brief interval when structure 10 was being torn down.

The strata richest in artifacts were zone D at the lower Queen's Battery zone B at the east flat of Lady's Lookout, the midden at the northeast corner of structure 11, and the latrines and ash pit at the east flat and in structure 2. These all fall in the period 1796-1860, and all overlap one another in the 1820-40 range.

Thus the areas excavated to date at Signal Hill have not produced good samples of artifacts that can be tightly dated. Consequently the conservative course with regard to dating the artifacts from their contexts seems to be appropriate here; that is, the bulk of the

regarded as representative of the period 1800-60. Attempts to date the artifact samples more closely would surely be risky and might well produce misleading results. If anyone is interested in pursuing the matter of artifact distribution further, he will find the necessary raw data in the tables that follow.

Table 1. Summary of Excavated Structures

Structure	Location	Nature of Remains	Probable Identification
1	Interpretation Centre	Stone foundation	?
2	Upper Queen's Battery	Magazines and bldg. foundations	Magazines and barracks (early 19th century)
3	Lower Queen's Battery	Stone foundation	Barracks (ca. 1812)
4	Upper Queen's Battery	Stone foundation	?
5	Lower Queen's Battery	Paved area	Working floor?
6	Lower Queen's Battery	Paved area	Working floor?
7	Lower Queen's Battery	Paved area	Working floor?
8	Lady's Lookout (South Flat)	Stone foundation	?
9	Lady's Lookout	Stone foundation	Blockhouse (1795)
10	Lady's Lookout (East Flat)	Stone and brick foundation	Canteen (1840s)
11	Lady's Lookout (East Flat)	Stone foundation	Commissariat (1811-183?)
12	Lady's Lookout (East Flat)	Stone foundation	Commissariat (1835-185?)
13	Lady's Lookout (East Flat)	Stone foundation	Latrine (1840s?)
14	Lady's Lookout (East Flat)	Stone foundation	?
15	Lady's Lookout (East Flat)	Stone foundation	Ash Pit
16	Lady's Lookout (East Flat)	Stone foundation	?

Table 2. Summary of Button Data

Sample No.	No. of Specimens	Material	Body Structure	Eye Attachment	Approximate Dimensions (in mm.) Diameter	Thickness	Eye Diameter	Face Design	Back Design
1	3	Brass	I	A	12-13	0.3-0.5	–	Plain	Plain
2	7	Brass	I	A	14	1	4-5	Plain	Plain
3	2	Brass	I	A	15	1-1.5	5	Plain	Plain
4	4	Brass	I	A	16-17	0.5-2	4-5	Plain	Plain
5	1	Brass	I	A	18	1	5	Plain	Plain
6	1	Brass	I	A	20	1	4	Plain	Plain
7	1	Brass	I	A	21.5	1	5	Plain	Illegible
8	1	Brass	I	A	12	1	5	Plain	TREBLE GILT GOLD
9	2	Brass	I	A	14	1	–	Plain	Wreath
10	1	Brass	I	A	20	1	–	Plain	Wreath
11	1	Brass	I	A	15	1	5	Plain	STANDARD GILT
12	1	Brass	I	A	12	1.5	6	Plain	PLATED JAS. D. & Co foliage between words
13	1	Brass	I	A	14	1	5	4	Plain
14	1	Brass	I	A	14	0.5	–	4	Plain (but design on face stamped through from back)
15	1	Brass	I	A	17	1.5	–	4	Plain
16	1	Brass	I	A	24.5	1	5	4	Plain
17	1	Brass	I	A	21	1.5	–	11	crown J. MANN – (?) FINE (in beaded circle)
18	1	Brass	I	A	17	1	5.5	12	Plain
19	1	White Metal	I	A	23.5	1	–	1 (device and legend indistinct)	Plain
20	1	Brass	I	B	13	1	5	Plain	Plain
21	6	Brass	I	B	15-17	1	5-6	Plain	Plain
22	2	Brass	I	B	18	1	5-6	Plain	Plain
23	5	Brass	I	B	19-20	1	4-6	Plain	Plain
24	1	Brass	I	B	31	1.5	7	13	Plain
25	1	Iron	I	B	17.5	2	6	Plain	Plain
26	1	White Metal	I	B	11	1	4	Plain	Plain
27	6	White Metal	I	B	13-14	0.5-1	4-5	Plain	Plain
28	33	White Metal	I	B	15-16	0.5-1	4-5	Plain	Plain
29	13	White Metal	I	B	16-17	1-1.5	4-6	Plain	Plain
30	2	White Metal	I	B	18-19	1-1.5	4-5	Plain	Plain
31	4	White Metal	I	B	19-20	0.3-1.5	6	Plain	Plain

Table 2. Summary of Button Data
(Continued)

Sample No.	No. of Specimens	Material	Body Structure	Eye Attachment	Approximate Dimensions (in mm.) Diameter	Thickness	Eye Diameter	Face Design	Back Design
32	8	White Metal	I	B	21-22	0.5-1	6	Plain	Plain
33	2	White Metal	I	B	22-23	0.5-1	5	Plain	Plain
34	1	White Metal	I	B	25	0.5	5	Plain	Plain
35	1	White Metal	I	B	20.5	1	–	Plain	I. G & SON COVENT GARDEN
36	1	White Metal	I	B	16.5	1	–	9	Plain
37	1	White Metal	I	B	14.5	1	–	1 NOVA SCOTIA – (?) (central device indistinct)	Plain
38	1	White Metal	I	B	23	1	–	1 NOVA SCOTIA – (?) (central device indistinct)	Plain
39	1	White Metal	I	B	19	1.5	–	2 VETERAN COMPANY 3	Plain
40	1	White Metal	I	B	20	1	–	3 ROYAL VETERAN COMPANIES	Plain
41	1	Brass	11(x)	A	13	0.5	–	Plain	Plain
42	1	Brass	11(x)	A	14.5	1	–	Plain	?
43	3	Brass	11(x)	A	12-14	1	5	Plain	Wreath
44	1	Brass	11(x)	A	13	1	5	Plain	I. McGOWAN LONDON
45	1	Brass	11(x)	A	19	1	6.5	Plain	GILT
46	1	Brass	11(x)	A	20	1	–	Plain	GILT wreath
47	1	Brass	11(x)	A	21	1	6	Plain	PLATED
48	1	Brass	11(x)	A	17	1	4	Plain	Plain
49	2	Brass	11(x)	A	20	1-1.5	6	1 ROYAL REGt OF ARTILLERY	DOLAN & SON LONDON
50	3	Brass	11(x)	A	20.5	1	5-6	1 ROYAL SAPPERS & MINERS	I. McGOWAN GERRARD St LONDON
51	8	Brass	11(x)	A	20-21.5	1-2	5-6	4	Plain
52	1	Brass	11(x)	A	20	1	6	4	I. McGOWAN LONDON
53	1	Brass	11(x)	A	16	1	5	4	I. McGOWAN LONDON
54	1	Brass	11(x)	A	15.5	1	–	14	TREBLE GILT STANDARD COLOUR

Table 2. Summary of Button Data
(Continued)

Sample No.	No. of Specimens	Material	Body Structure	Eye Attachment	Approximate Dimensions (in mm.) Diameter	Thickness	Eye Diameter	Face Design	Back Design
55	1	Brass	11(x)	B	23	1.5	5.5	7	FIRMIM
56	1	Brass	11(x)	C	13.5	0.5	–	Plain	Plain
57	6	Brass	11(x)	C	13-16	1-1.5	6	1 NOVA SCOTIA FENCIBLES	Plain
58	1	Brass	11(x)	C	20	1	–	1 ROYAL SAPPERS & MINERS	I. McGOWAN LONDON
59	1	Brass	11(x)	C	16	1	–	1 ROYAL REGt OF ARTILLERY	I. McGOWAN LONDON
60	1	Brass	11(x)	C	21	1	5.5	1 ROYAL REGt OF ARTILLERY	I. McGOWAN GERRARD St LONDON
61	2	Brass	11(x)	C	22	1.5-2	6	5 legend illegible	Plain
62	1	Brass	11(x)	C	16	1	–	8 legend illegible	JONES & SON DUBLIN
63	1	Brass	11(x)	C	27	1.5	5.5	15	FIRMIM & SONS 153 STRAND LONDON
64	2	Iron	11(x)	?	20	2	7	Plain (?)	Plain (?)
65	2	White Metal	11(x)	B	13	1	–	Plain	Plain
66	2	White Metal	11(x)	B	21-22	1-1.5	–	Plain	Plain
67	10	White Metal	11(x)	B	14-16	0.5-1	7	1 NOVA SCOTIA FENCIBLES	Plain
68	13	White Metal	11(x)	B	21-23	1-2	–	1 NOVA SCOTIA FENCIBLES	Plain
69	1	White Metal	11(x)	B	22	1	–	1 NOVA SCOTIA FENCIBLES	EGINTON BIRMINGHAM
70	1	White Metal	11(x)	B	16	1	–	1 ROYAL N –LA – (?) Lion device	Plain
71	28	White Metal	11(x)	B	13-23	0.5-1.5	6	1 legend illegible	Plain
72	2	White Metal	11(x)	B	19-21	1-2	–	3 ROYAL VETERAN COMPANIES	Plain
73	2	White Metal	11(x)	B	19	1	–	2 VETERAN COMPANY 4	Plain

Table 2. Summary of Button Data
(Continued)

Sample No.	Nc. of Specimens	Material	Body Structure	Eye Attachment	Approximate Dimensions (in mm.) Diameter	Thickness	Eye Diameter	Face Design	Back Design
74	2	White Metal	11(x)	B	16	1	–	8 legend illegible	FIRMIN Co (?)
75	1	White Metal	11(x)	B	16	1	–	9 66	Plain
76	1	White Metal	11(x)	B	19	1.5	–	10 34	NUTTING LONDON
77	2	White Metal	11(x)	B	16-20	1	–	design illegible	Plain
78	1	Brass	11(y)	A	10.5	0.5	–	Plain	Plain
79	1	Brass	11(y)	A	20	2	6	1 ROYAL REGt OF ARTILLERY	Plain
80	3	Brass	11(y)	A	13-14	1-1.5	5-6	4	Plain
81	1	Brass	11(y)	B	14	1	5	1 ROYAL REGt OF ARTILLERY	Plain
82	3	Brass	11(y)	B	20	2-3	6	1 ROYAL REGt OF ARTILLERY	Plain
83	1	Brass	11(y)	B	20	2	–	1 ROYAL REGt OF ARTILLERY	illegible
84	4	Brass	11(y)	B	15-17	1.5-2	5-6	6	Plain
85	3	Brass	11(y)	B	20-21	1.5-2.5	6	6	Plain
86	4	Brass	11(y)	B	20-21	1.5-2.5	–	6	DOLAN LONDON
87	2	Brass	11(y)	B	20-21	1.5-2.5	–	6	?
88	1	Brass	11(y)	C	14	1	–	16	Plain
89	11	White Metal	11(y)	B	12.5	1	–	17	Plain
90	10	White Metal	11(y)	B	14-16	1	–	17	Plain
91	2	White Metal	11(y)	B	18-19	1	–	17	Plain
92	15	White Metal	11(y)	B	12-19	1	7	illegible	Plain
93	1	White Metal	11(y)	B	18	1	–	illegible	NUTTING LONDON
94	1	Brass	III	A	17	–	5.5	Plain	Plain
95	1	Brass	III	A	22	–	–	1 ROYAL REGt OF ARTILLERY	TREBLE GILT STANDo. COLOUR
96	1	Brass	III	A	16	–	5	1 design illegible	Plain
97	1	Brass	III	A	23	–	–	5 legend: UBIQUE	Plain

Table 2. Summary of Button Data
(Continued)

Sample No.	No. of Specimens	Material	Body Structure	Eye Attachment	Approximate Dimensions (in mm.) Diameter	Thickness	Eye Diameter	Face Design	Back Design
98	1	Brass	III	A	16	–	–	6	Plain
99	1	Brass	III	A	25	0.5	6	face missing	Plain
100	1	Brass	III	D	21.5	–	7	6	FIRMIM & SON LONDON 1530 STRAND S
101	1	Brass	III	D	18.5	–	–	18	GOUGHTY & Co. LONDON
102	5	Brass	III	D	25	–	7	18	SMITH KEMP & WRIGHT BIRMINGHAM
103	1	Brass	III	D	22	–	7.5	19	NUTTING & KENT – TAIN
104	1	Brass	III	D	23	–	8	19	BUTTONS L TRADE B°HAM MARK
105	1	Brass	III	D	25	–	–	20	ROGERS & Co. KING ST COVENT GARDEN LONDON
106	2	Brass	III	D	25	–	7	20	SMITH KENT & WRIGHT BIRMINGHAM
107	1	Brass	III	D	18	–	6	21	illegible
108	1	Brass	III	D	23	–	7	22	NAVAL QUALITY K
109	1	Brass face Iron black	III	?	18	–	–	23	?
110	3	Brass	IV	A	16	–	5-6	4	Plain
111	1	Brass	IV	A	21	–	5.5	4	Plain
112	1	Brass and Bone	V	–	23	–	–	24	–
113	1	Brass face Back missing	V	–	17	–	–	11	–
114	1	Brass	VI	–	13	1	–	interior beaded circle	Plain evenly convex
115	1	Brass	VI 4-hole	–	16	1	–	interior beaded circle	SUPERFINE QUALITY evenly convex
116	1	Brass	VI 4-hole	–	16	1	–	COOK & MAYES SOUTHTON	Plain convex centre
117	1	Brass	VI 4-hole	–	17	1	–	IMPROVED FOUR HOLES	Plain flat
118	1	Brass	VI 4-hole	–	17	1	–	interior beaded circle	Plain convex centre
119	1	Brass	VI 4-hole	–	17	1	–	BRACE BUTTON beaded edge, interior beaded circle	Plain flat

Table 2. Summary of Button Data
(Continued)

Sample No.	No. of Specimens	Material	Body Structure	Eye Attachment	Approximate Dimensions (in mm.) Diameter	Thickness	Eye Diameter	Face Design	Back Design
120	1	Brass	VI 4-hole	–	17	1	–	SUSPENDER BUTTON wreath segment at bottom	Plain convex centre
121	3	Iron	VI 4-hole	–	17	1	–	badly oxidized	Plain (?) convex centre
122	2	Iron	VI 4-hole	–	19	2	–	badly oxidized	Plain (?) evenly convex
123	1	White Metal	VI 3-hole	–	12	1	–	Plain	Plain convex centre
124	1	White Metal	VI 4-hole	–	16.5	1	–	legend illegible	Plain convex centre
125	2	Bone	VI 1-hole	–	11.5	1.5	–	Plain flat	Plain flat
126	2	Bone	VI 1-hole	–	12.5	1.5	–	Plain flat	Plain flat
127	1	Bone	VI 1-hole	–	13.5	1	–	Plain flat	Plain flat
128	3	Bone	VI 1-hole	–	15.5	1.5	–	Plain flat	Plain flat
129	3	Bone	VI 1-hole	–	17	1.5-2	–	Plain flat	Plain flat
130	2	Bone	VI 1-hole	–	18	1-2	–	Plain flat	Plain flat
131	1	Bone	VI 1-hole	–	20	1.5	–	Plain flat	Plain flat
132	3	Bone	VI 3-hole	–	12	2-2.5	–	depressed centre	Plain flat
133	1	Bone	VI 4-hole	–	12	2	–	depressed centre	Plain convex
134	1	Bone	VI 4-hole	–	13	2	–	depressed centre	Plain convex
135	8	Bone	VI 4-hole	–	16	2	–	depressed centre	Plain convex
136	4	Bone	VI 4-hole	–	17-17.5	2.5	–	depressed centre	Plain convex
137	8	Bone	VI 4-hole	–	19-20	2-3	–	depressed centre	Plain convex
138	1	Bone	VI 4-hole	–	19	3	–	depressed centre	Plain flat
139	2	Bone	VI 5-hole	–	15.5-16	2.5	–	depressed centre	Plain flat
140	2	Bone	VI 5-hole	–	17-18	2.5	–	depressed centre	Plain flat
141	1	Shell	VI 2-hole	–	18	2.5	–	depressed centre	Plain flat
142	3	Shell	VI 4-hole	–	10	1	–	depressed centre	Plain flat

Table 2. Summary of Button Data
(Continued)

Sample No.	No. of Specimens	Material	Body Structure	Eye Attachment	Approximate Dimensions (in mm.) Diameter	Thickness	Eye Diameter	Face Design	Back Design
143	2	Shell	VI 4-hole	–	12	1.6	–	depressed centre	Plain flat
144	16	Glass white	VI 4-hole	–	11	2.5-3	–	depressed centre	Plain convex
145	1	Glass white	VI 4-hole	–	14	3	–	depressed centre	Plain convex
146	2	Glass white	VI 4-hole	–	11	2-2.5	–	depressed centre, pips around edge	Plain convex
147	1	Plastic white	VI 2-hole	–	19	1.5	–	depressed centre, crosshatched	Plain convex
148	1	Plastic white	VI 4-hole	–	17	3	–	Plain flat	Plain convex
149	3	Glass white	VII	–	8-13	5-6	4	Plain strongly convex	Plain
150	1	Bone	VIII	–	17	2	4	scalloped, milled edge; concentric rings in centre; perforations near edge	Plain flat
151	1	Bone	VIII	–	18	4	–	Plain convex	Plain flat
152	1	Shell	VIII	–	11.5	3	–	Plain	Plain flat
153	1	Brass	IX	A(?)	11	1	5	Plain	Plain
154	1	Brass and Shell	X	A(?)	24.5	7	5	floral design	Plain
155	1	White Metal and Iron	XI	–	11.5	4	–	facetted (white metal)	Plain (iron)
156	1	Brass and Fabric	III(?)	A(?)	28	8	5	raised 6-point star on elaborately decorated ground; entire button fabric-covered	Plain

Table 3. Summary of Coin Data.

Coin Type	No. of Specimens	Reference
1799 farthing	1	Peck 1960: 347-8
1825 farthing	1	Raymond 1953: #35
1826 halfpenny	2	Raymond 1953: #37
1900 halfpenny	1	Peck 1960: #1956
1797 penny	2	Peck 1960: 292 (Type 4)
1806 penny	2	Peck 1960: 371
1943 penny (Canadian)	1	Charlton 1966: 66
1812 penny token	2	Charlton 1966: #195
1813 penny token	1	Charlton 1966: #198a
1823 dime (U.S.)	1	Yeoman 1966: 105
Unidentified	1	

Table 4. Artifact Tabulation,
Lower Queen's Battery Area

	Zones							
	A	B	C	D	E	Outside Parapet	Misc. Locations	Totals
Ceramics								
Earthenware								
Coloured								
Unglazed	1		1				1	3
Glazed								
Free-slipped	1			10		1	2	14
Unslipped								
Dark opaque glaze	2			1	1			4
Light opaque glaze			2	4			5	11
Transparent glaze	3		5	10	2	1	3	24
White								
Plain								
Yellowish glaze	74	37	56	404	20	17	236	844
Bluish glaze	83	20	55	107	19	10	164	458
Clear glaze					17			17
Slip-banded	5		5	23	5	2	24	64
Painted								
Freehand	9		8	45	3	4	56	125
Painted edge (blue)	23	4	12	15	8	1	36	99
Painted edge (green)	1		1	1			2	5
Printed								
Blue Willow design	3		5	27		5	25	65
Blue, misc.	32	10	21	193	30	10	224	520
Nonblue, misc.	5		2	10	1	6	18	42
Stoneware								
Salt-glazed (coloured paste)								
Beakers	3	2	2	2			9	18
Jars						2	1	3
Bottles	2		4	9		2	23	40
Misc.	8	1	4	12		2	15	42
Lead-glazed								
Coloured	4		1	3			9	17
White								
Plain	14			2		7	31	54
Printed design							1	1
Porcelain								
European	18		9	10		7	23	67
Oriental	1	1	1	4	1		2	10
Ceramic varia				1				1
Clay Tobacco Pipes								
Fluted			2				1	3
Masonic		1	1					2

Table 4. Artifact Tabulation,
Lower Queen's Battery Area (Continued)

	Zones							
	A	B	C	D	E	Outside Parapet	Misc. Locations	Totals
T D (plain)							1	1
Misc.	15	26	4	7	1		30	83
Pipe stems								
Plain	83	44	52	85	5	7	227	503
Vine design							2	2
McDougall	6			2			2	10
Misc. maker's marks							1	1
Hole diameters								
4/64"	8		3	3			30	44
5/64"	69	38	31	65	5	6	179	393
6/64"	12	6	18	16		1	23	76
Clay Marbles	4			12		1	6	23
Wine Bottle Necks								
Double collar	2		2	8			12	24
Single collar							1	1
Misc.	1		3	12			5	21
Wine Bottle Bases								
Improved pontil		1		11			9	21
Snapcase				1			4	5
Wine Bottle Body Sherds	36	18	22	134	7	5	145	367
Misc. Glass Bottles	8		11	5	2	9	30	65
Flat Glass	28	4	12	62	4	2	68	180
Misc. Glass	29	2	5	14		26	55	131
Table Forks			1	1			1	3
Spoons			1				1	2
Case Knives				1			2	3
Misc. Iron Artifacts	10	6	10	5	1	8	10	50
Buttons								
Sample # 1		1						1
Sample # 9						1		1
Sample # 11							1	1
Sample # 16			1					1
Sample # 22				1				1
Sample # 24							1	1
Sample # 28			1	1				2
Sample # 29		1						1
Sample # 32							1	1
Sample # 39							1	1
Sample # 44							1	1
Sample # 49			1	1				2
Sample # 50		1					1	2
Sample # 51							1	1

Table 4. Artifact Tabulation,
Lower Queen's Battery Area (Continued)

	Zones							
	A	B	C	D	E	Outside Parapet	Misc. Locations	Totals
Sample # 57				1				1
Sample # 59				1				1
Sample # 60				1				1
Sample # 61							1	1
Sample # 62			1					1
Sample # 80							2	2
Sample # 82		1		1			1	3
Sample # 84							1	1
Sample # 85							1	1
Sample # 86		1						1
Sample # 88				1				1
Sample # 95							1	1
Sample # 96				1				1
Sample # 102					1			1
Sample # 111							1	1
Sample # 112							1	1
Sample # 117							1	1
Sample # 120							1	1
Sample # 121							1	1
Sample # 122				1				1
Sample # 124						1		1
Sample # 140							1	1
Sample # 143						1		1
Sample # 154						1		1
Sample # 155	1							1
Coins								
1826 halfpenny							1	1
1806 penny					1		1	2
1812 penny token							1	1
1813 penny token							1	1
Shako Chinstrap Leaves				11			2	13
Shoulder-Belt Buckle (NSR)							1	1
Misc. Military Insignia				1			6	7
Lead Artifacts								
Musket balls						1	1	2
Lead weights				1			1	2
Lead pencils					1			1
Bone and Antler Artifacts								
Bone whistle							1	1
Bone domino	1							1
Bone comb				1				1
Bone brush backs							1	1

Table 4. Artifact Tabulation,
Lower Queen's Battery Area (Continued)

	Zones							
	A	B	C	D	E	Outside Parapet	Misc. Locations	Totals
Misc. bone artifacts	1			1				2
Brass and Copper Artifacts								
Friction tubes	5		2	1		1	10	19
Misc. brass and copper artifacts	2	1	9	1	1	16		30
Gunflints				1			1	2

Table 5. Artifact Tabulation,
Structure 2, Room C

	Latrine #1		Latrine #2			
	Upper Level	Lower Level	Upper Level	Lower Level	Room C Misc.	Totals
Ceramics						
Earthenware						
Coloured (glazed)						
Light opaque glaze		1				1
Misc.	4	1			3	8
White						
Plain						
Yellowish glaze	2	10	8	2	40	62
Bluish glaze	1		16	8	2	27
Clear glaze	4	7			39	50
Slip-banded		1			4	5
Painted						
Freehand	1				6	7
Painted edge (blue)	2	6	2	1		11
Printed						
Blue Willow		1		1	1	3
Blue, misc.	6	10	18	11	49	94
Nonblue, misc.	1				4	5
Stoneware						
Salt-glazed (coloured paste)						
Beakers			2	2	2	6
Jars	2		3		7	12
Bottles			1			1
Misc.	2	1	2	1	5	11
Lead-glazed (coloured paste)				1		1
Porcelain						
European			1		7	8
Oriental		1				1
Ceramic varia					1	1
Clay Tobacco Pipes						
Fluted	1	1	1			3
Mathew					1	1
T D (wreathed)		1				1
Misc.	18	12	9	17	35	91
Pipe stems						
Plain	52	38	66	31	116	303
Hole diameters						
4/64"	2	2	4	1	14	23
5/64"	43	34	55	24	80	236
6/64"	7	2	7	6	22	44
Marbles						
Clay	3		1		26	30

Table 5. Artifact Tabulation,
Structure 2, Room C (Continued)

	Latrine #1		Latrine #2			
	Upper Level	Lower Level	Upper Level	Lower Level	Room C Misc.	Totals
Glass					1	1
Wine Bottle Necks						
Double collar			1			1
Single collar				1		1
Misc.			2			2
Wine Bottle Bases						
Improved pontil				1	1	2
Misc.					1	1
Wine Bottle Body Sherds			1			1
Misc. Glass Bottles			5		8	13
Flat Glass		10	7		95	112
Misc. Glass		1	14	3	19	37
Spoons				1		1
Misc. Table Utensils		1				1
Misc. Iron Artifacts		6			1	7
Buttons						
Sample # 29	1					1
Sample # 54	1					1
Sample # 79					1	1
Sample # 81					1	1
Sample # 84			1		1	2
Sample # 85					1	1
Sample # 86	1	1		1		3
Sample # 87			1			1
Sample # 94					1	1
Sample # 104					1	1
Sample # 113			1			1
Sample # 136					1	1
Sample # 139			1			1
Sample # 141					1	1
Sample # 149					1	1
Coins						
1825 farthing					1	1
Unidentified					1	1
Misc. Military Insignia			1		1	2
Wrist Rosary			1			1
Lead Weights					1	1
Bone Artifacts						
Dominoes		1				1
Misc. bone artifacts					1	1
Misc. Brass and Copper Artifacts		2			2	4
Sharpening Stones		1			1	2
Misc. Shell Artifacts					1	1

Table 6. Artifact Tabulation,
Structure 2 (Exclusive of Room C)

	Room B				Room E					
	Room A	Upper Level	Lower Level	Misc.	Room D	Upper Level	Lower Level	Misc.	Structure 2 Misc.	Totals
Ceramics										
Earthenware										
Coloured										
Unglazed		1								1
Glazed (unslipped)										
Dark opaque glaze									2	2
Transparent (misc.)	1									1
White										
Plain										
Yellowish glaze	1			1		2				4
Bluish glaze	12	9	1	41	2	1	3	2	2	61
Clear glaze				3					3	6
Whieldon-like glaze						3				3
Slip-banded	1								5	6
Painted										
Freehand	2				1		1		4	8
Painted edge (blue)		7				2			5	14
Painted edge (green)										
Stamped									4	4
Printed										
Blue Willow design	1					2	6	13	3	25
Blue, misc.	6	1				26	13	81	3	130
Nonblue, misc.	1	1	6			5	3	14	2	32
Stoneware										
Salt-glazed (coloured)										
Beakers				12						12
Jars				2			1			3
Bottles	1						1	1	1	4
Misc.		2								2
Lead-glazed										
Coloured				2	1					3
White										
Plain	10			3				22	1	36
Printed design	2									2
Porcelain										
European	5	2		2			1		5	15
Oriental						3		1		4
Clay Tobacco Pipes										
Foliate					1					1
Misc.	2	1			2				7	12
Pipe stems										

Table 6. Artifact Tabulation,
Structure 2 (Exclusive of Room C) (Continued)

	Room B				Room E					
	Room A	Upper Level	Lower Level	Misc.	Room D	Upper Level	Lower Level	Misc.	Structure 2 Misc.	Totals
Plain	2	1	1	5	6		7			22
McDougall				1						1
Hole diameters										
4/64"	1			1			2			4
5/64"	1		1	3	2		2			9
6/64"		1		1	4		3			9
Clay Marbles					1					1
Wine Bottle Necks										
Double collar					3	1	5	1		10
Single collar	1									1
Misc.					3		1			4
Wine Bottle Bases										
Improved pontil	1				1		2			4
Snapcase					1		3			4
Misc.					2		1			3
Misc. Bottle Body Sherds	8				11	1			9	29
Flat Glass	9	27	11		2				27	76
Misc. Glass	6		12		5	3				26
Table Forks					1					1
Spoons					1					1
Misc. Iron Artifacts	66	7	2	18					3	96
Buttons										
Sample # 32				1						1
Sample # 135					1					1
Sample # 136					1					1
Brass and Copper Artifacts										
Friction tubes		2		1					1	4
Misc. copper and brass artifacts	2								2	4
Sharpening Stones					1					1

Table 7. Artifact Tabulation,
Structure 4 Area and Various Locations
in the General Queen's Battery Area

	Structure 4				
	Upper Level	Lower Level	Misc.	Q.B. Area Misc.	Totals
Ceramics					
Earthenware					
Coloured					
Unglazed			3		3
Glazed					
Free-slipped	1				1
Unslipped					
Dark opaque glaze	1			3	4
Light opaque glaze				1	1
Misc. transparent glaze	2		7	3	12
Whieldon-like glaze			3		3
White					
Plain					
Yellowish glaze		6		55	61
Bluish glaze	2	13	49	16	80
Clear glaze	46	9	57	45	157
Slip-banded	2	2	20	5	29
Painted					
Freehand	5	9	2	10	26
Painted edge (blue)	3	4	9		16
Stamped	1	1			2
Printed					
Blue Willow design				12	12
Blue, misc.				32	32
Nonblue, misc.				9	9
Textured			5		5
Stoneware					
Salt-glazed (coloured)					
Beakers	3	2	5	1	11
Bottles	1	2	5	3	11
Misc.	1	2	9	5	17
Lead-glazed					
Coloured			4		4
White (plain)	27	3			30
Porcelain					
European	8	2	40	8	58
Oriental	1				1
Ceramic varia	5				5
Clay Tobacco Pipes					
Fluted	1			1	2
Nautical		1			1
TD (plain)		2	1	1	4

Table 7. Artifact Tabulation,
Structure 4 Area and Various Locations
in the General Queen's Battery Area
(Continued)

	Structure 4				
	Upper Level	Lower Level	Misc.	Q.B. Area Misc.	Totals
Misc.	1	1	12	2	16
Pipe stems					
Plain	10	9	26	43	88
Vine design			1		1
McDougall	2	3	7		12
Hole diameters					
4/64"			2	5	7
5/64"	11	9	28	29	77
6/64"	1	3	4	9	17
Marbles					
Clay			5	1	6
Glass	2				2
Wine Bottle Necks					
Double collar	1	1	2	4	8
Single collar	1				1
Misc.		3	1	2	6
Wine Bottle Bases					
Improved pontil		2	1		3
Snapcase			3		3
Misc.			14	3	17
Wine Bottle Body Sherds	12	17	69	37	125
Misc. Bottles	16		40	10	66
Flat Glass	32		100	16	148
Misc. Glass	22		41	27	90
Misc. Iron Artifacts	8	4	63	4	79
Buttons					
Sample # 28			1		1
Sample # 57				1	1
Sample # 61				1	1
Sample # 84				1	1
Sample # 100		1			1
Sample # 103			1		1
Sample # 108				1	1
Sample # 109		1			1
Sample # 135			1		1
Sample # 137			1		1
Sample # 147			1		1
Sample # 156			1		1
Misc. Military Insignia	1				1
Sheet Lead			1		1
Brass Friction Tubes		1	8	1	10
Misc. Brass and Copper Artifcats		1	2	1	4
Slate Pencils			2	1	3

Table 8. Artifact Tabulation,
Structure 10 Area

	Zones					
	A	B	C	D	Misc.	Totals
Ceramics						
Earthenware						
Coloured						
Salt-glazed				1	6	7
Lead-glazed						
Free-slipped					5	5
Unslipped						
Dark opaque glaze		1			3	4
Light opaque glaze					1	1
Transparent glaze						
Slip-banded					8	8
Misc.		2		3	24	29
Whieldon-like glaze				1	42	43
White						
Plain						
Yellowish glaze		21	2	1	313	337
Bluish glaze		10	1	1	123	135
Clear glaze		2		1	69	72
Whieldon-like glaze					13	13
Slip-banded		4			28	32
Painted						
Freehand		2			91	93
Painted edge (blue)		3	4		29	36
Painted edge (green)			1		8	9
Stamped		1			2	3
Printed						
Blue Willow design		2	2	1	41	46
Blue, misc.		13	4	3	158	178
Nonblue, misc.				1	32	33
Textured					4	4
Stoneware						
Salt-glazed (coloured)						
Beakers					5	5
Jars				1	8	9
Bottles		1			1	2
Misc.		3			12	15
Lead-glazed						
Coloured		4	1	1	7	13
White					4	4
Porcelain						
European		4	1	3	32	40
Oriental					7	7
Ceramic varia					2	2

Table 8. Artifact Tabulation,
Structure 10 Area (Continued)

	Zones					
	A	B	C	D	Misc.	Totals
Clay Tobacco Pipes						
Repeal				1	1	2
Union					1	1
T D (plain)				1		1
Misc.		4	1	4	44	53
Pipe stems						
Plain		36	8	7	243	294
McDougall				1	7	8
Misc. maker's marks					1	1
Hole diameters						
4/64"		1			22	23
5/64"		27	5	4	164	200
6/64"		8	3	3	66	
Clay Marbles					3	3
Wine Bottle Necks						
Double collar		2			9	11
Single collar				1	2	3
Misc.					8	8
Wine Bottle Bases						
Improved pontil					1	1
Snapcase					3	3
Misc.				1	14	15
Wine Bottle Body Sherds		80	1	2	77	160
Misc. Bottles		6	1	2	44	53
Flat Glass		15	5	1	114	135
Misc. Glass		12	2	1	61	76
Table Forks			1		4	5
Misc. Table Utensils					1	1
Clasp Knives					2	2
Misc. Iron Artifacts		1	3	2	18	24
Buttons						
Sample # 3					1	1
Sample # 22					1	1
Sample # 27					1	1
Sample # 28		1			3	4
Sample # 29					1	1
Sample # 36					1	1
Sample # 43			1			1
Sample # 48					1	1
Sample # 57					1	1
Sample # 64		1				1
Sample # 65		1				1
Sample # 70		1				1

Table 8. Artifact Tabulation,
Structure 10 Area (Continued)

	Zones					
	A	B	C	D	Misc.	Totals
Sample # 77			1			1
Sample # 78					1	1
Sample # 90					1	1
Sample # 116					1	1
Sample # 129					1	1
Sample # 131					1	1
Sample # 132		1				1
Sample # 135					3	3
Sample # 137					1	1
Sample # 138					1	1
Sample # 142		1				1
Sample # 144					5	5
Coins						
1943 Canadian penny				1		1
Shako Chinstrap Leaves					1	1
Misc. Military Insignia					6	6
Lead Artifacts						
Musket balls			1			1
Sheet lead			2			2
Button Manufacturing Debris					5	5
Misc. Brass and Copper Artifacts				1	7	8
Slate pencils					1	1

Table 9. Artifact Tabulation,
Structure 11 Area

	East Part			Room 1			Midden at NE Corner			
	Above Mortar Zone	Mortar Zone	Below Mortar Zone	Level 1	Level 2	Level 3	Upper	Lower	Misc.	Totals
Ceramics										
Earthenware										
Coloured										
Unglazed	1									1
Salt-glazed									1	1
Lead-glazed										
Free-slipped	1	4	1					1	8	15
Unslipped										
Dark opaque glaze	7	8	2	3			8		12	40
Light opaque glaze		1	1						1	3
Transparent glaze										
Slip-banded	35	10		21			3	7	38	114
Misc.	12	1	2	6			7	3	31	62
Whieldon-like glaze	1						6	1		
White										
Plain										
Yellowish glaze	153	329	358				149	68	891	1,948
Bluish glaze	45	21	42	1			43	20	315	487
Clear glaze	11	5		37					92	145
Whieldon-like glaze				4					7	11
Slip-banded	20	24	16	6	1		28	18	118	231
Painted										
Freehand	27	72	64	6	1		35	19	258	482
Painted edge (blue)	23	15	9	2			25	5	74	153
Painted edge (green)		8	4	5			1	1	39	58
Stamped	1			2			1		4	8
Printed										
Blue Willow design	33		10	11			12	8	93	167
Blue, misc.	80		30	14			45	35	220	424
Nonblue, misc.	11	12	5	1			2		43	74
Textured	6						2		7	15
Stoneware										
Unglazed (black basaltes)		1								1
Salt-glazed (coloured)										
Beakers	4					2	1	4	18	29
Jars	4		2						13	19
Bottles	2	2	18				2	3	25	52
Misc.	18	17	13	2			6	3	46	105
Lead-glazed										
Coloured		2	1	1		1	2	1	8	16
White									8	8

Table 9. Artifact Tabulation,
Structure 11 Area (Continued)

	East Part			Room 1			Midden at NE Corner			
	Above Mortar Zone	Mortar Zone	Below Mortar Zone	Level 1	Level 2	Level 3	Upper	Lower	Misc.	Totals
Porcelain										
European	3	2				5	4	4	17	35
Oriental		3	1						4	8
Ceramic varia		2							1	3
Clay Tobacco Pipes										
Fluted	2		1	1			1		1	6
Foliate									1	1
Masonic									1	1
Human effigy									1	1
T D (plain)				2					3	5
T D (wreathed)							1			1
Misc.	12	38	17	8			14	10	91	190
Pipe stems										
Plain	75	210	80			8	66	24	359	822
McDougall									9	9
Hole diameters										
4/64"	6	35	11			1	9	2	53	117
5/64"	52	136	51			9	44	17	269	578
6/64"	17	39	18			1	13	5	47	140
Marbles										
Clay	3		1	1	1				5	11
Glass									3	3
Wine Bottle Necks										
Double collar	8	4	9	2			4	5	25	57
Single collar				1					2	3
Misc.	6	4	4	2			6	4	20	46
Wine Bottle Bases										
Improved pontil	1	1	2				5	2	9	20
Snapcase			1	1			1		3	6
Misc.	8	6	7	2			5	2	39	69
Wine Bottle Body Sherds	40	76	51	19			30	36	222	474
Misc. Bottles	22	24	11	17			6	12	98	190
Flat Glass	34	59	29	21			23	23	135	324
Misc. Glass	11	21	10	42			4	4	99	191
Table Forks									1	1
Spoons		1							5	6
Misc. Table Utensils									1	1
Clasp Knives		1							1	2
Case Knives		1		1					6	8
Misc. Iron Artifacts	4	14	5	18	4				78	123
Buttons										

Table 9. Artifact Tabulation,
Structure 11 Area (Continued)

	East Part			Room 1			Midden at NE Corner			
	Above Mortar Zone	Mortar Zone	Below Mortar Zone	Level 1	Level 2	Level 3	Upper	Lower	Misc.	Totals
Sample # 1			1					2		3
Sample # 2			1						3	4
Sample # 4									3	3
Sample # 5									1	1
Sample # 9									1	1
Sample # 13		1								1
Sample # 18									1	1
Sample # 19			1							1
Sample # 20									1	1
Sample # 21	1	1	1						3	6
Sample # 23			1							1
Sample # 25							1			1
Sample # 26		1								1
Sample # 27		1							3	4
Sample # 28		7	3				1	1	12	24
Sample # 29	1	1							4	6
Sample # 30									1	1
Sample # 31		1							2	3
Sample # 32	2	1							3	6
Sample # 33								1		1
Sample # 34	1									1
Sample # 37			1							1
Sample # 38									1	1
Sample # 40									1	1
Sample # 41									1	1
Sample # 42									1	1
Sample # 43	2									2
Sample # 45									1	1
Sample # 46									1	1
Sample # 47		1								1
Sample # 51	2							1	3	6
Sample # 52									1	1
Sample # 56	1									1
Sample # 57		1							1	2
Sample # 63	1									1
Sample # 64									1	1
Sample # 65		1								1
Sample # 66		1	1							2
Sample # 67		2	2						4	8
Sample # 68	1	2	6						3	12
Sample # 69									1	1

Table 9. Artifact Tabulation,
Structure 11 Area (Continued)

	East Part			Room 1			Midden at NE Corner			
	Above Mortar Zone	Mortar Zone	Below Mortar Zone	Level 1	Level 2	Level 3	Upper	Lower	Misc.	Totals
Sample # 71		9	14						3	26
Sample # 72									1	1
Sample # 73									1	1
Sample # 74									1	1
Sample # 75									1	1
Sample # 76			1							1
Sample # 77									1	1
Sample # 80			1							1
Sample # 89		1	6						3	10
Sample # 90		1	3						5	9
Sample # 91			1						1	2
Sample # 92	2	5	1						6	14
Sample # 93		1								1
Sample # 98									1	1
Sample # 99			1							1
Sample # 101									1	1
Sample # 102									3	3
Sample # 106									2	2
Sample # 107									1	1
Sample # 109		1								1
Sample # 110									2	2
Sample # 118									1	1
Sample # 121									2	2
Sample # 123									1	1
Sample # 125			1						1	2
Sample # 126	1	1								2
Sample # 127		1								1
Sample # 128								1	2	3
Sample # 129			1						1	2
Sample # 130									1	1
Sample # 132		1							1	2
Sample # 133									1	1
Sample # 134									1	1
Sample # 135									2	2
Sample # 136				1					1	2
Sample # 137				2					1	3
Sample # 139									1	1
Sample # 142									1	1
Sample # 144			1	4	1				3	9
Sample # 145				1						1
Sample # 146	1								1	2

Table 9. Artifact Tabulation,
Structure 11 Area (Continued)

	East Part			Room 1			Midden at NE Corner			
	Above Mortar Zone	Mortar Zone	Below Mortar Zone	Level 1	Level 2	Level 3	Upper	Lower	Misc.	Totals
Sample # 149				1					1	2
Sample # 150									1	1
Coins										
1797 penny									1	1
1823 dime (U.S.)						1				1
Shako Chinstrap Leaves	2	4							4	10
Shoulder-Belt Buckles (plain)	1									1
Misc. Military Insignia		1	2					2	3	8
Glass Beads							1			1
Lead Artifacts										
Musket balls	3	2						1	10	16
Sheet lead									3	3
Misc. lead artifacts		1							4	5
Bone Combs									1	1
Misc. Bone Artifacts	1		1						1	3
Antler Cane Head									1	1
Button Manufacturing Debris		9	13				1	10	16	49
Misc. Brass and Copper Artifacts	2	3						1	14	20
Brass Friction Tubes									1	1
Quartz Crystals	1	1	2							4
Slate Pencils									5	5
Gunflints		2						1	1	4

Table 10. Artifact Tabulation,
Various Locations in Lady's Lookout Area;
Artifacts with no Provenience Data

	Lady's Lookout Proper	South Flat Misc.	East Flat Misc.	Lady's Lookout Misc.	No provenience Data	Totals
Ceramics						
Earthenware						
Coloured				1		1
Unglazed						
Glazed						
Free-slipped		1		1		2
Unslipped						
Dark opaque glaze			1	1		2
Transparent glaze						
Slip-banded			1			1
Misc.	1	10	5	5		21
White			1			
Plain						
Yellowish glaze	66	190	60	16		332
Bluish glaze		37	13	22		72
Clear glaze	10	2	11			23
Whieldon-like glaze				1		1
Slip-banded		3	2	6		11
Painted						
Freehand	7	10	1	8		26
Painted edge (blue)	3	21		4		28
Painted edge (green)		1				1
Stamped		2	1			3
Printed						
Blue Willow design		2		7		9
Blue, misc.	23	44		17		84
Nonblue, misc.		1	10	2		13
Textured			1	1		2
Stoneware						
Salt-glazed (coloured)						
Beakers	5	19	2	1		27
Jars		3	1	1		5
Bottles	7	12	3	1		23
Misc.	11	26	1	5		43
Lead-glazed						
Coloured	3	3	2			8
White			2			2
Porcelain						
European	1	2		9		12
Oriental	2	1		1		4
Ceramic varia				1		1
Clay Tobacco Pipes						
Misc.	2	5	6	7		20

Table 10. Artifact Tabulation,
Various Locations in Lady's Lookout Area;
Artifacts with no Provenience Data
(Continued)

	Lady's Lookout Proper	South Flat Misc.	East Flat Misc.	Lady's Lookout Misc.	No provenience Data	Totals
Pipe stems						
Plain	23	51	30	38		142
Misc. maker's marks	1		1			2
Hole diameters						
4/64"	3	9	2	3		17
5/64"	13	36	28	30		107
6/64"	8	6	1	5		20
Clay Marbles	2			1		3
Wine Bottle Necks						
Double collar	1	19	5	1		26
Single collar		1				1
Misc.	6	28	3	5		42
Wine Bottle Bases						
Improved pontil	2	2	1			5
Snapcase			1	1		2
Misc.	16		6	4		26
Wine Bottle Body Sherds	38	298	33	20		389
Misc. Glass Bottles		14	7	3		24
Flat Glass		19	7	11		37
Misc. Glass	3	16	2	7		28
Table Knives		1				1
Table Forks	1	1			1	3
Spoons		1				1
Clasp Knives		1				1
Case Knives		1				1
Misc. Iron Artifacts	6	2	16	8	11	43
Buttons						
Sample # 2			1	2		3
Sample # 4				1		1
Sample # 6					1	1
Sample # 14			1			1
Sample # 17					1	1
Sample # 23		1	2		1	4
Sample # 27					1	1
Sample # 28			1		1	2
Sample # 29			1	1	2	4
Sample # 30					1	1
Sample # 31					1	1
Sample # 33			1			1
Sample # 35					1	1
Sample # 50					1	1
Sample # 51			1			1
Sample # 53					1	1

Table 10. Artifact Tabulation,
Various Locations in Lady's Lookout Area;
Artifacts with no Provenience Data
(Continued)

	Lady's Lookout Proper	South Flat Misc.	East Flat Misc.	Lady's Lookout Misc.	No provenience Data	Totals
Sample # 55					1	1
Sample # 57					1	1
Sample # 58			1			1
Sample # 67			1		1	2
Sample # 71					2	2
Sample # 72					1	1
Sample # 73				1		1
Sample # 74					1	1
Sample # 85	1					1
Sample # 89					1	1
Sample # 92			1			1
Sample # 97				1		1
Sample # 102				1		1
Sample # 105					1	1
Sample # 114			1			1
Sample # 119			1			1
Sample # 135				1		1
Sample # 140			1			1
Sample # 142			1			1
Sample # 148			1			1
Sample # 151				1		1
Sample # 153		1				1
Coins						
1799 farthing		1				1
1826 halfpenny	1					1
1900 halfpenny					1	1
1797 penny			1			1
1812 penny token	1					1
Shako Chinstrap Leaves		1			2	3
Shoulder-Belt Buckle (artillery)					1	1
Misc. Military Insignia		1		1		2
Lead Artifacts						
Musket balls					8	8
Lead pencils					1	1
Misc. lead artifacts					1	1
Bone Artifacts						
Brush backs					1	1
Misc. bone artifacts			1			1
Button manufacturing debris			4			4

Table 10. Artifact Tabulation,
Various Locations in Lady's Lookout Area;
Artifacts with no Provenience Data
(Continued)

	Lady's Lookout Proper	South Flat Misc.	East Flat Misc.	Lady's Lookout Misc.	No provenience Data	Totals
Brass and Copper Artifacts						
Friction tubes					5	5
Misc. brass and copper artifacts	2		5		5	12
Slate Pencils					1	1

Table 11. Artifact Tabulation,
Structures 13, 14 and 15

	Structure 13				Structure 15			
	Upper Level	Lower Level	Misc.	Structure 14 Area	Upper Level	Lower Level	Misc.	Totals
Ceramics								
Earthenware								
Coloured								
Unglazed			1					1
Glazed								
Free-slipped					1			1
Unslipped								
Dark opaque glaze		1						1
Transparent glaze (misc.)						2	1	3
White								
Plain								
Yellowish glaze	7	7		2	4	10	17	47
Bluish glaze	1	3	5	1	7	16	15	48
Clear glaze					16	5	7	28
Whieldon-like glaze							2	2
Slip-banded				2	1		3	6
Painted								
Freehand	2	1	2		3		1	9
Painted edge (blue)				1	12	2	4	19
Painted edge (green)	1							1
Printed								
Blue Willow design			7	5	2	5	10	29
Blue, misc.	11	10	6	5	11	9	20	72
Nonblue, misc.					1		6	7
Stoneware								
Salt-glazed (coloured)								
Beakers		1		2	1	2		6
Misc.					1		1	2
Lead-glazed (coloured)					1		1	2
Porcelain								
European	2	2			1	2		7
Oriental			2					
Ceramic varia	1							1
Clay Tobacco Pipes								
Mathew						1	2	3
Repeal					1		2	3
Misc.		1	2		2		8	13
Pipe stems								
Plain	4	14	2	5	11	21	36	93
Rouletted							3	3
Misc. maker's mark						1		1
Hole diameters								

Table 11. Artifact Tabulation,
Structures 13, 14 and 15 (Continued)

	Structure 13				Structure 15			
	Upper Level	Lower Level	Misc.	Structure 14 Area	Upper Level	Lower Level	Misc.	Totals
4/64"		1			1	4	3	9
5/64"	4	11	1	3	8	14	28	69
6/64"		2	1	2	2	4	5	16
Clay Marbles	1						1	2
Wine Bottle Necks								
Double collar	3							3
Misc.				2				2
Wine Bottle Bases								
Improved pontil	1			1		2		4
Snapcase	1						1	2
Misc.		3		4		3		10
Wine Bottle Body Sherds	41	37		5	1	14	14	112
Misc. Glass Bottles					1		7	8
Flat Glass				1	10	35	45	91
Misc. Glass	20	9	7			8	3	47
Spoons	1			1				2
Clasp Knives							1	1
Misc. Iron Artifacts	5	1	3	14	5	2	2	32
Buttons								
Sample # 7							1	1
Sample # 8						1		1
Sample # 10					1			1
Sample # 68		1						1
Sample # 83							1	1
Sample # 122		1						1
Sample # 130							1	1
Sample # 137	1						2	3
Sample # 144			1				1	2
Sample # 152					1			1
Shako Chinstrap Leaves							1	1
Misc. Military Insignia						1	3	4
Lead Musket Balls					1			1
Bone Artifacts								
Dominoes							1	1
Misc. bone artifacts					1			

As a result of the excavations at Signal Hill, the remains of several buildings were located and a sizeable sample of artifacts that had been lost or discarded by the occupants was accumulated. These things offer no startling additions to recorded history, but they do provide insights into what life was like at Signal Hill in the 19th century. The preceding report has attempted to describe the structural remains, the soil, and the artifacts in such a way that detailed comparisons can be made with related data from other sites. No effort has been made to go far beyond full description.

But archaeology and history have a story to tell about Signal Hill, a story that can really be told effectively only on the spot. For the overriding reality that moulds human thought and action at Signal Hill is the hill itself.

Thrusting starkly above land and sea, Signal Hill offers a vantage point for surveying the approaches to St. John's. But before its strategic value can be exploited, the challenge posed by the hill's obdurate topography and unhappy climate has to be met. The logistic problem of raising cannon to the summit presented worrisome problems to the engineers of the 19th century. There were few level spots for erecting buildings, and even the smallest structure required special tailoring to make it fit the hill's topography. Steeply canted expanses of bare bedrock, when iced over in winter, made footing treacherous. And the blustery wind which constantly rakes the hilltop is a continual source of annoyance.

Down below, around the harbour, a city grew. Streets appeared in orderly rows; houses materialized along the streets, rank upon rank; massive buildings, commercial and civic, were erected. At St. John's, man imposed the architectural accoutrements of his civilization upon the face of nature.

And men set out to transform the crest of Signal Hill, too: to sculpture its flanks into sheer, unsurmountable cliffs; to blanket its surface with batteries, barracks, blockhouses and buildings of diverse shapes, sizes, and purposes; to prepare there an impregnable fortress that would be garrisoned with thousands of men and that would stand, Gibraltar-like, for centuries to come. Several master plans for the hill's development were dafted at one time or another, and several starts on their implementation were made. In 1811, 200 tons of building stone from Cape Breton and 80 more salvaged from the ruined fortress of Louisbourg, Nova Scotia, were stockpiled on Signal Hill ready for the anticipated construction to begin. But nothing much ever happened. An abundance of ambitious plans and a half-century of intermittent efforts produced little tangible results, and the hill stands today virtually unaltered.

The reasons that enthusiastic plans were repeatedly abandoned short of completion do not lie entirely in fluctuating fiscal and political policies in London. They reside to a large degree in the psychological reaction to the hill's physical properties. The necessary money and energy to develop the St. John's area were forthcoming – but they were expended on the hospitable environment around the harbour, not on Signal Hill. There is no question but that men *could* have overcome the hill technologically; but it is a fact of history that they did not conquer it psychologically.

Signal Hill has a stark, aloof majesty that stirs the senses and imagination of almost everyone who climbs to its summit. Its story is wrapped up in the mood it creates and in the intractability of its substance; and those two factors have, ultimately, directed the course of human activities on the hill. Attempting to convert the hill's natural advantages to his own purposes, man found himself, instead, continually forced to accommodate his enterprise to the temper of the hill. Instead of shaping the hill to fit his preconceived mould, man was compelled to shape his works to the demands of the hill.

The archaeological studies complement the historical record in recounting the story of Signal Hill. The adaptation of men's plans to the demands of the hill's physiography are manifest in the structural remains unearthed: in the scaling of bedrock and levelling with rubble to make a suitable spot for the erection of a building; in the fitting of foundations and walls to the configuration of the bedrock; in the conduits and double walls designed to decrease dampness. The story is reflected, too, in steel rods anchored in the bedrock where cannon were parbuckled up the cliffs, in incompletely sheered scarps, in discarded chisels and hammers, in rusty ice creepers.

It is the writer's opinion that the archaeological remains at Signal Hill can best be used interpretively as witnesses of men's desultory efforts to meet the hill's environmental challenge. Of the historically important events that took place there – the Battle of Signal Hill and Marconi's wireless breakthrough – there is little or no archaeological evidence. But historical and archaeological displays oriented toward the drama of the hill's setting could effectively reinforce the stark scenic appeal that so forcefully impresses most visitors.

References Cited

Board of Artillery Officers
1864
Instruction for Field Artillery. Philadelphia.

Charleton, J. E.
1966
1967 Standard Catalogue of Canadian Coins, Tokens, and Paper Money. 15th ed. Whitman Publishing Co., Racine, Wisconsin.

Harris, R. K., I. M. Harris, J. C. Blaine, and J. Blaine.
1965
"A Preliminary Archaeological and Documentary Study of the Womack Site, Lamar County, Texas. *Bulletin of the Texas Archeological Society,* Vol. 36, pp. 287-363. Austin.

Ingram, George
1964
Structural History of the Fortifications and Military Buildings at Signal Hill, to Precede Archaeological Investigation, St. John's, Newfoundland. National Historic Sites Service, Ottawa.

Peck, C. Wilson
1960
English Copper, Tin, and Bronze Coins in the British Museum, 1558-1958. Trustees of the British Museum, London.

Prowse, D. W.
1895
History of Newfoundland. Macmillan, New York.

Raymond, Wayte, ed.
1953
Coins of the World: Nineteenth Century Issues. 2nd ed. Wayte Raymond, New York.

Richardson, A. J. H.
1962
History of Signal Hill Area, St. John's, Newfoundland (Exclusive of Battle of Signal Hill, 1762). National Historic Sites Service, Ottawa.

Rose, E. R.
1952
Torbay Map-Area, Newfoundland. *Geological Survey of Canada, Memoir 265.* Canada, Department of Mines and Technical Surveys.

Webber, David A.
n.d.
Voyage to Defeat: A History of the French and British Campaigns at Newfoundland in 1762. Newfoundland Naval and Military Museum, Government of Newfoundland and Labrador, Vol. 3, No. 1.

Yoeman, R. S.
1966
A Guide Book of United States Coins. 20th rev. ed. Whitman Publishing Co., Racine, Wisconsin.

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