Nova Scotia

Department of Education

Nova Scotia Museum Complex

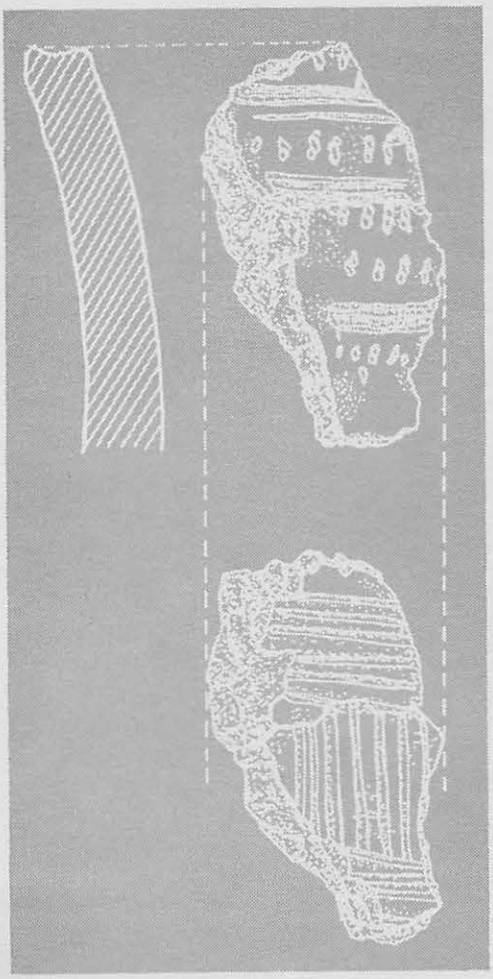
Curatorial Report Number 63

Archaeology in Nova Scotia 1985 and 1986

Edited by:
Stephen A. Davis
Charles Lindsay
Robert Ogilvie
Brian Preston

December 1987

Nova Scotia Museum
1747 Summer Street
Halifax, Nova Scotia, Canada
B3H 3A6



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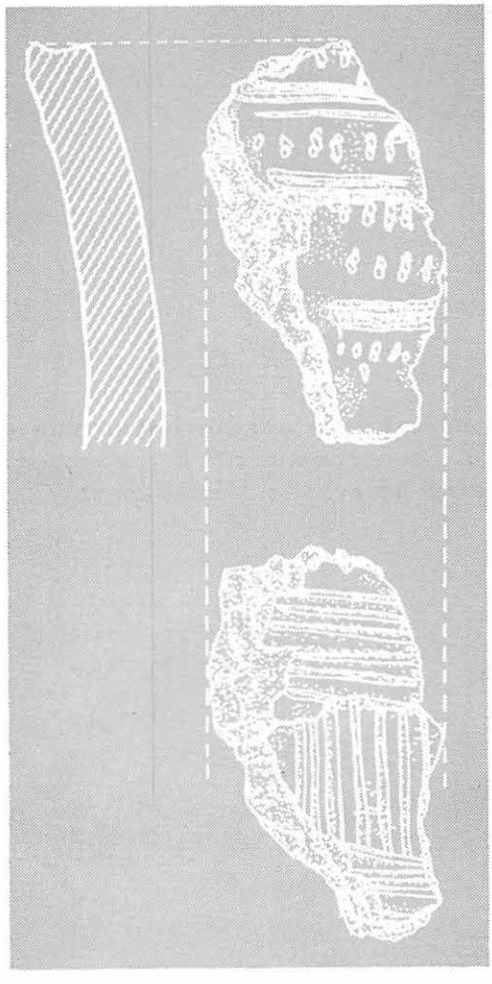

Nova Scotia Museum

Curatorial Reports

The *Curatorial Reports* of the Nova Scotia Museum contain information on the collections and the preliminary results of research projects carried out under the program of the Museum. The *Reports* may be cited in publications but their manuscript status should be clearly indicated.

The Editors would like to acknowledge the efforts of Mrs. Roberta Wittmann, Department of Anthropology, Saint Mary's University who word processed this report.

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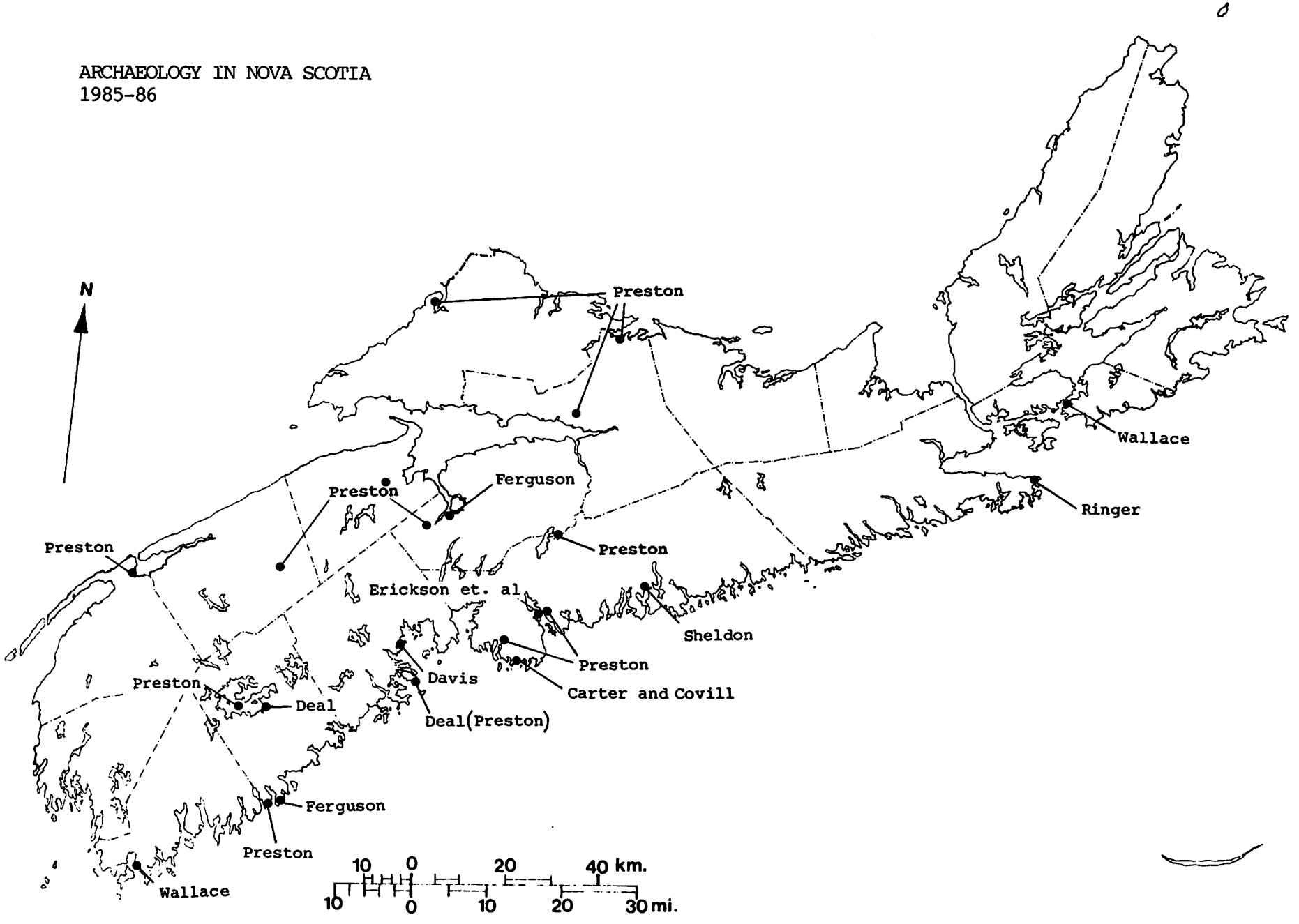
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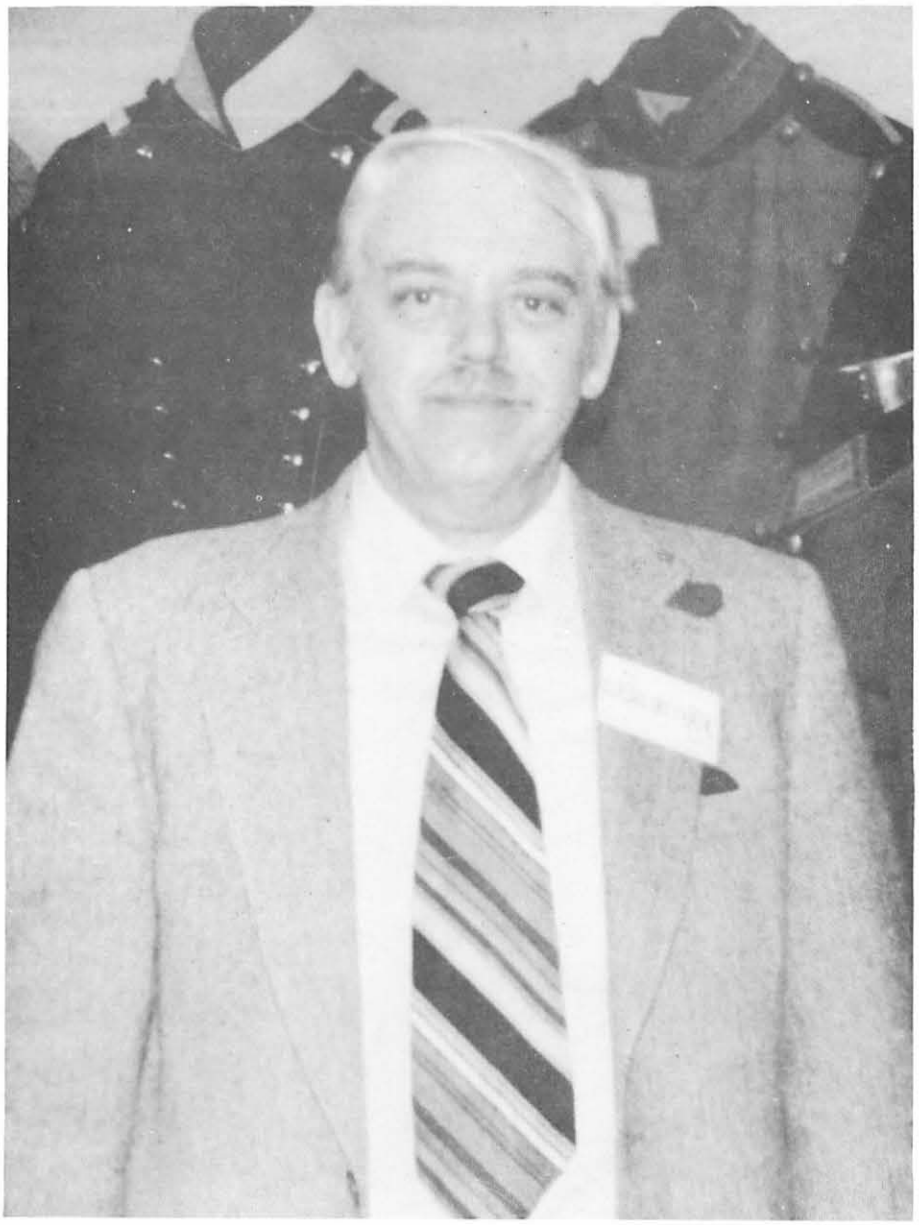

William A. Russell, 1928-1987

Dedication

William A. Russell, 1928-1987

Bill Russell died suddenly on July 31, 1987 in Halifax, Nova Scotia. His death was a shock to the small community of archaeologists in Nova Scotia who had come to appreciate his quick humour and dedication to our profession. Bill was a native son of Nova Scotia receiving his Bachelor of Arts degree from Saint Mary's University in 1950. He continued his studies at Ignatius College in Guelph where he received a second Bachelor's in 1954 with a combined major in Classics and Literature. This was followed by a Lic. Phil. in 1958 at Regis College, University of Toronto. Bill left Canada to complete a Masters of Arts Degree in Anthropology at St. Louis University which he received in 1961 with the presentation of his thesis: "The Structural Nature and Function of the Jesuit Mission Centre of Sainte Marie I: 1639-1649". Bill was enrolled in the Ph.D. programme of the Department of Anthropology at the University of Toronto in the years 1966 through 1970.

Bill's research was primarily focused on sites in Ontario. He began with two seasons at the Ste. Marie I. site, five at the Fournier site and three at Cahiaque. His activities in Ontario were interrupted by a year in Flintshire, Wales where he cleaned, classified and restored a nineteenth century collection from two Bronze Age Tumuli. He returned briefly to the Maritimes in 1970 and assisted on the National Museum of Man's Passamaquoddy Bay Project and the Cow Point Burial site. In the period 1972 to 1975 he was employed with the Historical Sites Branch, Parks Division, Ontario Ministry of Natural Resources in Toronto: his first two years were as a Historical Systems Planner followed by two years as a staff archaeologist. From 1975 until his retirement in 1980, Bill was the archaeological coordinator for administrating the licensing program and overseeing the Archaeological Grants Program of the Ontario Heritage Foundation.

Bill returned to Nova Scotia in 1980 and soon became involved in the local scene. His experiences gained in Ontario led to his appointment as a member of the Special Places Advisory Committee and as an archaeological consultant to the Museum of Industry and Transportation. At the time of his death Bill had been working on the history of the Shubenacadie Canal, plans are being made to publish this important contribution to the history of Nova Scotia.

Bill is survived by his wife Irene and his mother, Margaret, and by those of us who were his colleagues and friends who remember him with great affection.

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ARCHAEOLOGICAL RESEARCH IN NOVA SCOTIA

The papers in this volume are the inaugural series of reports for an annual publication of archaeological investigations carried out within the Province of Nova Scotia. They represent the preliminary statements of research results required by the terms of the Special Places Protection Act (1980). The purpose of this Act is to govern the preservation, protection, regulation, exploration, excavation, acquisition and study of archaeological and historical remains and palaeontological sites which are considered important parts of the human or natural heritage of the Province. As such, the Act states that no person shall carry out explorations or make excavations on any land in the Province, including land covered with water for the purpose of seeking archaeological, historical, or palaeontological objects or remains, without a Heritage Research Permit. This Act is administered by the Nova Scotia Museum. For further details or legal questions, the Act, in Chapter 17 of the Statutes of Nova Scotia 1980 should be consulted.

The Nova Scotia Museum has taken a number of initiatives in archaeology since the passing of the Special Places Protection Act. Included amongst them is the inception of a curatorial position to administer the Act. The duties of the position include the awarding of Permits under the Act as well as receiving and reviewing reports resulting from archaeological investigations within the Province. The assistant Director of the Nova Scotia Museum complex, along with the Curator of Special Places and the Curator of History (archaeology), has also instituted an annual workshop in archaeology to discuss current issues and problems related to the discipline as it functions in Nova Scotia. One of the most pressing issues identified during the first workshop was the need for a mechanism for dissemination of preliminary research results and site reports. This publication series represents an attempt to alleviate this particular problem by reporting

summary results. The series will also include more substantive reports as they become available.

The publication issue was one area of concern within the larger problem of creating greater public awareness of archaeology in the Province. A second avenue for developing awareness was to establish a Society which would deal with archaeology. David Christianson offered to chair an ad hoc committee to oversee the establishment of such a group. The committee met a number of times and a formal series of public meetings were held with the result that the Nova Scotia Archaeology Society will be incorporated in the winter of 1987. The Halifax chapter of the Society has a membership of approximately seventy individuals. It is hoped that other chapters will be formed throughout the province.

The 1985 workshop also led to the formation of an ad hoc committee to deal with Urban Archaeology. This group has met a number of times to deal with particular problems related to developments in Halifax. Unfortunately, no clear policy statements have been forthcoming. The issue of Urban Archaeology and the impact of ongoing developments in the downtown core of Halifax is a complicated problem which will require time and cooperation by all concerned before it can be resolved.

The first article in this report illustrates the need for a policy on Urban Archaeology. The Sellon Site was selected for test excavations after archival research identified the possible existence of an eighteenth century residence in an undisturbed context. The excavation was proposed to provide contextual data for eighteenth century material culture from Halifax to offset the lack of such evidence from the Central Trust Site (Davis et al: 1987). It was also designed to test the effectiveness of archival research in an urban setting. The preliminary results support both of the objectives and highlight the need for an urban archaeology policy in Halifax.

The report by Birgitta Wallace, Parks Canada, summarizes survey and test results at two historic sites. The first involves testing at the site of the French fort at Port Toulouse (1717). The investigations centered on the confirmation of the location of the fort, a survey of surface features and the testing of selected features.

The second location to be reported on is the site of Fort Saint Louis dating to 1630. The project was designed to clarify the debate as to where Fort Saint Louis was located.

The short article by Davis is a report on the test excavations at Whynachts Cove on Indian Point, Lunenburg County. The site had been excavated and reported on early in this century by Wintemberg (Smith and Wintemberg 1973). The objective of the testing was to evaluate the extent of natural and cultural distubances since this pioneering work.

The report by Michael Deal involves the investigation of two man-made cairn features located at Stonehurst, Lunenburg County. The property owners had requested that the features be investigated. The objective of the project was to determine the age and cultural affinities of the cairns.

Robert Ferguson, Parks Canada, reports on preliminary test excavations at the Fort Edward National Historical site at Windsor, Hants County. The purpose of the testing was two-fold; to determine the extent of the eighteenth century palisade and a later fraise, and to monitor the placement of floodlights and subsurface wiring around the blockhouse.

The second report by Robert Ferguson, Parks Canada, details the survey results at the Kejimkujik National Park Seaside Adjunct. The purpose of the survey was to record the cultural resources within the boundaries of the newly acquired property prior to its development as a park area.

The preliminary report by Helen Sheldon outlines the excavation results from two late prehistoric sites at the head of the eastern arm of Jeddore

Harbour, Halifax County. The project was initiated to provide data for a better understanding of the late Ceramic Period on the eastern shore of Nova Scotia. A detailed site report has been submitted as partial fulfillment of the requirements for a Masters of Arts Degree, Memorial University of Newfoundland (Sheldon 1987). The Nova Scotia Museum will be publishing the results of Ms. Sheldon's excavation as a special report within this series.

The extensive report on Indian Gardens by Michael Deal and his students outlines their test excavations conducted as a field school. The report also includes descriptions of artifacts recovered from this site by Thomas Raddall in the early half of this century.

The section presented by Brian Preston, Curator of Archaeology, Nova Scotia Museum, is a summary of his yearly activities related to archaeology. The report contains discussions ranging from a Palaeo-Indian fluted point preform to Castle Frederick, the eighteenth century DesBarres estate.

Two special interest reports are also included. The first is an evaluation by John Carter and James Covill of a diver-operated computer as a tool for underwater archaeology. The second is a preliminary report by James Ringer of an underwater survey of the Canso Islands area of Guysborough County, Nova Scotia.

The various articles presented in this publication represent the efforts of numerous individuals who collectively are attempting to record and interpret the heritage resources of Nova Scotia. The editorial committee has simply assembled the reports and edited them for style and presentation. The content of each article and the opinions and conclusions presented are those of the individual authors. The role of the committee has been to disseminate the information as quickly as possible and in this regard we would like to extend our appreciation to the authors for their cooperation.

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Davis, S.A., C. Cottreau and L. Niven

1987 Artifacts from Eighteenth Century Halifax Heritage Division, City of Halifax, Halifax.

Sellon Site (BdCv:7)

Paul Erickson, Dawn Mitchell, Laird Niven
Katie Cottreau and Nicola Hubbard
Department of Anthropology
Saint Mary's University

Abstract

This Preliminary Report reviews work carried out during the Spring and Summer of 1986 in accordance with Heritage Research Permit 1986NS5. The work was inspired by a growing interest in urban archaeology in general and the threatened loss of a major archaeological site in Halifax in particular. Its goal was to test the effectiveness of premeditated archival research as a means of locating urban archaeology sites.

From archival research we concluded that property near what is now the southwest corner of the intersection of Barrington and Cornwallis streets contained a residence, perhaps dating back to 1752, when the property was first granted to Ebenezer Fales. Archival documents refer to the burning of a residence there in 1787. The site has been called the Sellon Site, after Samuel Sellon, whose grandmother lived in the residence that burned.

Our excavation concentrated on a 5m x 5m square. A foundation wall and possible hearth area were discovered as well as more than 2,000 artifacts. A burn layer discovered within the foundation supports the conclusion that the foundation belongs to the house destroyed in 1787. This layer was encountered at a depth of approximately 50cm and ended at a depth of 70cm, where sterile soil was reached. It contained only 18th century artifacts.

We recommend that a full-scale excavation of the Sellon Site be undertaken as soon as possible.

Introduction

Our project began in the Spring of 1986 amidst growing interest in the preservation of early urban archaeological sites in Halifax and concern over the recent destruction of the Central Trust Site (BdCv:5). Its goal was to test the effectiveness of archival research as a means of locating sites in an urban setting. The project was initiated by Paul Erickson. It was designed by Nicola Hubbard and Dawn Mitchell and directed by Mitchell with Hubbard serving as consultant. Full-time crew members were Katie Cottreau, Laird Niven and Paul Erickson. Part-time crew members were Barbara Bishop and Joseph Tramble. The site is owned by the City of Halifax and has been designated BdCv:7 in the Borden system.

Archival research indicated that an 18th century residence had been located near the southwest corner of the intersection of Barrington and Cornwallis streets. Our search for the residence took place between May 17 and June 1, 1986. Within that time we located the remains of a building. The evidence leading us to believe that this is the sought-after 18th century residence is presented in this report. Artifacts recovered from the excavation of BdCv:7 were taken to Saint Mary's University. During June, 1986, they were cleaned, catalogued and analyzed. This work is summarized in the Appendix on Material Culture Analysis.

On June 3, 1986, after preliminary excavation was completed, Paul Erickson and Dawn Mitchell met with Museum and City officials to discuss the future of BdCv:7. Everyone agreed that the site was important enough to warrant a full-scale excavation, and the excavators and the Museum planned to seek joint funding for such a project. Except for work at the Halifax

Citadel, it would be the first premeditated urban archaeology project in the history of Halifax.

This Preliminary Report comprises three separate reports: an Archival Report; an Archaeology Report; and an Appendix on Material Culture Analysis. The Archival Report presents the history of the site and surrounding area. The Archaeology Report reviews the excavation procedures, relates the archaeology to the history of the site and describes the two main features encountered. It also contains suggestions for future research. The Appendix on Material Culture Analysis is an artifact catalogue.

Archival Report

by Paul Erickson

Introduction

Archival research for the project began in the Spring of 1986. As soon as sufficient material had been collected to provide a solid basis for archaeology, an application for a permit to test the site was submitted. Archival research continued through July in order to double-check information, expand our knowledge and provide new reference material as the archaeology proceeded.

This Archival Report is divided into two parts. The first part is a history of the BdCv:7 site. The second part is a more general survey of relevant buildings in the surrounding area.

BdCv:7 Site History

BdCv:7 lies in the northeast corner of Lot 11 of Section A in the old Halifax North Suburbs (see Fig. 1). Originally the North Suburbs extended from the northern Town boundary to North Street. The main roads were Upper Water along the shore, Brunswick on the hill above it and, later, Gottingen farther west. The North Suburbs began developing in the 1750s when they were settled by German immigrants. Through a crude Anglicization of the German word Deutsche the area became known as Dutch Town. Another spur to development was creation of the Royal Naval Dockyard in 1759. The Dockyard began at the foot of Artz Street and eventually spread between Gerrish and North. Many North Suburbs residents were Dockyard employees (Erickson 1986).

Lots in the North Suburbs were larger than lots in the Town. They fronted on main roads like Brunswick and averaged approximately 100 feet wide

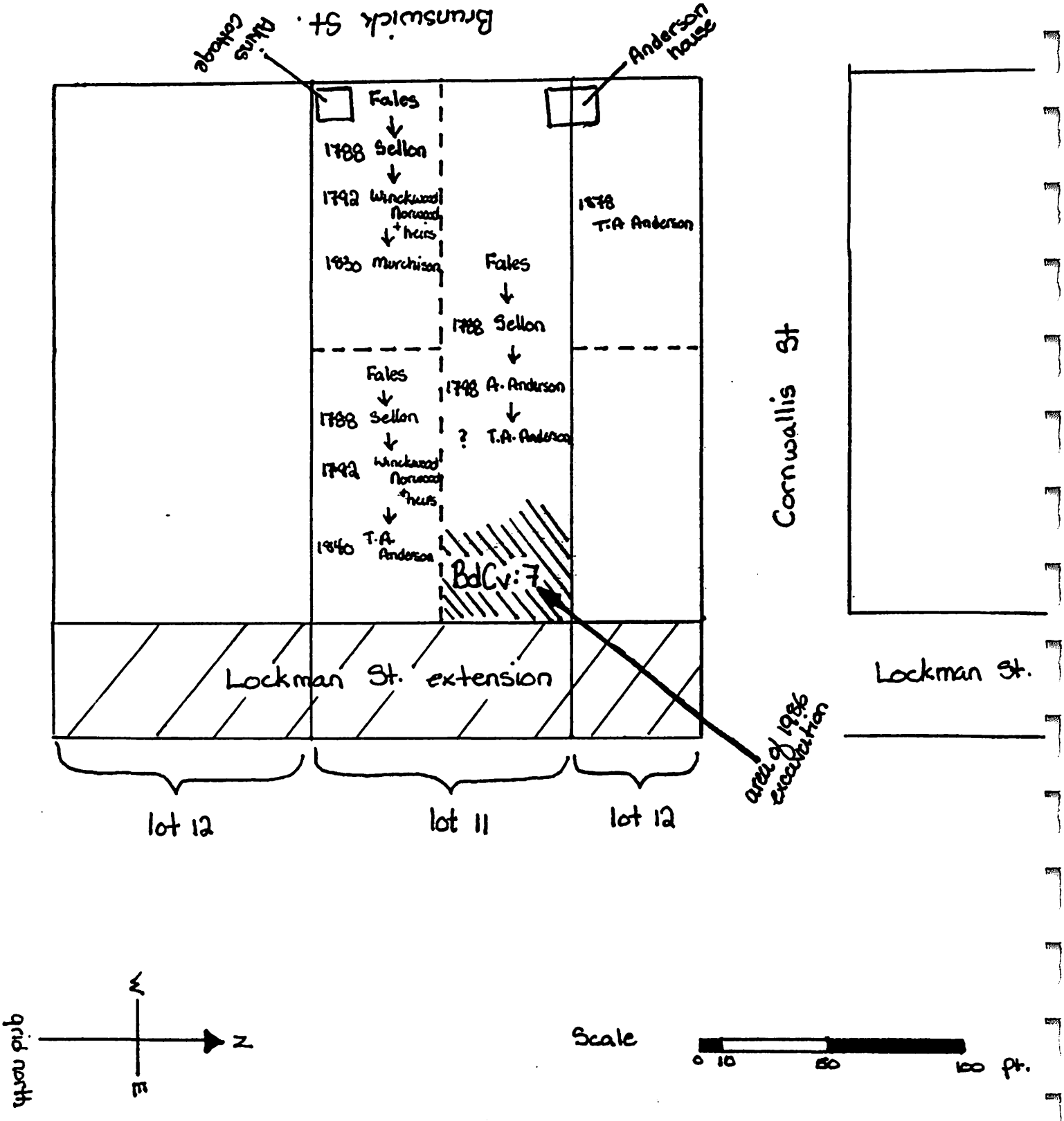

FIGURE 1. Site History Diagram

by 250 feet deep, or approximately 1/2 acre.*. Lot 11 was of average size. Its border began approximately 50 feet south of Cornwallis Street, ran 100 feet south along the eastern side of Brunswick Street, 250 feet east along the northern border of Lot 10, 100 feet north along the western border of Lot 13 and then 250 feet west along the southern border of Lot 12 (Public Archives of Nova Scotia [hereinafter PANS] V_6/240 Town of Halifax North Suburbs; PANS RG 47 Reel 867 Allotment Book) (see Fig. 1). The land sloped steeply toward the harbor, affording a splendid view that made it attractive for settlement.

In 1752 the British Crown first granted Lot 11 to Ebenezer or Eleanor Fales. The name Eleanor appears only twice in archival documents connected with Lot 11, once on an early map of the area (PANS V_6/240 Town of Halifax North Suburbs) and again in the Crown Allotment Book (PANS RG 47 Reel 867 Allotment Book) and probably is a clerical misspelling of Ebenezer. Probably Eleanor Fales never existed and Lot 11 was granted to Ebenezer Fales alone.

The Fales surname was rare in early Halifax. Ebenezer probably belonged to the Fales families of New England. An Ebenezer Fales was born on May 28, 1812, in Walpole, Massachusetts. He married Mary Fales on August 8, 1733, and fathered several children, including a son Benjamin, who was born on July 7, 1738. Father and son are alleged to have emigrated to Nova Scotia, with Benjamin ending up in Annapolis County sometime after 1760 (Crowell n.d.:191). In 1786 Ebenezer and Benjamin Fales acquired adjacent parcels of land totalling 600 acres in Wilmont Township (PANS RG 20 Ser. A 1786 No. 492). The Fales surname is common in Annapolis County today. I am attempting to learn more about the family from Ruth Burgess (personal communication) of the MacDonald Museum in Middleton, Nova Scotia.

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*For historical authenticity, English measurement units have been retained in the Archival Report.

On March 6, 1788, Samuel Sellon petitioned the Crown to have Lot 11 granted to him. In his petition (PANS RG 1, Vol. 377 Book of Escheats No. 113) he stated that his grandmother had lived on the Lot for at least 15 years and that her house had burned or otherwise been destroyed the preceding Fall. Because his grandmother was unable to rebuild, she attempted to deed the property over to Samuel but lacked proper title to the grant. The Crown responded by ruling that Ebenezer Fales had been away from the Province for more than seven years and had failed to develop his Lot properly. On June 18, 1788, it escheated the Lot and regranted it to Samuel Sellon (PANS RG 1 Vol. 377 Book of Escheats No. 113).

So far I have been unable to identify Samuel Sellon's grandmother by name, to determine how she came to occupy land granted to Ebenezer Fales or to determine whether the two families were related. Nevertheless, the Archaeology Report shows that BdCv:7 probably contains the remains of Samuel Sellon's grandmother's house that burned in the Fall of 1787. It is possible that her house was built by Ebenezer Fales as early as 1752.

Samuel Sellon's grandmother's house appears on Blaskowitz's 1784 Plan of Halifax and is drawn on a 1786 watercolor sketch of the Royal Naval Dockyard (PANS Photo Col. C-2557). It was a rectangular building long on the east and west and short on the north and south. The watercolor sketch shows that it had a roof like the gambrel roofs of North Suburbs Dutch cottages built at that time. Some of these cottages survived into the 20th century. An alleged 18th century cottage located one block west of BdCv:7 and photographed in 1929 (PANS Photo Col. Halifax Houses Ga 1) looks like its foundation dimensions were approximately 25 feet x 15 feet.

Samuel Sellon was born in Halifax on January 3, 1765. His parents were probably Thomas Sellon and Sarah Wickham, who were married on January 22, 1764. There is some evidence that Samuel married three times (PANS MG 1 Vol.

1621 N11373). His last wife was Charity Norwood, whom he married probably on September 25, 1786. Samuel and Charity had seven children whose descendants have been traced down into the 1950s (PANS MG Vol. 1650 Reel 16). The 1986 Halifax/Dartmouth telephone directory lists six individuals with the Sellon surname.

In his petition, Samuel stated that he was ready to build a house on Lot 11. If he did, he might have built it on the foundation of his grandmother's burned house. Sellon worked all his life as a shipwright (carpenter) at the Dockyard, beginning as a teenager during the American Revolutionary War. He appears to have moved from Lot 11 by 1798. By 1811 he had become a Foreman of Shipwrights, and by 1839 he and his wife had moved to Coffin's Island near Liverpool, Nova Scotia (PANS Uncompleted Land Grants no. 365 Samuel Sellon). Charity Sellon died near Liverpool on June 22, 1839, at age 73 (Acadian Recorder, July 8, 1839, p. 3), and Samuel Sellon died there on February 25, 1851, at age 87 (Nova Scotian, March 10, 1851, p. 79).

In 1792 Sellon sold the southern half of Lot 11 to Winckworth Norwood, an apparent relative of his wife Charity, for 25 pounds. The southern half-lot fronted 50 feet along Brunswick beginning approximately 100 feet south of Cornwallis. With a depth of approximately 250 feet, this amounted to approximately 1/4 acre (PANS RG 47 Reel 882 Vol. 32 p. 153) (see Fig. 1).

Like Samuel Sellon, Winckworth Norwood was a shipwright who raised a large family while working all his life at the Dockyard. He died on August 30, 1821, at age 56 and is buried in the "Little Dutch Church" cemetery at the corner of Gerrish Street and Brunswick. Beside him is his wife Catherine Norwood, who died on August 1, 1811, at age 42. In 1821 the newspaper Acadian Recorder announced that Winckworth Norwood's funeral would take place at "...his late residence in Dutch-town, near the Round Church... (September 1,

1821, p. 3)." That residence was almost certainly the building now known as Akins' Cottage, which is situated at the southwest corner of old Lot 11. The architecture of Akins' Cottage suggests that it was built during the period that Winckworth Norwood owned the lot, i.e. 1792-1830 (Gary Hanley personal communication).

After Norwood's death, his estate remained unsettled until 1830, when his heirs divided the southern half of Lot 11 into eastern and western parts and sold them separately. They sold the western part to John Murchison, who at the time was living in Winckworth Norwood's "late residence". The western part measured approximately 50 feet by something in excess of 100 feet, or approximately 1/8 acre. The purchase price was 400 pounds (PANS RG 47 Reel 899 pp. 342-344). A few years later this property passed into the hands of the Beamish and Akins families. For many years it was home to Thomas Beamish Akins, the first Provincial archivist of Nova Scotia, from whom it acquired its present name. Akins wrote that in the early 19th century Brunswick Street was in parts overgrown with grass, and where old Dutch cottages remained, they stood "...on banks a few feet above the sidewalk and where there were no buildings rough stone walls or fences marked the line of the street (Akins 1895:173-174)." In 1986 Akins' Cottage was restored to become offices of Mettam Wright Associates Limited.

In 1830 Winckworth Norwood's heirs sold the eastern part of the southern half of Lot 11 to Thomas Alexander Anderson for 90 pounds (PANS RG 47 Reel 889 Vol. 53 pp. 322-325) (see Fig. 1). The eastern border of old Lot 11 is now Barrington Street, but in Samuel Sellon's time this part of north Barrington Street did not exist. North Barrington's predecessor, Lockman Street, extended only as far south as Cornwallis, where it became a dead end. There is evidence that a cul-de-sac extension was created at an early time, perhaps to provide access from Cornwallis Street to the house of Samuel Sellon's

grandmother. The 1830 deed of sale between Thomas Alexander Anderson and Winckworth Norwood's heirs gives Lockman Street as the eastern boundary of Lot 11 (PANS RG 47 Reel 889 Vol. 53 p. 322), and an 1830 City map gives more evidence that Lockman extended that far south (PANS V_6/240-1830 Halifax, North & South Suburbs). Later this extension was widened, lengthened and made more formal, so that by 1865 at least four buildings were located along its western side (PANS V_6/239 - 1865 Metropolitan Halifax). By 1873 Lockman was connected to Barrington Street downtown, and by 1880 the entire thoroughfare was renamed Barrington (PANS V_6/240 - 1872-73 Map of the City of Halifax).

The 1830 sale of land to Thomas Alexander Anderson had one curious twist. On the very day that Anderson bought the land from Winckworth Norwood's heirs, he sold it back to them for the same price (PANS RG 47 Reel 899 Vol. 53 p. 324), a transaction probably designed to avoid taxes. Thomas Alexander acquired the southeastern quarter of Lot 11 again in 1840, when he bought it from Winckworth Norwood's son William for 15 pounds (PANS RG 47 Reel 907 Vol. 69 no. 131).

Back in 1798, six years after selling the southern half of Lot 11 to Winckworth Norwood for 25 pounds, Samuel Sellon sold the northern half of Lot 11 to Alexander Anderson for 200 pounds (PANS RG 47 Reel 882 Vol. 33 p. 265). Barring extraordinary inflation and fluctuation in the value of the pound, this price difference might mean that the northern half contained more valuable buildings, perhaps a house built by Samuel Sellon. On the other hand, Sellon might have charged Winckworth Norwood less because he was his wife's relative.

Like Samuel Sellon and Winckworth Norwood, Alexander Anderson was employed at the Dockyard, where he was Superintendent of Naval Stores. He was born in Scotland in 1758, earned an MA degree from Aberdeen College and with

his wife Ann (b. 1760) produced three children (PANS MG 100 Vol. 102 Nos. 16-16b). He died on January 31, 1833, at age 75 and is buried in Halifax in the Grafton Street Churchyard (Nova Scotia Royal Gazette, February 6, 1833, p. 3). There is no evidence that he sold the northern half of Lot 11 before he died.

Alexander Anderson died without a will, and his wife Ann became administrator of his estate, which she valued at 368 pounds (PANS RG 48 Reel 396 A33). It is possible that Ann inherited the northern half of Lot 11 from her husband, but so far I have been unable to find a record of such a transaction. In the 19th century, the property rights of widows were limited, so it is more likely that the northern half-lot was inherited by her son Thomas Alexander. Ann Alexander died in 1837 (PANS MG 100 Vol. 102 Nos. 16-16b). So far I have been unable to locate her will, estate papers or any evidence of transfer of property to Thomas Alexander. Nevertheless, after his mother's death, if not before, Thomas Alexander Anderson became owner of the northern half of Lot 11, which he consolidated with the eastern part of the southern half of Lot 11 and the western part of Lot 12.

Thomas Alexander Anderson was born in 1799 and at least for a while had a career with the military (PANS RG 5 Ser. G.P. Vol. 10 No. 17). On August 27, 1852, he married Caroline Goreham (1825-1914) (Nova Scotian, September 6, 1852, p. 293) and then fathered four children. By 1869, when McAlpine's Halifax City Directory began annual publication, he was living at #93-#95 Brunswick Street in a house that straddled the border between old Lot 11 and Lot 12. Thomas Alexander Anderson died on January 26, 1875, and is buried in Halifax in Camp Hill Cemetery (PANS MG 100 Vol. 102 Nos. 16-16b). Hopkins' 1878 City Atlas of Halifax (p. 19) labels the northern half of Lot 11, the eastern part of the southern half of Lot 11 and the western part of Lot 12 as "[Thos. A.] Anderson Estate." Anderson's house was located on the Brunswick Street side of the estate. Samuel Sellon's grandmother's house would have

been located on the Barrington Street side in the area of BdCv:7. The portion of Lot 11 on which BdCv:7 is located apparently remained Anderson land for at least 80 years.

After Alexander Anderson bought the northern half of Lot 11 from Samuel Sellon, he might have used it in one of three ways. First, he might have left it undeveloped, which seems unlikely. Second, if Samuel Sellon had built a house on the Lot, Anderson might have lived in it, at least for a while. Third, if Sellon did not build a house, or if the Sellon house were deemed unsatisfactory, Anderson might have built a new and better house on Brunswick Street, later occupied by his son Thomas Alexander. This third possibility (or some variation of it) seems most likely. If there was a Sellon house, it probably survived at the rear of the Anderson estate and became incorporated into outbuildings that appear there in Goad's Insurance Plan of the City of Halifax (1895:14).

Surrounding Area

The 3/4 acre of land surrounding BdCv:7 is almost entirely vacant. The only structures on old Lots 11 and 12 are Akins' Cottage and a large Mediacom billboard next to our excavation site. In the 1960s and 1970s the City of Halifax cleared this land to make way for urban renewal and possibly an expressway along Barrington Street. There is a longstanding plan to construct a traffic interchange at the Cornwallis/Barrington intersection. The eastern part of this vacant land is still owned by the City, which leases part of it to Mediacom. Recently the City sold the western part to Mettam Wright Associates, who, in conjunction with their restoration of Akins' Cottage, will help design townhouses along Brunswick and Cornwallis.

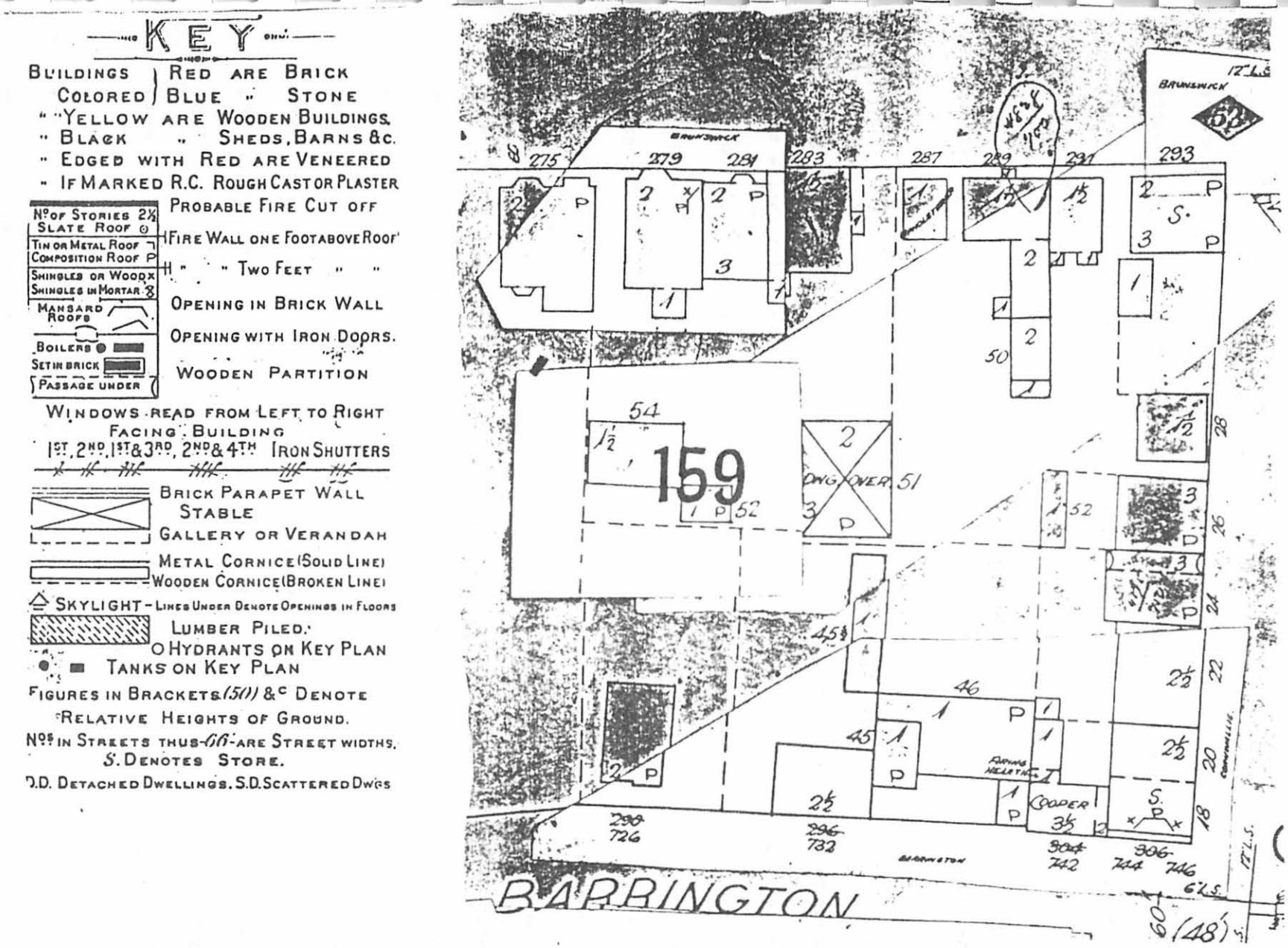
The Barrington/Brunswick/Cornwallis area has been occupied for more than 200 years. Street-front buildings there have created an open interior

"courtyard" that contains debris from this entire time span (PANS V_6/240 -- Halifax Bird's Eye View). A thorough excavation of BdCv:7 would encounter this debris as well as foundations and artifacts from adjacent 19th and 20th century buildings. To help guide such an excavation, I have prepared a brief inventory of buildings surrounding BdCv:7 on old Lots 11 and 12. The inventory is gleaned from documents already cited, especially annual editions of McAlpine's Halifax City Directory. The description given here is oriented to Goad's 1895 Insurance Plan, reproduced as Figure 2.

On Brunswick Street, #283 is Akins' Cottage, discussed earlier. This property was first numbered #87 and later #2151 Brunswick, its present civic address. After 1900, a basement apartment in the Cottage was given the number #283 1/2 Brunswick. The land just north of Akins' Cottage was first numbered #89 and later #285 Brunswick. For a long time it was vacant, but by 1920 people were living there, probably in a large building set back from the Street that the Insurance Plan labels a stable. This building appears in a 20th century photograph of Akins' Cottage (PANS photo Col. Halifax Houses T.B. Akins).

The next property north was first numbered #91 and then #287 Brunswick. It remained vacant until about 1884, when Edward Dockrill established an upholstery there. Dockrill lived just north of the upholstery at #289 Brunswick. This upholstery evolved into Dockrill Brothers cabinet makers, antique furniture store and furniture repair shop. The building survived until at least 1960.

The compound building first numbered #93-#95 and then #289-#291 Brunswick was the home of Thomas Alexander Anderson, which the Dockrills probably acquired after Anderson's death. Viola Dockrill stayed at #289 until at least 1960, but #291 Brunswick passed into other hands, and by 1925 it had become



One inch = fifty feet

FIGURE 2. Goad's Insurance Plan of the City of Halifax (1895)

Ang Kee's Chinese Laundry. The laundry remained until at least 1960.

The Brunswick Street property at the corner of Cornwallis was first numbered #97 and then #293 Brunswick. In 1869 this was E. K. Brown's hardware store. A few years later it became Charles McQueen's confectionery and fancy bakery. By 1900 it had been converted into flats or a rooming house for male laborers, tradesmen and widowed women. The building survived until at least 1975.

The foundations of all these old Brunswick Street buildings are exposed at or above ground level today. Soon they will be disturbed or covered over by construction of the new townhouses.

Around the corner from Brunswick, on Cornwallis Street, is land first numbered #30-#32 Cornwallis. This land, marked today by an old curbside tree, has always been vacant. The rest of Cornwallis Street, east to its intersection with Barrington, was fully developed before 1878. As the Insurance Plan shows, most buildings there were attached frame residences of various heights, some of which may have been replaced after the Halifax Explosion of 1917 (PANS V_6/ 140 -- 1973 Halifax).

During the 19th and early 20th centuries, #18-#28 Cornwallis Street were occupied by many people. Sometimes these residences were privately owned, but usually they were rented. Most of the occupants were laborers or tradesmen with a sprinkling in the 19th century of what today would be called white-collar workers. By 1890 #18 Cornwallis, at the corner of Barrington, was occupied by Thomas Mulcahy, who operated a cooperage around the corner. The Mulcahy family lived there until at least 1935. By 1965 #18 disappeared from the City Directory, and by 1975 all buildings along Cornwallis were demolished.

The foundations of most of these old Cornwallis Street buildings are exposed at or above ground level today. The western foundations will soon be

disturbed or covered over by construction of the new townhouses. The eastern foundations have been disturbed by grading and removing land to enlarge the right-turn traffic lane on Cornwallis.

Barrington Street properties at the corner of Cornwallis were situated on old Lot 12. Lot 12 was only 50 feet wide, so these properties abutted the BdCv:7 site. Their civic addresses changed at least three times before 1950, and because they were used for commerce and light industry, it is difficult to identify them precisely. I believe that old Lot 12 includes properties first numbered #14-#16 Lockman, next #304-#308 Barrington and then #798-#802 Barrington (the Insurance Plan is erroneous here). In 1869 these were a cooperage, and at various times they have been a locksmith's, dry goods store and, in 1910, part of W. J. Regan's Harness and Horse Furnishings (Barrington Street was an important route of the horse-drawn Halifax Street Railway). The Mulcahy family operated the cooperage until at least 1925. After that the property became a corner grocery and variety store, and by 1975 it was demolished.

Some Barrington Street businesses may have used what the Insurance Plan labels "sheds, barns, etc." to the south on old Lot 11. These structures were located on the BdCv:7 site. Parts of them overlay, surrounded or intersected the position of Samuel Sellon's grandmother's house. These "sheds, barns, etc." were probably outbuildings at the Barrington Street side (the rear) of Thomas Alexander Anderson's estate. They were set back from the street, yet not far enough to allow construction of street-front buildings in front of them. I believe that the civic addresses in this area were first #8-#12 Lockman, next #298-#302 Barrington and then #790-#796 Barrington. The City Directory routinely omits them or lists them as vacant.

On Barrington Street abutting BdCv:7 to the south is the land directly

behind Akins' Cottage. This is the eastern part of the southern half of old Lot 11 that Thomas Alexander Anderson bought in 1840. In 1869 a street-front building was there, and it survived until at least 1980 as a rooming house. I believe that its civic address changed from #6 Lockman to #296 Barrington and then to #798 Barrington (again the Insurance Plan is erroneous) and was #2184 Barrington when it was demolished. The northwest corner of a building foundation is currently exposed washing out of land cut for widening of Barrington Street. This is likely to be the foundation of the rooming house.

Altogether, the area surrounding BdCv:7 represents a slice of North End life spanning two hundred years. Part of it includes once-fashionable Brunswick Street. Most of it was residential, ranging from working class to middle class in character. There were retail and commercial stores and some light manufacturing. When Halifax housing was in short supply, especially during wartime, the area was crowded with people. After World War II this part of the North End declined, and buildings were razed for urban renewal, now underway.

Archaeology Report

by Dawn Mitchell

Introduction

The Sellon Site preliminary excavation has yielded some of the surviving material remains of a dwelling which burned down in the 18th century. The portion of the foundation uncovered, the stratigraphy of the site (including a heavy charcoal layer) and the associated artifacts, all lead to this conclusion. The remains also comply with archival research on the site which reveals that an 18th century residence, once located near the southwest corner of the intersection of Barrington and Cornwallis streets, burned down in 1787. We believe we have found the remains of this building.

This Report reviews the excavation procedures, relates the archaeology to the history of the site and describes the two features uncovered. Conclusions are drawn and suggestions for future research are presented. The material culture analysis is contained in the Appendix.

The Site

The Sellon Site is located on the property at the corner of Cornwallis and Barrington streets close to downtown Halifax. The site falls entirely within the boundary of Lot 11 in the land grant map of 1755 (see Fig. 1). This lot was originally bounded by Brunswick Street on the west, Lot 12 on the north (the last lot on the block, with Cornwallis Street at its northern boundary) and on the south by Lot 10. The eastern portion of the original Lot 11 became part of what is now Barrington Street. The Blaskowitz Plan of 1784 shows clearly that the residence we were seeking was west of the present Barrington Street.

The southwestern corner of the original Lot 11 is now occupied by Akins' Cottage (see Fig. 3). East and northeast of this cottage is a slightly elevated mound which, residents of the area say, contains fill from the construction of the Uniacke Square housing development on Gottingen Street in the 1960s. This is a rocky, flat-topped mound with scrub vegetation. On the southeast corner of the mound is a cluster of young elm, poplar and maple trees. A lush grassy area is east of the mound. The area of excavation lies to the east of this grassy section and has relatively flat topography with very little vegetation cover. The flora in this area has been significantly disturbed, as would be expected in an urban location. The entire lot is located on a hill or drumlin sloping towards the harbor. The eastern portion of the lot is truncated abruptly by Barrington Street, and there is a vertical drop of 2.2 meters to street level.

Noticeable features include an old foundation being eroded out of the truncated hill at the eastern edge of the property. There is a Mediacom billboard north of the area excavated this summer, and there is a well-trodden footpath running diagonally across the lot from its southeastern corner. Motor access to the site is gained via two gravel driveways off Cornwallis Street.

Reasons for Excavation

In 1984 an accidental archaeological find of major proportion was made in Halifax when the site of the Central Trust Building was excavated in preparation for development. Archaeologists were called to the site to conduct a salvage operation, but unfortunately much of the material had already been removed. Still, over 20,000 18th century artifacts were recovered. The loss of the archaeological context of such important early material, and the problem of undertaking an archaeological excavation on a

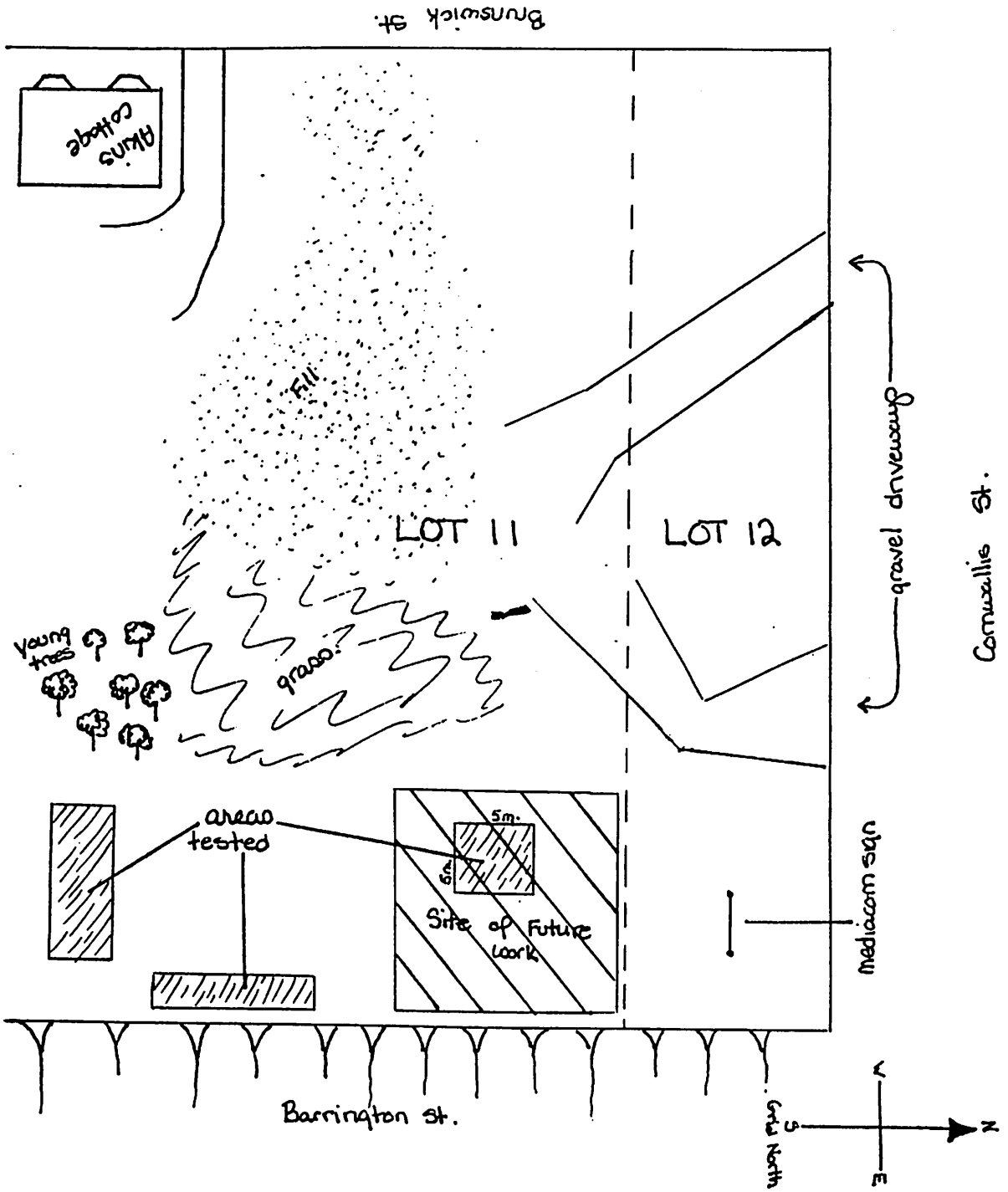


FIGURE 3. Schematic Diagram of the Area

site already under development, led several different parties to review the situation. They independently came to the conclusion that early archival research would avoid such salvage operations.

One of the first people to come to this conclusion was the Heritage Co-ordinator for the City of Halifax, A. W. Churchill. In 1985, Mr. Churchill supervised an inventory of potential archaeological sites in Halifax. Nicola Hubbard was hired to undertake the project. Her report included guidelines for assessing the archaeological potential of sites, as well as recommendations for future work (Hubbard 1985).

Working independently, Paul Erickson of Saint Mary's University also decided early archival research was essential. In 1986 he produced a history of Halifax's North End (Erickson 1986) and initiated our joint archival/ archaeological project. The goal of the project was to test the effectiveness of premeditated archival research as a means of locating urban archaeological sites. To this end a site in North End Halifax, at the corner of Cornwallis and Barrington streets, was chosen for research and excavation. The site is currently vacant and owned by the City. Dr. Erickson conducted the initial archival research with the help of Dawn Mitchell. They established that an 18th century residence had once existed at the eastern end of Lot 11. Research revealed that the house had been destroyed by fire in 1787. This meant that remains of the house might be identified precisely from our knowledge of the fire. Using archival information as the guide, excavation began.

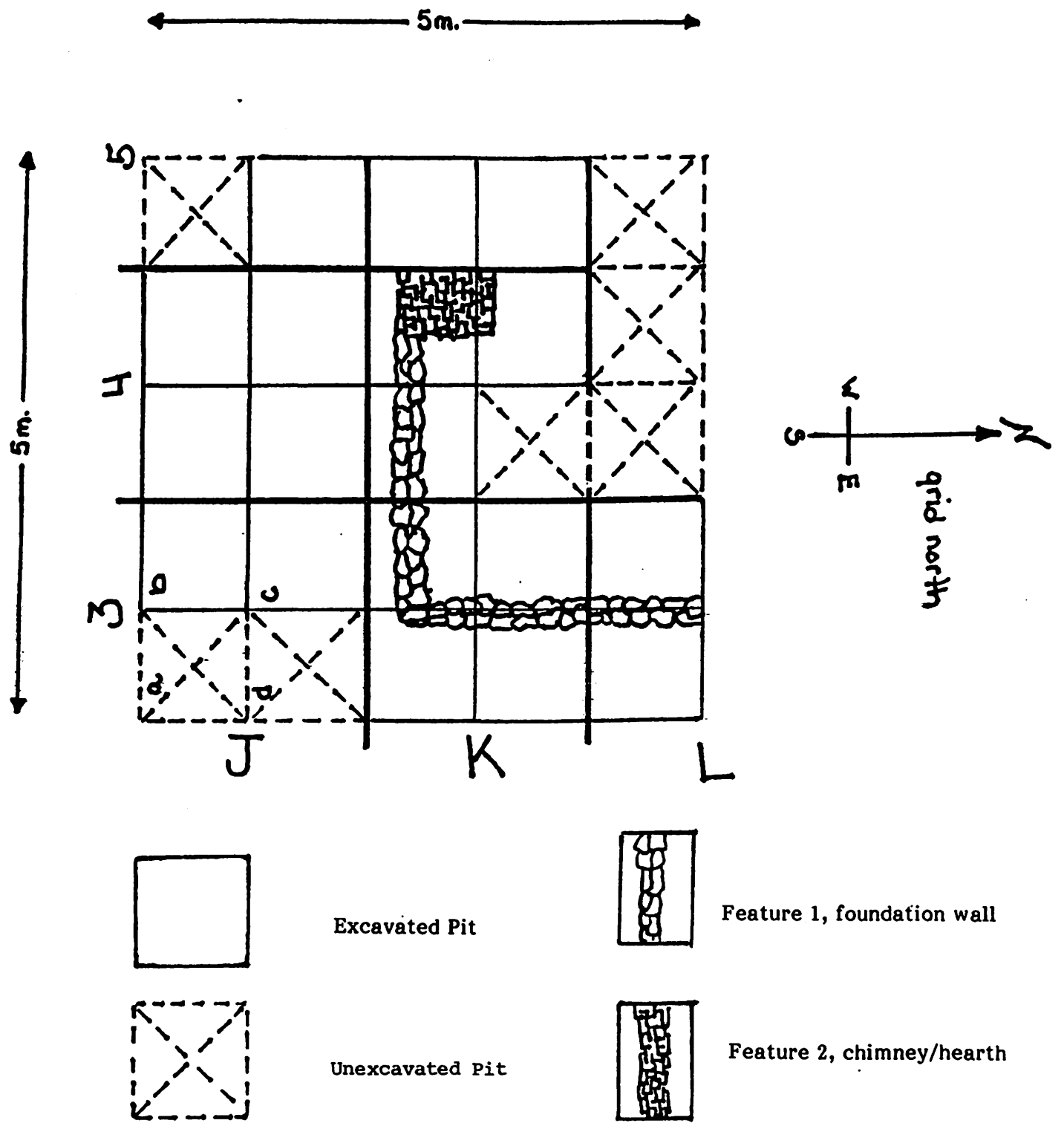
The Excavation

The Sellon Site excavation was carried out by initial surface-collection, followed by limited sub-surface testing by Saint Mary's University graduates and staff. The following discussion outlines the excavation procedures,

presents the site stratigraphy and describes the two features encountered.

At the start of the two-week excavation period a datum was established on a north-south line on the eastern section of Lot 11, and a 10m x 14m grid was set up. A survey of the site was conducted by Anthropology students from Saint Mary's University under the direction of Dr. Michael Deal. Testing was initially conducted at the southern end of Lot 11 based on information from Hopkins' Atlas (cited in the original report prepared to support our Heritage Research Permit application). It was quickly established that this area was of more recent origin than that of an 18th century residence. Rechecking of Hopkins' Atlas revealed that the Atlas had misplaced the boundary between Lot 10 and Lot 11. This necessitated the extension of the grid northward where a 5m x 5m section became the area of concentration and subsequent finds (see Fig. 4).

Due to the firmly-packed layer first encountered, a pick was used carefully to loosen the top 10cm. Excavation then proceeded using hoes, but the recovery of copious artifactual material and the rocky nature of the soil very quickly necessitated a change to trowels and dustpans for the rest of the work. Given the limited time available to complete the excavation, the use of full screening procedures was considered to be too time-consuming and, therefore, was not employed. Eventually, over a six-day period, eighteen 1m x 1m pits were taken down to various depths, all within the 5m x 5m grid (see Fig. 4).



Scale: 2 cm. = 1 metre

FIGURE 4. Sellon Site Excavation Area

The Stratigraphy

The stratigraphy of a site represents both human activity and processes of natural soil formation. The Harris stratigraphic sequence method (Harris 1975) takes both of these factors into account so that a relative chronology of events at an archaeological site can be determined. This method was employed at the Sellon Site.

Twelve stratigraphic events were encountered during the excavation. These events and descriptions of the resulting soils are presented in Table 1. The stratigraphic sequences associated with the foundation are illustrated in the form of soil profiles in Figure 5.

The events for the area inside the foundation show distinct differences from those outside the foundation. The soil event/level sequence within the foundation is 1-2-4-6-7 (Fig. 5a and 5b). Outside the foundation, the eastern excavated portion has a sequence of 1-8-2-9-10-11 (Fig. 5c), while the southern part shows a soil event/level sequence of only 1-2-3 (Fig.5d). Interpretation of these sequences will be best accomplished by further excavation. However, a few observations can be made at this time.

Levels 1 and 2 covered the entire excavation area with the exception of the eastern wall outside the foundation (K3a, K3d), where Level 8, a thin charcoal lens, appeared between Levels 1 and 2. With this one exception, Level 1 always overlayed Level 2. Level 1, the top layer, yielded a mixed assemblage of 18th, 19th and 20th century ceramics, pipe stems, glass and metal objects. Level 2 contained 18th and 19th century artifacts in the same categories as those found in Level 1. The age of the assemblages present in these two layers indicates, as would be expected, that Level 1 is of more recent origin than Level 2.

TABLE 1. Stratigraphic Levels (BdCv:7)

Level	Event	Soil Description
1	Sod development	Surface vegetation, topsoil, fill, dark brown color
2	Mixture of soil, artifacts and general rubble	Medium brown soil, rocky
3	Sterile soil and rocks	Orange/yellow with flecks of charcoal
4	Feature 1 interior, debris	Brown organic soil with slate, quartzite and brick
5	Feature 1 - wall	Local slate and quartzite
6	Feature 1 interior, burned debris	Heavily charcoaled and sandy with some brick
7	Feature 1 interior, tamped base preparation for house construction	Orange/yellow soil with bedrock
8	Feature 1 exterior, debris	Thin charcoal line
9	Feature 1 exterior, debris	Light brown soil with flecks of charcoal
10	Feature 1 exterior, debris	Heavily rocked area in light brown matrix
11	Feature 1 exterior, debris	Light, almost sterile in color
12	Feature 2 chimney/hearth complex	Mortared, reddish-brown local slate and quartzite, and red bricks in heavily charcoaled matrix

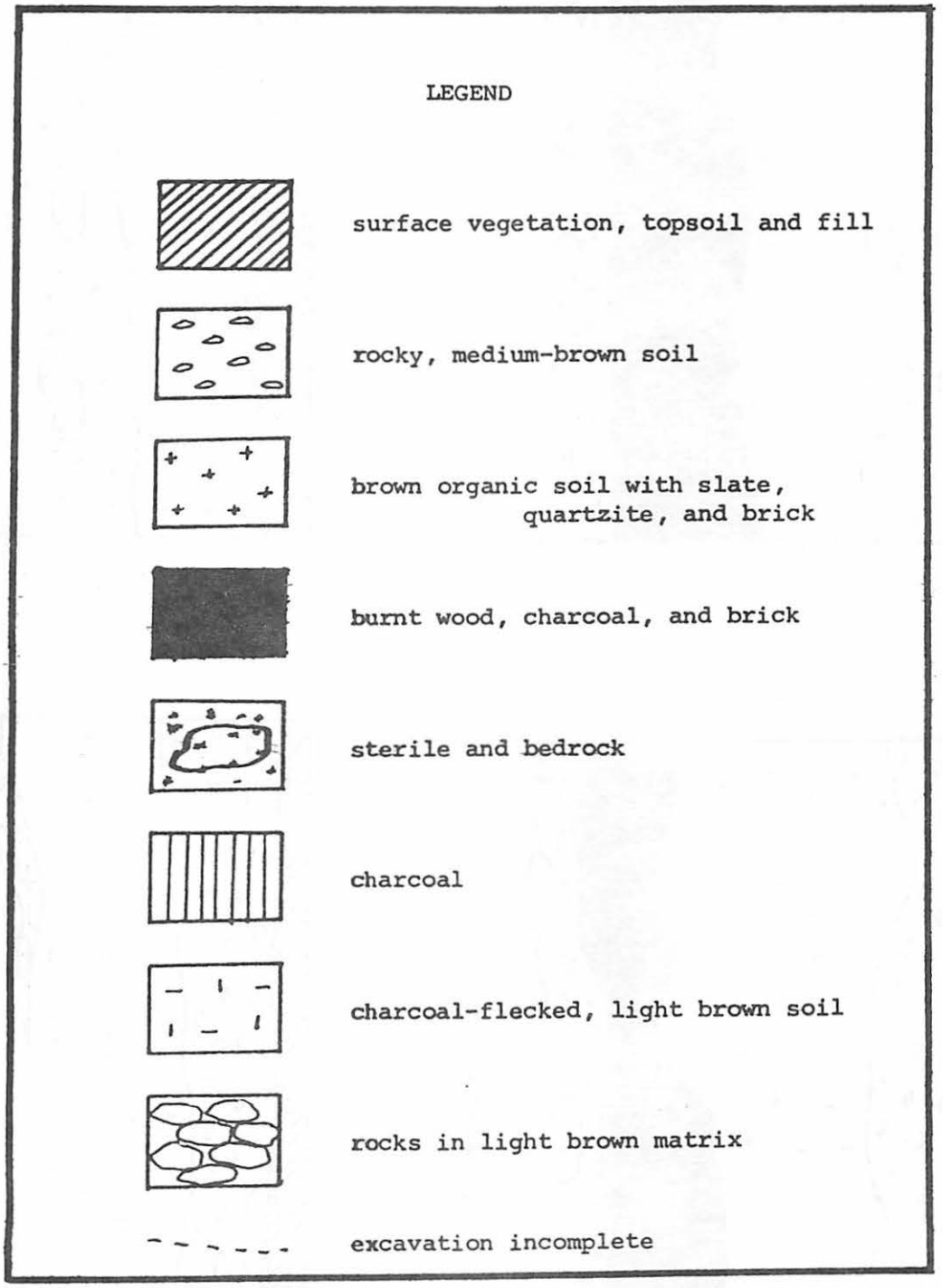
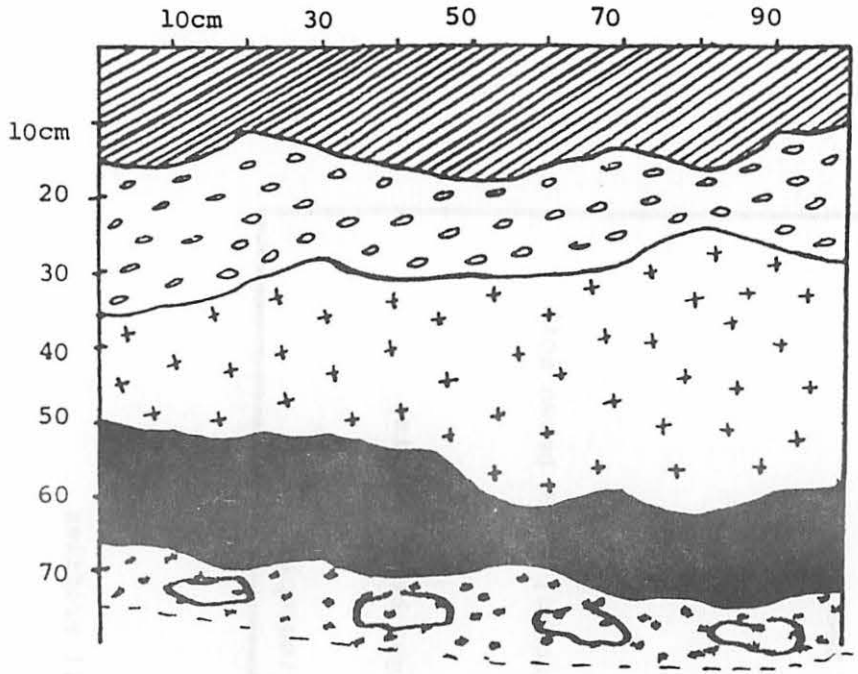
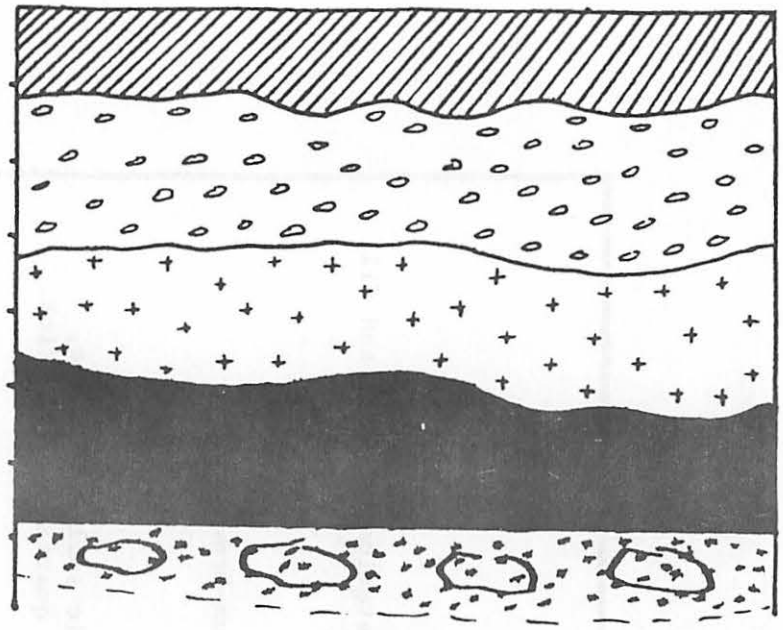


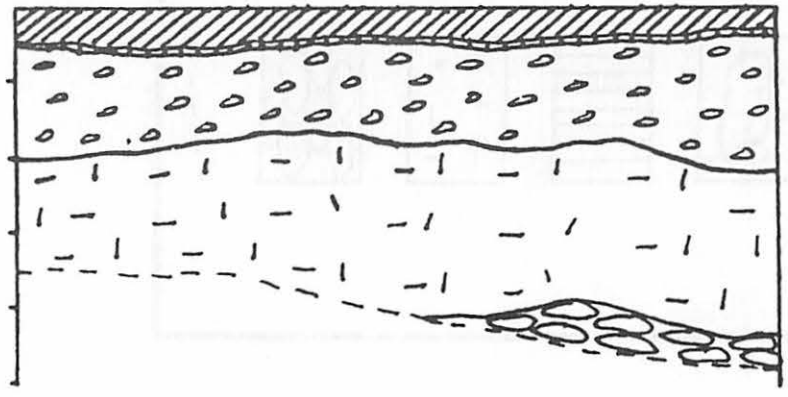
FIGURE 5. Soil Profiles



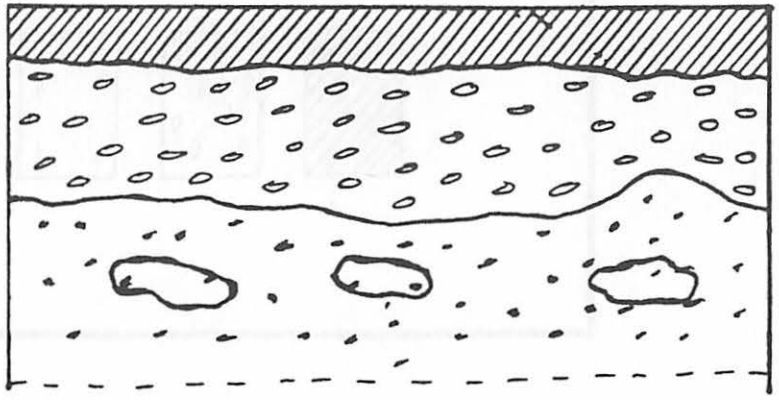
a. West wall - K3c



b. North wall - K4a



c. East wall - K3a



d. South wall - J4a

FIGURE 5. Soil Profiles con't

Level 4 is confined inside the foundation. The rocks incorporated within its brown organic soil matrix are strikingly uniform in size and shape. They are so aligned that when a vertical wall is exposed, the rocks are seen to be lined up in torpedo-like fashion, lying in an east/west direction. The deliberateness of the positioning of these rocks and the presence of this level only within the foundation, strongly suggest that Level 4 was used to fill in the foundation once the building had been razed. This level contained a few 18th and 19th century artifacts.

Level 6, the heavy charcoal layer confined within the foundation, proved to be the first unmixed layer, yielding only 18th century artifacts in and under it. The remains of burned planks and nails (often embedded in burnt wood) were also found in this layer. The nails are hand-wrought and were popular in the 18th century until the advent of machine-cut nails around 1790 (Noel Hume 1982:253). Two gunspalls, each dated mid- to late-18th century (see Appendix on Material Culture Analysis), were recovered underneath the charcoal layer in the southeast corner of the foundation. The dating of the nails and gunspalls as well as other artifacts found in Levels 6 and 7 indicates an 18th century age for these levels.

Level 3 is the only level devoid of artifactual material. It is located in the southern section of the excavation area (Fig. 5d). Level 3 is sterile soil similar to the orange-yellow sterile observed in Level 7 (inside the foundation), except that Level 3 has charcoal flecks in it and is encountered at a shallower depth than Level 7. The difference in depth of the sterile soils, Levels 3 and 7, is probably due to the fact that Level 7 was dug down into when the house was being constructed. Level 9, on the east wall (Fig. 5c) outside the foundation, also exhibits charcoal flecks. Levels 3 and 9 occur at the same depth. The burning of a structure results in burned material collapsing inward. Residual accumulation occurs outside the

structure due to the spewing of some of the burnt material at the moment of collapse. The charcoal-flecking of Levels 3 and 9 is probably the residual accumulation deposited during the same event (the burning of the house) since both levels are encountered at the same depth.

Further excavation will allow more speculation on the events which occurred at the Sellon Site. Soil analysis, not performed during the preliminary excavation, would be indispensible for the interpretation of the soil event/levels in future excavation.

Features

This section of the Archaeology Report describes the physical evidence of the two features -- Feature 1, a house foundation, and Feature 2, a chimney/hearth (see Fig. 4 and Plates 5-11).

Feature 1

The section of the house foundation exposed in the test excavation was built using local slate and quartzite arranged two rows wide and three courses high. No mortar was detected. The interior face of the foundation is fashioned so that a finished surface is obtained. The exterior of the southern section of the foundation wall, the only exterior section exposed during excavation, is unfinished. Only the southeast corner of the foundation was encountered during the preliminary testing.

Feature 2

At the western end of the exposed foundation, approximately 2.7 meters from its southeast corner, a heavily mortared feature was encountered consisting of quartzite and slate rocks, red-hued and fire-cracked (see Plate 11). A concentration of both whole and broken red bricks was found among the

mortared rocks, suggesting a brick-lined chimney. Place of manufacture of these bricks has yet to be determined. As the eastern section of the feature rubble was removed, a large number of Buckleyware storage jars (dating from the third quarter of the 18th century) was found among the mortared rocks and bricks. A flatiron (see Plate 3B) with its handle missing was found in situ among the chimney rubble.

Conclusions

The preliminary excavation of BdCv:7 provides evidence from which important conclusions can be drawn. The artifacts recovered, the stratigraphy, and the two features encountered are all consistent with the archival prediction that a house burned on this property in 1787. The portion of the foundation uncovered so far does not contradict the archival research which states that this structure may have been Dutch-cottage like in design (see p. 6).

The material culture recovered from the site combined with the soil event/levels provided by the stratigraphy gives a good chronology of the site even in these early stages of excavation. The deepest levels, 6 and 7, prove to be the oldest, yielding only 18th century artifacts. The presence of the heavy charcoal layer (Level 6) inside the foundation indicates this structure burned down in the last quarter of the 18th century. The composition and nature of Level 4 (see p. 27) suggest the foundation was filled in after the structure burned because a few 19th century artifacts were found in this layer. Level 2, although of different composition than Level 4, will probably be found to be younger or of the same time period as Level 4 since it contains 18th and 19th century artifacts as well. Level 1, the youngest layer, offers the only 20th century artifacts in its matrix. This level appears to be fill and has a mixed assemblage of 18th, 19th and 20th century artifacts. It

would be difficult to locate the origin of this top layer. It could have been brought in from other areas of the City as other material on this property is alleged to have been (see p. 18); or perhaps it came from a dump site once located here. Surface-collection reveals as varied a mixture of artifacts as does Level 1, but also includes bands of iron which may have come from the cooperage which operated in this area (see p. 14). A study of the artifact assemblage in conjunction with the history of the site contained in the Archival Report, may shed some light on the origin of Level 1.

The main purpose of this preliminary excavation was to discover the remains of Samuel Sellon's grandmother's house which burned in the fall of 1787. We believe that we have discovered domestic remains, since all of the material culture so far identified is associated with domestic use. The relative scarcity of liquor bottle fragments and military artifacts rules out this dwelling as a tavern or military installation. This is consistent with the archival research which shows that neither of these types of establishments existed on this property in the 18th century. The presence of the heavy charcoal layer (Level 6) and its associated 18th century artifacts was the most significant discovery for dating the remains. The material culture analysis shows that all the artifacts found in and under Level 6 date to the time archival research predicts the burning took place. The nails found in this level have been identified and dated as hand-wrought, rosehead nails, pre-1790. The other artifacts found in this level, such as the gunspalls, ceramics, pipe-bowl and bottle fragments, have also been dated to the 18th century (see Appendix on Material Culture Analysis).

The preliminary excavation of BdCv:7 presents us with some of the original architecture of the building. The foundation was finished on the inside, but unfinished on the outside (as far as the outside was exposed), and no builder's trench was encountered along the exposed southern section. The

finished interior and the presence of the hearth at this level indicate this was a living area. The unfinished exterior and the lack of a builder's trench suggest the need for further excavation so that more can be learned about these particular building features and their relation to construction techniques of the time. The position of the hearth also discloses some of the original architecture of the building. If the hearth is centrally located on the southern wall, then the width of the building is approximately 5 to 6 meters depending on the width of the chimney. This description is in keeping with the archival information that the building on this site was Dutch cottage-like with dimensions approximately 25 feet x 15 feet (see p. 6).

It has been shown by looking at the evidence provided by the artifacts, the stratigraphy and the two features, that the remains of the dwelling located in the preliminary excavation of BdCv:7 are probably the home of Samuel Sellon's grandmother which burned in 1787. Nothing found so far contradicts this probability. The artifact assemblage indicates a domestic dwelling; Level 6 provides evidence of a fire; the artifacts associated with the burn layer and the hearth suggest the time of the fire-- c. 1787; the evidence provided by the dimensions of the two features so far supports the archival research that the residence was Dutch-cottage like. Further excavation of the site will uncover more evidence which will probably substantiate these conclusions, but whether this turns out to be the case or not, a great deal of information would be provided for urban archaeology in Halifax by continuing this project.

Suggestions for Future Research

Our preliminary excavation of BdCv:7 has shown how premeditated archival research can produce substantial archaeological results. It has also provided compelling reasons to continue excavating BdCv:7. Continued excavation would yield valuable information about the architectural form and function of a dwelling dating back to Halifax's early years. It would yield a wide range of artifacts that could be studied for years to come as material culture of 18th century life in the City. The best of these artifacts would be suitable for public display. Because the artifacts would have been recovered in archaeological context, they could serve as a benchmark for identifying, dating and interpreting artifacts salvaged from disturbed sites like Central Trust.

Continued excavation of BdCv:7 would begin a database of information which could be used in the future to assess the potential of other archaeological sites in Halifax. For example, it would provide information about the effects of urbanization on historical remains. Only until this type of data is available from a variety of sites will we be able to predict the likelihood of important archaeological material surviving. The ability to do this is particularly important to sites scheduled for development or in other ways threatened. Excavation of threatened sites can be conducted more efficiently if there is a database from sites excavated in a controlled manner (as the BdCv:7 site would be).

Salvage archaeology is important and often the only choice available to the archaeologist. But salvage archaeology is usually rushed and inadequately planned and funded, and it can antagonize land owners and developers. The Sellon Site has <u>none</u> of these disadvantages. It should be excavated further <u>because</u> it is not immediately threatened.

BdCv:7 is a highly visible and accessible site within Halifax, and it affords an excellent opportunity to educate the public and students about archaeology. The potential academic advantages for students and other interested parties using the data provided by the excavation would be numerous and varied as well.

Halifax is rich in heritage, but the most heritage-rich sections of the City are rapidly redeveloping. The time has come for the City's first planned archaeology project.

Appendix

Material Culture Analysis

by Laird Niven and Katie Cottreau

This Appendix classifies and describes 1,481 of the more than 2,000 artifacts found during preliminary excavation of the Sellon Site. For purposes of classification, we have adopted a slightly modified version of the scheme of South (1977). This scheme, used widely in historical archaeology, stresses the function of artifacts rather than their material of manufacture. It consists of artifact groups divided into artifact classes.

Following South, we have employed the following groups and classes in analyzing the material culture from BdCv:7. The number of identified artifacts is included for each class.

Artifact Group		Artifact Class
Kitchen	481	Ceramics (Katie Cotteau)
	84	Liquor Bottles (Laird Niven)
	2	Storage Bottles (L.N.)
	6	Tableglass (L.N.)
	63	Undiagnostic Glass (L.N.)
	1	Tableware (L.N.)
	=637	
Bone (L.N.)	=121	Bone Fragments
Architectural (L.N.)	128	Pane Glass
	548	Nails
	6	Bricks
	2	Mortar and Plaster
	=684	
Furniture (L.N.)	= 1	Furniture Hardware
Arms (L.N.)	= 2	Gunspalls

Clothing (L.N.)	1	Shoe Buckles
	4	Buttons
	1	Paste or Glass "Jewelry"
	1	Eye Fasteners
	= 7	
Personal (L.N.)	1	Coins
	1	Jewelry
	1	Medallions
	= 3	
Tobacco Pipes (K.C)	=125	European Clay Tobacco Pipes
Activities (L.N.)	= 1	Toys
	N=1481	

This material culture analysis omits artifacts too small to be identified and 20th century artifacts found only in the uppermost layer (Level 1) of fill. It concentrates on the diagnostic artifacts recovered from the heavy charcoal layer, Level 6. The identification of objects and their dates of manufacture have been emphasized. A thorough analysis of all artifacts in relation to all levels would be done in any future excavation.

Artifacts recovered from BdCv:7 represent objects associated with a domestic dwelling. The distribution and composition of the artifact assemblage in Level 6 is indicative of a dwelling that burned in the 18th century. The diagnostic artifacts found in the charcoal layer all date to around the archivally-documented time of the burning, 1787. No material culture evidence has been discovered to contradict the conclusion that this is the house of Samuel Sellon's grandmother.

Kitchen Artifact Group

The kitchen artifact group consists of items used in the preparation,

consumption and storage of food. Kitchen artifacts recovered from the Sellon Site fall into the classes of ceramics, liquor bottles, storage bottles, tableglass, undiagnostic glass and tableware.

Ceramics (Katie Cottreau)

BdCv:7 ceramics consist primarily of 18th century household wares, but there are sherds from the 19th century as well. The most diagnostic examples of 18th century ceramics were excavated from the sandy, wet charcoal layer (Level 6) within the foundation. There is a preponderence of 18th century wares in the ceramics identified. The ceramic vessel forms identified indicate functions such as food and drink storage, individual beverage consumption, food consumption, health and hygiene and non-food liquid storage.

BdCv:7 yielded a total of 481 ceramic fragments: porcelain (52); stoneware (44); and earthenware (385). See Table 2 for a list of the types of ceramics recovered, periods of manufacture, numbers and brief descriptions. The format of Table 2 closely follows that employed for ceramics by South (1977:210).

Liquor Bottles (Laird Niven)

Liquor bottles were used to hold a variety of wines and liquors, as well as non-alcholic substances. Eighty-four (84) liquor bottle fragments were recovered from the Sellon Site. No complete bottles were found. The fragments represent bottles typical of the second half of the 18th and early 19th centuries. They were blown into part-sized dip moulds with the body shaped on a marver and the finish completed by hand or with the aid of a finishing tool.

The bottle finishes (the top part of the bottle consisting of a lip and

string rim) were dated using Dumbrell (1983) and Jones and Smith (1985) (see Plate 2A-G). It should be noted that Jones and Smith use Canadian archaeological contexts and for this reason may be more appropriate than Dumbrell. The majority of the finishes date from the last quarter of the 18th century (see Table 3). Table 4 lists the characteristics of each finish type.

A single base was recovered (BdCv:7:19). It has a round conical push-up formed by a pontil (pre-1860s) and a base diameter of 101mm. It is most likely from a tall cylindrical bottle typical of the last quarter of the 18th century.

Storage Bottles (L.N.)

Two (2) unidentified storage bottle fragments were recovered from BdCv:7, each representing a different type.

Type 1: Dark Green Finish

This hand-formed finish (BdCv:7:307) has a downtooled V-shaped lip and rounded string rim. It has an external diameter of 45mm and a bore diameter of 28.5mm. It may have come from any number of different storage bottles that could have contained condiments or snuff (Jones and Smith 1985:64).

Type 2: "Mustard", Colorless Lead Metal

This is a body fragment (BdCv:7:1471) embossed with the letters "NDO", most likely part of the word "LONDON". This fragment may represent a dry mustard bottle, the London examples of which occur frequently in North American archaeological sites. They are first mentioned in 1808 and continue to be mentioned into the 19th and possibly the 20th centuries (Jones 1983:73, 78).

TABLE 2. Sellon Site Ceramics

Page numbers refer to Noel Hume (1982)

Porcelain

Type	Date Range	No. of Specimens	Description
Chinese	c. 1680-1800	37	Underglaze blue export porcelain (pp. 157,260)
Chinese	c. 1660-1825	12	Overglazed enamel porcelain (pp. 258-160)
Chinese	c. 1685-1800	2	"Famille rose" porcelain (pp. 159-260)
English	c. 1745-1785	1	Underglaze blue porcelain (p. 137) (see Plate 1C)
		52	

Stoneware

Brown	c. 1840-1900	5	Brown bottle fragments, likely English, (pp. 78-79)
Blue and Gray	c. 1700-1775	3	Westerwald district cobalt blue on gray body stoneware (pp.84-85)
White	c. 1740-1770	10	Moulded white salt glazed stoneware (p. 115)
White	c. 1745-1775	3	"Scratch blue" white salt-glazed stoneware (p. 117)
White	c. 1720-1805	23	White salt-glazed excluding moulded (pp. 115-117)
		44	

TABLE 2. Sellon Site Ceramics con't

Type	Date Range	No. of Specimens	Description
		Earthenware	
Creamware	c. 1762-1820	228	Cream colored fine earthenware (pp. 125-128)
Creamware	c. 1765-1815	2	Transfer printed creamware (p. 126)
Creamware	c. 1785-1815	2	Annular wares creamware (p. 131)
Pearlware	c. 1780-1830	15	Blue or green edged pearlware (pp. 128-130)
Pearlware	c. 1780-1830	25	Undecorated pearlware
Pearlware	c. 1795-1835	10	Underglazed polychrome pearlware (p. 129)
Pearlware	c. 1779-1810	12	Underglaze blue handpainted pearlware (p. 129)
Pearlware	c. 1795-1815	3	Annular wares pearlware (p. 131)
Tin-enammeled	c. 1730-1830	1	Pedestal-footed type ointment pot (pp. 204-205)
Slipware	c. 1680-1770	3	Leadglazed slipware (combed yellow) (p.107) (see Plate 1: A & B)
Refined	c. 1750-1775	3	"Clouded" ware (pp. 123-125)
Refined	c. 1820-1900	12	Whiteware (p. 130)
Coarse	c. 1750-1800	59	Buckleyware (p. 133)
		10	Miscellaneous red bodied wares
		385	

Tableglass (L.N.)

Six (6) tableglass fragments recovered from BdCv:7 fall into the categories of stemware (2), undiagnostic (2) and tumblers (2). They are summarized in Table 5.

Stemware

Type 1: Feet

Variety A: Basal Step, Lead Metal

This one (1) foot fragment (BdCv:7:222) has a basal strip, a blob of glass at the top of the foot and an unfinished pontil, indicative of pre-1850s manufacture for most objects (McNally 1982:14).

Variety B: Folded Foot, Lead Metal

The folded foot of this one (1) piece (BdCv:7:584) would have been formed by folding over the rim of the foot, thus creating a double layer of glass and making it more resistant to chipping. This piece is from Level 1 and is difficult to date. The folded foot rim was a common feature on English glasses about 1750, but it was rare thereafter, although it became common again on lightly-made cheap glasses in the 18th and early 19th centuries (McNally 1982:67).

Undiagnostic

Type 1: Rim Fragment

Variety A: Lead Metal

Two (2) rim fragments of colorless lead metal were recovered. The first (BdCv:7:1316) is 1.5mm thick with a fire-polished rim. The second (BdCv:7:246) is 25mm thick with a faint ridge on both sides of the rim, possibly indicating press-moulded manufacture (post-1820s). Both were recovered from Level 1.

TABLE 3. Liquor Bottle Finishes

Jones and Smith refers to Jones and Smith (1985). Dumbrell refers to Dumbrell (1983).

Catalogue Number	Date	Square	Level
BdCv:7: 5	c. 1753-1763 (Jones and Smith)	K5D	6
10	c. 1753-1763 (Jones and Smith) c. 1740-1760 (Dumbrell)	L3B	6
9	c. 1770-1785 (?) (Jones and Smith) c. 1740-1760 (Dumbrell)	K4B	6
1	c. 1770-1785 (Jones and Smith) c. 1770-1780 (Dumbrell)	K3B	6
7	c. 1770-1785 (Jones and Smith)	L3D	6
6	c. 1790-1820 (Jones and Smith) c. 1770-1780 (Dumbrell)	K3D	2
2	c. 1790-1820 (Jones and Smith) c. 1790-1800 (Dumbrell)	K3C	6
3	c. 1815-1820 (Dumbrell)	L3B	2
11	Post-1820	L3B	1
8	Undiagnostic	K4A	6

Table 4. Liquor Bottle Finish Characteristic

Catalogue Number	Characteristic
BdCv:7: 5,10	Cracked-off and fire-polished lip; downtooled, V-shaped, string rim
9	Flat-topped lip; downtooled, V-shaped, string rim
1	V-shaped lip; downtooled, V-shaped, string rim
7	Flattened lip; downtooled, flattened, string rim
6,2	Downtooled lip; downtooled, flattened, string rim
3	Rounded, tool-finished lip*; V-shaped, string rim

*The finishing tool was hand-held or bench-mounted and gave the finish a more uniform size and shape than did hand-finishing. A general date for the finishing tool is from the 1820s into the 1920s (Jones and Sullivan 1985:42-43).

TABLE 5. Sellon Site Tableglass

Class: Tableglass	Level	Date Range
Category: Stemware		
Type 1: Variety A: BdCv:7:222	1	pre-1850
Variety B: BdCv:7:584	1	18th and 19th centuries
Category: Undiagnostic		
Type 1: Variety A: BdCv:7:1316	1	
246	1	post-1820s
Category: Tumblers		
Type 1: Variety A: BdCv:7: 14	6	
Type 2: Variety A: BdCv:7: 742	1	post-1860s

Tumblers

Type 1: Plain

Variety A: Unfinished Pontil, Lead-Metal

This half of a tumbler base (BdCv:7:14) is 61mm in diameter. It would have been blown into a part-sized, unpatterned dip mould. Plain tumblers were popular throughout the 18th century and are difficult to date precisely. The presence of lead in the glass points to British manufacture. The unfinished pontil was common into the 19th century (Jones and Smith 1985:35). This specimen was found in Level 6.

Type 2: Press-Moulded

Variety A: Press-Moulded Panels, Lime Metal

Press-moulding was used for complete objects beginning in the 1820s using a lead metal. A "lime" metal was developed in the United States in the 1860s and thereafter became common in Canada (McNally 1982:15-16). The base of this fragment (BdCv:7:742) is 50mm in diameter. It was found in Level 1.

Undiagnostic Glass (L.N.)

Sixty-three (63) fragments of undiagnostic glass were recovered. They came from all levels. Jones and Sullivan define undiagnostic as "a term used for miscellaneous nondescript fragments whose function cannot be determined even in the grossest sense and whose function will probably remain undetermined (1985:10)."

Tableware (L.N.)

One (1) badly corroded pewter teaspoon bowl (BdCv:7:1648) was found in the fill level (Level 1). It has a pointed elliptical bowl and evidence of reinforcing at the stem/bowl juncture. There are no dateable elements on it.

Bone Artifact Group (L.N.)

Bone Fragments

The bone from the Sellon Site was very poorly preserved. One hundred and twenty-one (121) bone fragments were recovered. No attempt was made to analyze them.

Architectural Artifact Group (L.N.)

Architectural artifacts are items used in building construction. The architectural artifact group recovered from the Sellon Site and commented on here includes pane glass, nails, bricks, and mortar and plaster. One hundred and seventy-eight (178) iron objects recovered from the Site have not yet been conserved and most of them have not been identified. It is likely that many of them fall into the architectural group.

Pane Glass

One hundred and twenty-eight (128) pane, or window, glass fragments came from the Sellon Site, including one fire-rounded edge fragment. The glass was found in Levels 1, 2 and 6.

Nails

One hundred and forty-six (146) nails were recovered. With the exception of a single wire nail, they appear to be hand-wrought, rosehead nails, varying in length from 2cm to 14.5cm, in both pointed and flattened shank form. Wire nails are not found in context before 1850. Hand-wrought nails were popular in the 18th century until the advent of machine-cut nails circa 1790 (Noel Hume 1982:253). The nails were found in all levels, but the heaviest concentration was in Level 6, the charcoal layer. Four hundred and two (402) nail fragments were also recovered from the site.

Bricks

Six (6) measurable bricks and 40.35kg of brick fragments were recovered. Brick sizes range from 180mm to 197mm long (average 186.17mm), 84mm to 97mm wide (average 92.00mm) and 40mm to 47mm thick (average 43.67mm). A single short brick (135mm x 91mm x 45mm) appears to have been intentionally broken. Five of the bricks show evidence of burning. The average weight of the bricks is 1.46kg. Some bricks came from Levels 1 and 2, but most were found in Level 6 around the chimney/hearth area.

Mortar and Plaster

Evidence of both mortar and plaster was abundant, including two (2) pieces of plaster bearing the impression of the wood they were applied to. They were both found at the bottom of Level 2 directly on top of the chimney/hearth rubble. It should be noted that the building foundation was dry wall, not mortared.

Furniture Artifact Group (L.N.)

Furniture Hardware

One (1) brass bale handle (BdCv:7:1651) was recovered. It closely resembles a bale handle in Noel Hume (1982:229, Fig. 72, No. 5) assigned to the Chippendale period, circa 1750-1775.

Arms Artifact Group (L.N.)

The arms artifact group from the Sellon Site comprises two (2) gunspalls. Both were recovered from Level 7.

Gunspalls

Gunspalls, or spall gunflints, were used on flintlock muskets, held between the jaws of the cock and struck against the battery, thereby creating sparks igniting the powder and firing the ball (Blanchette 1975:44).

Gunspalls were produced by removing individual spalls from a flint core; gunflints were cut from prepared flint blades. White has proposed that the spall technique was used in England until it was replaced by the more efficient blade technique from France sometime after 1770 (1975:70).

One gunspall (BdCv:7:33) (see Plate 2H) is made from a gray-black flint and is relatively large (30.5mm long x 33mm wide). It has a convex top face and a slightly concave bottom face bearing a transverse flake scar from the removal of a previous flake (Blanchette 1975:48). The heel has been slightly retouched, but a chalk heel remains, a remnant of the original flint core. The bulb of percussion is slightly off-center at the top of the face. Both sides have been retouched, and the edge displays extensive use-wear. These attributes correspond to Stone's Series C Spall gunflints (1974:225-261).

The other gunspall (BdCv:7:34) (see Plate 2I), while similar in form to the first, was most likely used as a strike-a-light. It would have been used with a fire-steel to produce sparks for starting a fire. The spall has a slightly convex back face and a very convex top face with a peak at the bulb of percussion. The spall is 29mm long, 37mm wide and 11mm thick. The sides and heel have been retouched, and the edge is extremely worn by use.

Clothing Artifact Group (L.N.)

Shoe Buckles

Shoe buckles became popular after 1689 and remained so until the French Revolution, then died out before 1800. A partial rectangular brass shoe buckle frame was recovered from Level 1 (BdCv:7:1647). It corresponds to Abbitt's Type IV: decorated buckle frame with round corners (Abbitt 1973:32). The decoration is a very simple raised geometric design. The pin terminal covers the whole of the frame, an attribute common throughout the 18th

century. Terminals covering only a portion of the frame are found only on buckles from late 18th century contexts (Abbitt 1973:35).

Buttons

Four (4) buttons were recovered, one of which has no provenience.

BdCv:7:1643

This is a flat brass button with a plain face. It is 23mm in diameter. The edge is broken, but there does not appear to have been a foot on the eye. It corresponds to South's Type 9, circa 1727-1776 (Noel Hume 1982:90-91).

BdCv:7:1649

There is a bone button back, 24mm in diameter. It has four holes in it, and some evidence remains of its nearly disintegrated hollow brass face. This kind of back is found on buttons corresponding to South's Type 3, circa 1726-1776 (Noel Hume 1982:90-91).

BdCv:7:1113

This is a dome-shaped "porcelain" button, 11mm in diameter. Its eye is broken. It was found in Level 2. No reference to this type of button has yet been found.

BdCv:7:1644

This button has no provenience. It is extremely corroded and therefore is difficult to assign to a type. The face is decorated with a large, raised central crown surrounded by serrated edging. It appears to be made of a metal other than copper or brass, possibly pewter.

Paste or Glass "Jewelry"

One (1) yellow dome-shaped "jewel" or "stone" made of paste or glass (BdCv:7:527) was recovered (see Plate 4B). It is 12mm in diameter and was

probably set in a buckle or button. It was found in Level 1. No reference to this type of stone has yet been located.

Eyefasteners

One (1) copper eye fastener (BdCv:7:1646) was recovered. Hook and eye fasteners were popular 18th century clothing assessories.

Personal Artifact Group (L.N.)

Coins

One (1) identifiable coin (BdCv:7:1652) was recovered in the form of an 1832 Province of Nova Scotia half penny token. Other coins were too corroded to identify positively. The identifiable coin was found in Level 2.

Jewelry

One (1) large aquamarine glass "jewel" (BdCv:7:1180) was recovered (see Plate 4A). It is facet-cut and was intended to be set into a piece of jewelry. It was found in Level 1. No date can be attributed to this specimen.

Medallions

One (1) very thin copper disc (BdCv:7:1645) is approximately 21mm in diameter. It is badly corroded, and no decoration is evident, so it is impossible to date. A single hole has been punched into it, possibly indicating that it was meant to be worn around the neck as a religious medallion. It was found in Level 6.

Tobacco Pipes Artifact Group (K.C.)

British Clay Tobacco Pipes

One hundred and twenty-five (125) tobacco pipe specimens, all probably of

British manufacture, were recovered from the Sellon Site. They are categorized as 1 complete plain bowl (no heel or spur), 29 plain bowl fragments, 3 decorated bowl fragments, 1 stem fragment with "TD" moulded on a flattened heel, 1 stem fragment with a pointed spur and 90 plain stem fragments.

The complete bowl (BdCv:7:103) probably dates circa 1730-1760 (see Plate 3A) (Oswald 1975:40). It was found in Level 6.

The 29 plain bowl fragments and the 3 decorated bowl fragments are difficult to date. They are small and the decoration on the 3 fragments is badly worn. A moulded thistle is detectable on one piece (BdCv:7:1493), milling on the second (BdCv:7:1100) and possibly the letter "E" on the third (BdCv:7:1327).

The stem fragment with the initials "TD" moulded on the flattened heel (BdCv-7:38) is easily explained. "TD" was a very common maker's mark employed by several British pipe manufacturers in the 18th century (Oswald 1975). Stems with pointed spurs were even more popular and were manufactured throughout the 18th century (Walker 1977:12).

Activities Artifact Group (L.N.)

Toys

One (1) toy, a jew's harp, was recovered (BdCv:7:1654) (see Plate 4C). It has a cast-brass frame which has been finished with a file. The iron tongue is missing. The frame is diamond-shaped in cross-section, and it has a round head. It corresponds to Stone's Series B, Type 1, Variety a (1974:141). The jew's harp was popular throughout the 17th, 18th and early 19th centuries.

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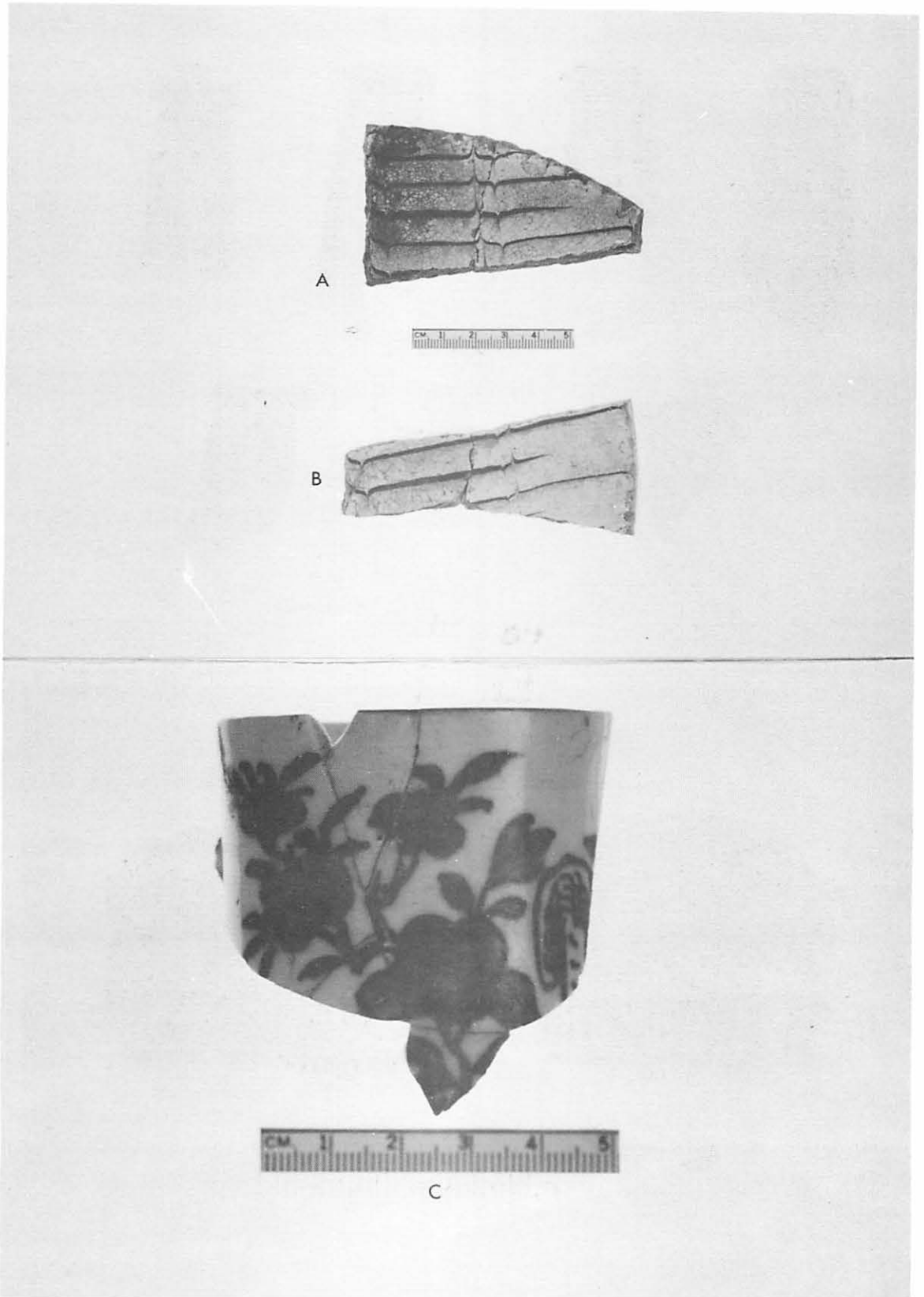

PLATE 1

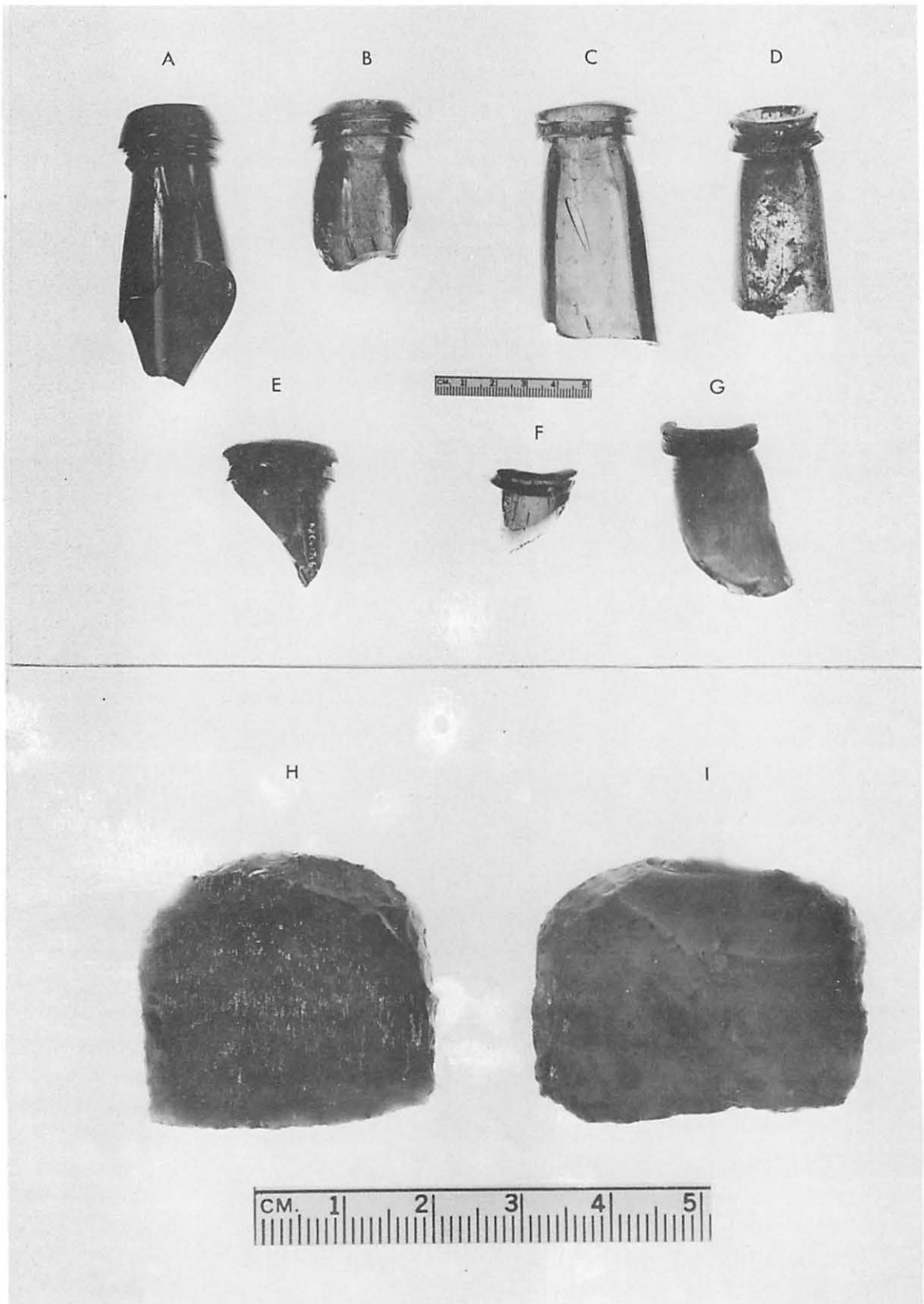

PLATE 2

A

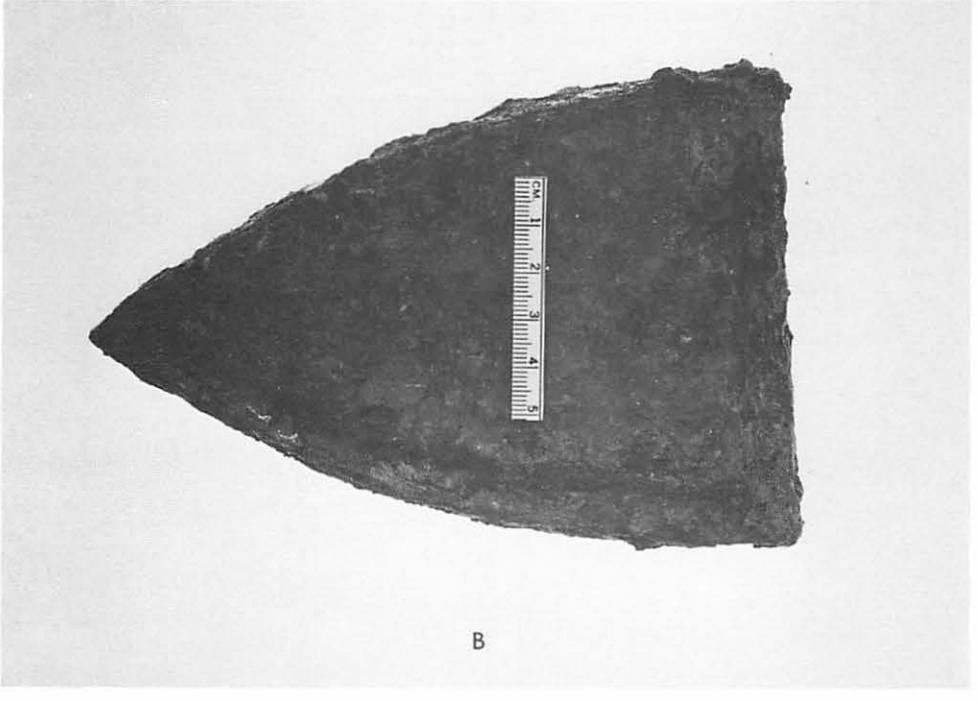

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PLATE 3

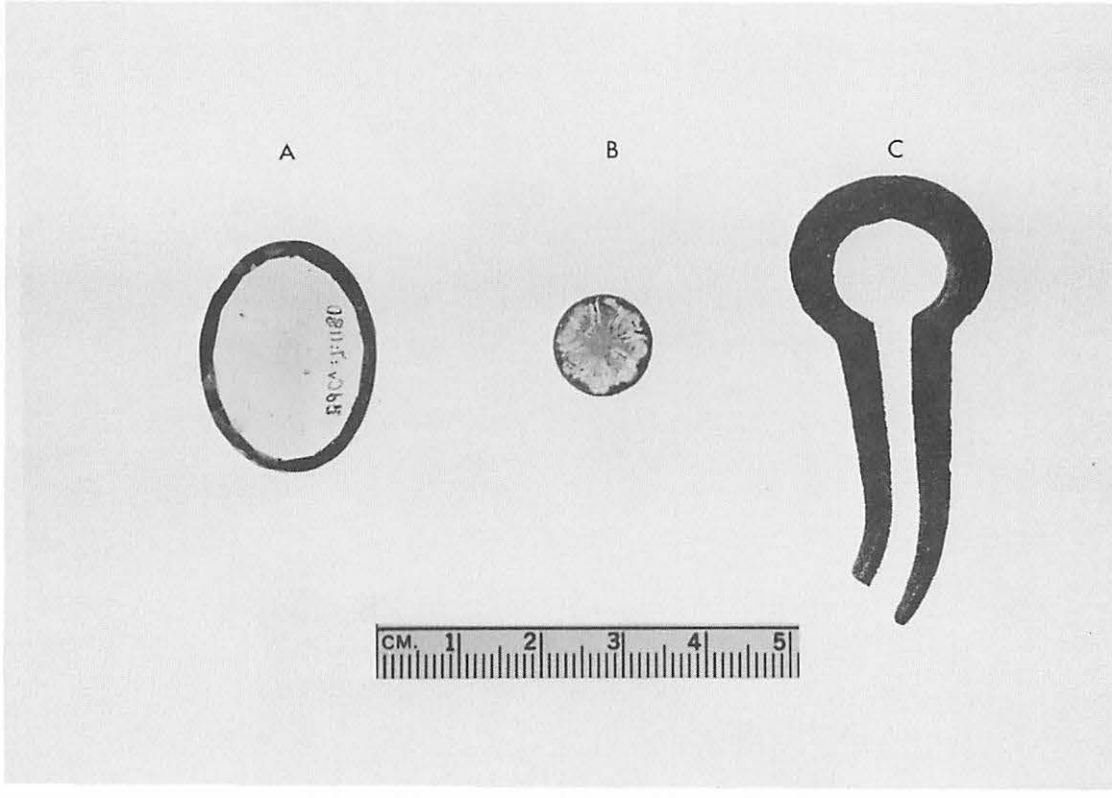

PLATE 4

PLATE 5

PLATE 6

PLATE 7

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PLATE 9

PLATE 10

PLATE 11

Preliminary Report

THE PORT TOLOUSE AND SAND HILLS SITES

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Test excavations were carried out between May 27 and August 5, 1985 under the direction of the author with a paid crew of four and the intermittent help of one to five volunteers. The investigations were concurrent with test excavations on the Parks Canada site Fort Saint Pierre in St. Peters, Nova Scotia (not under the above Heritage Research Permits), wherefore not all the time was spent on the two sites reported on here.

Both the Port Toulouse and the Sand Hills sites are in provincial parks: Port Toulouse in Battery Provincial Park in St. Peters, Cape Breton; and Sand Hills in Sand Hills Provincial Park, Villagedale, near Barrington, southwestern Nova Scotia. Port Toulouse is situated on the shore about 1 km east of the entrance to Battery Park. The Sand Hills site is on a sand-covered hilltop adjacent to the southern boundary of Sand Hills Park, just above Sebim Beach. The two sites will be described individually below. More detailed accounts are to follow in separate final reports. All illustrative material will be attached to the latter.

PORT TOULOUSE (Borden No. BjCf-2; Parks Canada site No. 19B)

Test excavation of the French fort at Port Toulouse was requested by the Historic Site and Monuments Board of Canada for an assessment of the archaeological potential of the site.

The fort at Port Toulouse was built around 1717 to protect the village of the same name and the transportation route to the interior of Cape Breton via the Bras d'Or lakes. The village was established also at that time for Acadians moving into Cape Breton from mainland Nova Scotia after the French loss of that area to the British in 1713. The fort was enlarged and improved around 1731. Both the fort and the village were burnt by the British in 1745, partially rebuilt in 1749-1750, and finally destroyed by the British in 1758.

Extensive documentation on the fort and its function has been preserved, and a fair amount of research dealing with it has already been carried out (Pothier 1967, Dickason 1976, Passfield 1977, Lee 1981). Research on the fort has also been undertaken by the Nicholas Denys Museum in St. Peters. The only previous archaeological work on the site was done by Donald Webster, Curator of Canadiana, the Royal Ontario Museum (Webster 1973). Webster's investigation was limited to a brief survey. He believed that he had identified the location of the fort, but the ruins he examined are those of the late 18th century - early 19th century establishment of the Anglo-Irish merchant Lawrence Kavanagh, Jr.

The 1985 investigation contained three elements: confirmation of the location of the fort, a survey of surface features, and test excavation of selected features. The results are outlined below.

Location

According to local tradition, the fort was situated in a wooded area immediately west of the open field where the ruins of the Kavanagh and later establishments are found (Harvey McEwan and Lloyd MacDonald pers. comm.). This is an open grassy area in an otherwise heavily wooded setting. Local residents state that the area has not been cleared in modern times. It has apparently remained open as a result of earlier occupation activities. Our work confirmed that this area is indeed the location of the fort.

Survey

The survey consisted of an air photo study, foot survey and comparison of features found with the several existing historical maps of the fort. The results are as follows:

-The open area corresponds to the surface covered by the 1734 fort. On a 1734 map, the area covered by the fort is 34.2 by 40.8 toises (approximately 68.4 by 81.6 m). The area identified in 1985 measures about 88 by 74 m.

-Tree growth, in the form of large spruce, is now beginning to infringe on the site.

-Natural drainage channels define in part the limits of the fort.

-There are no visible remains of earthworks, palisade lines or other fortifications.

-The area of the fort is marshy and covered by tussocks which obscure surface features. The marshiness is probably the result of the

gradual submergence of the coast, which in this area amounts to about 0.50 m per century (Grant 1970), and the initial clearing of trees.

-The seaward side of the fort is eroding. About 15 m of the coastline have been lost since the 18th century.

-Artifacts are present in the erosion cut in the western portion of the site.

-Only four features are clearly visible in the surface. They are two cellar pits, one well and a mounded feature.

Excavation

Excavation was limited to the larger of the two cellars and the mounded feature. The wetness of the site posed a hindrance to excavation of the features, so only small areas were investigated. No random testing was attempted in undistinguished areas of the site, as it is so water-logged that excavation cannot proceed without an elaborate pump and drainage system.

The cellar pit: The cellar pit examined is the most distinct feature on the site. It is situated near the eastern limit of the site, about 17 m inland. It was found to be the cellar of the commandant's house from the last building phase of the fort, i.e. the 1749-1750 construction. The building had been of wood on a foundation of unmortared field stone. Artifacts consisted of iron nails, window glass, clay pipe stem fragments, gunflints, a couple of brass buttons, a piece of textile, possibly of a uniform braid, and a six-denier French coin from 1711. The ceramics are predominantly French and date from

the first half of the 18th century. The pipe stem fragments have small bore diameters consistent with the date of the ceramics.

The mounded feature: The mounded feature was located in the western half of the fort, about 11 m inland. A comparison with historical maps suggests that it must have been part of the pre-1745 phase of the fort. The feature consisted in part of a layer of small field stones and appears to be related to a building with a domestic function, perhaps the barracks or provisions magazine. Artifacts associated with it were iron nails, clay pipe stems, a few pieces of ceramics, and a gunflint. There were also a couple of bird bones and a sea mammal bone. A fragment of woven wood could be evidence of either a basket or an architectural feature.

Conclusion

The local tradition concerning the location of the fort can now be confirmed. As could be expected, the early phase of the fort had the greatest physical impact on the area. The cleared area corresponds to that of the early fort. The artifactual material is French and dates from the first half of the 18th century. Although features from two different phases of the fort were tested, dating via artifacts is too imprecise to distinguish one building period from another.

The site is rich in artifacts as can be expected from a site that has twice been subjected to destruction. Unfortunately, erosion is slowly taking its toll on the cultural remains. Contrary to what could be expected, the wetness of the site has not helped to preserve organic materials, as the paludification postdates the site and has been gradual. By the same token,

the waterlogged condition of the site complicates further excavation.

SAND HILLS (Borden AjDj-9, Parks Canada 21B)

Fort Saint Louis was built in 1630 for the French Compagnie des Cent Associes and was conceded to Charles de La Tour in 1635. Currently a plaque erected by the Historic Sites and Monuments Board of Canada indicates that the site of the ruins of a small fort in present-day Port La Tour is this Fort Saint Louis. Research by the Reverend Clarence J. d'Entremont has suggested, however, that this particular fort is not Fort Saint Louis but another establishment also owned by Charles de La Tour (d'Entremont 1981:153-272). Instead, he thought that Fort Saint Louis was located on the summit of a rocky hill in what is now Sand Hills Provincial Park, Villagedale, Nova Scotia, a suggestion originally advanced by Arnold Doane in 1886. Visible here were walls and foundations of stone and scattered brick which Doane suggested might be the remains of the fort (d'Entremont 1981:251).

The 1985 excavations were requested by the Historic Sites and Monuments Board of Canada to establish whether or not the above rock and brick features were indeed the ruins of Fort Saint Louis. A 1977 investigation by Stephen Davis of the Department of Anthropology of Saint Mary's University, Halifax, had touched on this question when assessing cultural resources in the park for the Nova Scotia Department of Lands and Forests (Davis 1977). At the time, Davis recorded a couple of brick concentrations believed to be from the fort. Clay pipe stem fragments, white glazed ceramics and a fragment of earthenware were found associated with them but could not be dated, leaving open the identification of these brick piles.

In the 1985 investigations the stone and brick features mentioned by Doane (and consequently discussed by many others -- H.L. d'Entremont 1938, Perry 1970, C.J. d'Entremont 1981:153-272), were mapped, and test excavations conducted on each type of feature. The seaward slope of the hill was shovel-tested in thirty random spots. Areas at the foot of the hill and between the hill and the main road leading into the park were also carefully searched for possible cultural features.

The stone features

The stone walls were found to be field fences. A stone foundation roughly 13 by 13 m in size was that of a late 18th century dwelling associated with the fences. The dwelling had had a central chimney with a brick stack and stone base. Both the fences and the building lay partially buried by sand, on top of a surface which, at the time of their construction, had been covered with a grassy vegetation. Artifacts found in conjunction with the building were ceramics, iron nails, window glass, and a couple of clay pipe stem fragments. The pipe stems are undiagnostic. The ceramics are of entirely English manufacture such as Buckley ware, coarse earthenware of Staffordshire style, English white salt-glazed fine stoneware, and pearlware. The date range suggested by the assemblage is ca. 1750 to 1880 (Denise Hansen pers. comm.)

Bricks

Scattered bricks and brick fragments were found in and around the building. The bricks had a red fabric and were of much the same size as modern bricks. They were, however, hand-moulded. Their size and proportions indicate a relatively late manufacturing date, certainly not earlier than the second half of the 18th century.

One concentration of identical bricks was found about 500 m north of the building, in line with one of the stone fences. This is the concentration from which Davis collected artifacts in 1977. No artifacts were found associated with it in 1985, but the pieces found in 1977 appear to be the same kind as those associated with the building.

Features at the foot of the hill

Two relatively recent cellars of cut and mortared stone were found near the entrance to the park, just south of the road. According to local residents, they are from an icehouse located here during the second half of the 19th century (Harold Hogg pers. comm.). A small enclosure consisting of a single course of large field stones at the bottom of the hill was tested, but no cultural materials were encountered. The enclosure was probably a foundation for a small shed.

Shovel tests

About thirty shovel pits were dug on the seaside slope of the hill, but no cultural materials or culturally disturbed soil strata were found.

Conclusion

The stone walls, the stone foundation and the bricks stem from a late 18th century farm. The total absence of French ceramics makes it likely that the inhabitants of the farm were of English extraction. If the occupants of the farm had indeed been English, they could perhaps have been among the New Englanders who arrived in the area in 1761 to carry on the whale fishery, or new England Planters. Some of these people returned to New England after only

a few years (Haliburton 1829:188). A forest fire in 1798 in nearby Barrington, on the western shore of Barrington Bay, opposite Sand Hills, exposed a lot of sand, which, carried by winds and strong tides, migrated towards the eastern shore and Sand Hills, a process that is still in progress. The sand now covers areas once grass-covered and probably contributed to the abandonment of the farm. As for the proper location of Fort S. Louis, the question remains open.

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Whynachts Cove (BcDd:1)

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The pioneering work by Smith and Wintemberg (1973) on shell middens in Nova Scotia still remains as the only substantive report on this type of site within the province. As part of a senior methods course in Archaeology one of the sites reported by Wintemberg was selected for test excavations (Figure 1). The primary objective of the test excavations was to evaluate the extent of natural and cultural disturbance at this location. Towards this end, two one-by-two metre test units were excavated below the current road bed within the right-of-way. The units were so positioned as to ascertain the extent of damage caused by road construction (Figure 2).

Test Unit 1 Squares A and B:

The stratigraphic profile as defined in the northwest corner of the test unit revealed a thick sod/humus layer from surface to a depth of 18 cm. Below this was crushed rock from the road construction activities (18-35 cm) with sterile soil immediately beneath the crushed rock. A thin scatter of cultural deposit, represented by broken shell, was evident between the base of the crushed rock and the top of the sterile soil. The deposit was confined to the northeast and southeast corners of the unit. The only cultural material recovered was two flakes.

Test Unit 2 Squares C and D:

The stratigraphic profile as defined in the northwest corner of this test unit revealed a sod/humus layer from surface to a depth of 14 cm. It was

followed by a brown sterile fill to a depth of 8 cm which capped the crushed rock (22-42 cm). The cultural deposit was notably thicker in this unit, beginning at 42 cm below surface and extending to a depth of 54 cm below surface. The deposit was represented by crushed shell in a greasy black soil matrix. The sterile soil was immediately below this. Six flakes were recovered from the cultural deposit while a quartz biface tip fragment came from the road fill. A number of historic objects, glass fragments, plastic, iron etc. were found in the south square of this unit to a depth of 50 cm below surface.

Conclusions:

The primary objective was achieved, in that, the two areas tested clearly show that the site has been extensively disturbed. The most destructive process was the construction of the Indian Point highway. The presence of the historic objects in square D is a reflection of recent "potting" activities. The shoreline area of the site is actively being eroded as illustrated by midden deposit and flakes lying along the intertide zone. Unfortunately, due to time constraints, it was not possible to test the western limits of the site. It is anticipated that this area may contain undisturbed cultural deposits (Figure 2).

Recommendation:

Although the areas excavated were disturbed, further testing is recommended before the site is designated as totally destroyed. Any future work should be directed at the western end of the site and on the north side of the highway. A second objective that was proposed in the research permit application could not be achieved due to the time factor. This was to draw an accurate map of the site. The surface cover of the site consists of dense

stands of alder, interspersed with thick brambles and scrub. It would require at least a week to clear the site to meet this objective. Given the "potting" activities which have taken place at this location it is recommended that this surface cover be left to deter any further such activities.

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Figure 1

Wintemberg's Sites

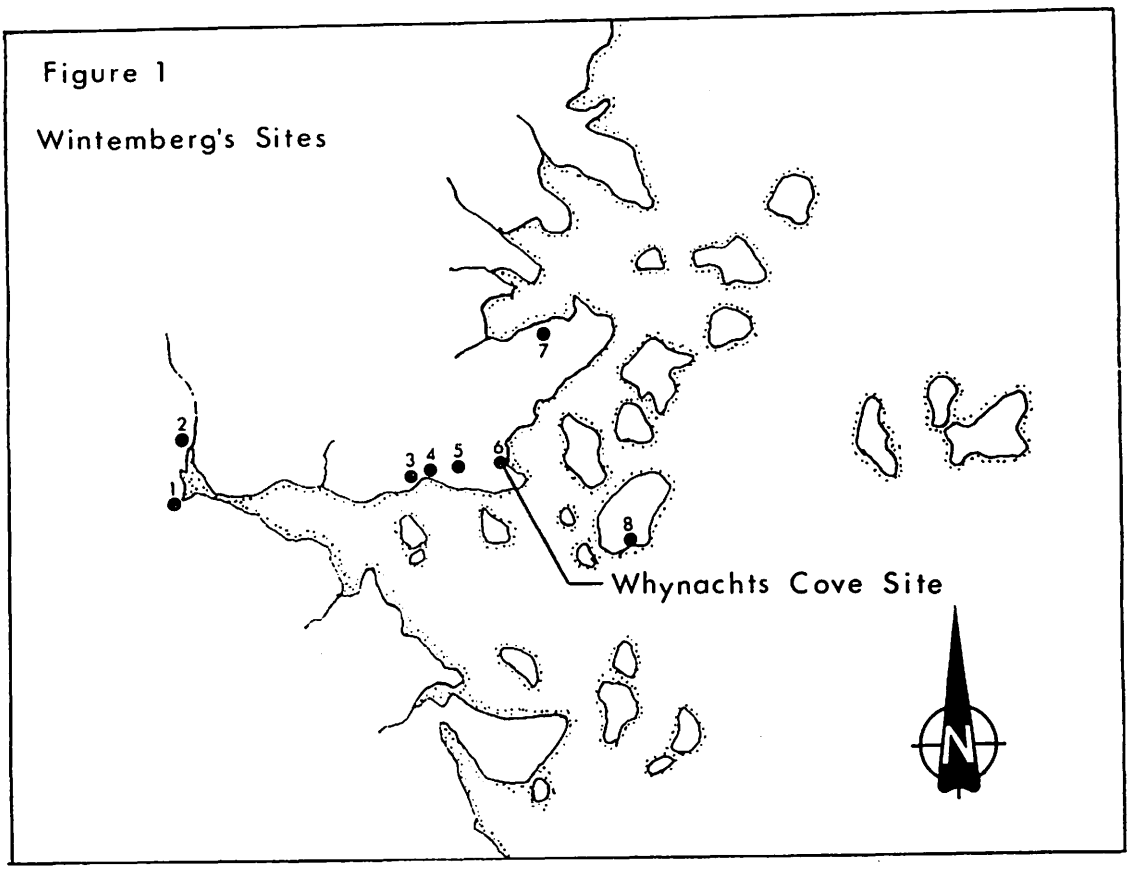
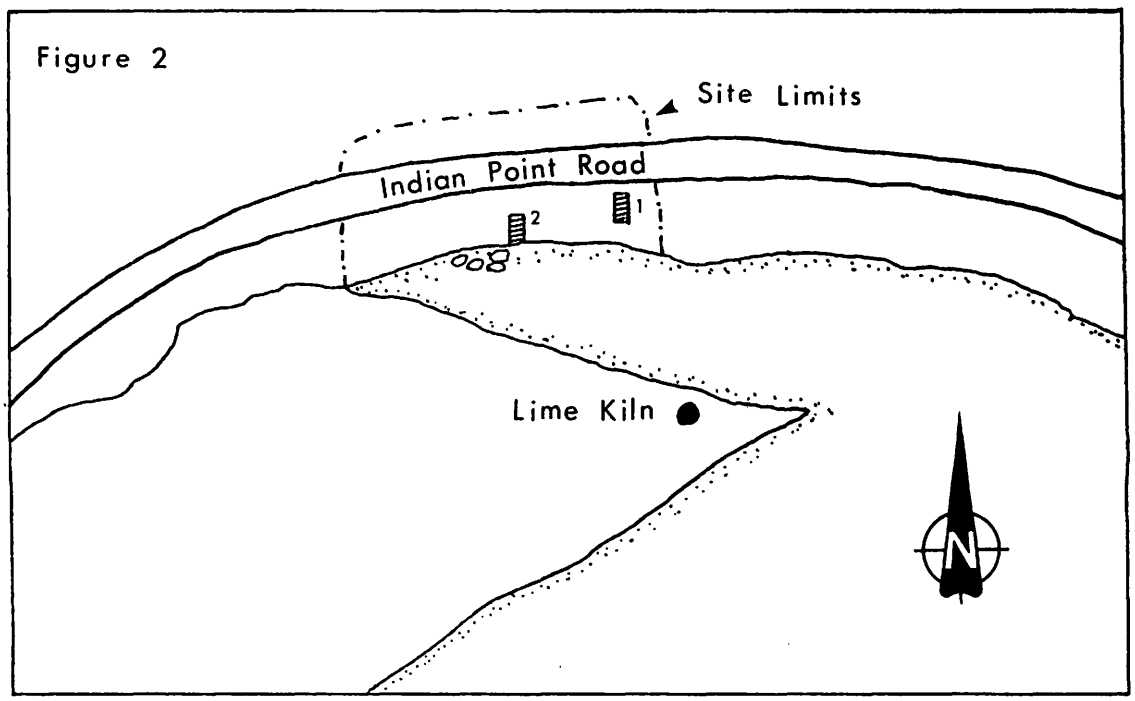


Figure 2



Preliminary Report on the Stonehurst Cairn Excavation

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Background:

On Sunday, April 21, 1986, the permit holder accompanied Robert Ogilvie and Ruth Whitehead of the Nova Scotia Museum, to the Stonehurst property of Shirley Robertson (see Figure 1). The Robertsons wished to draw the attention of the Nova Scotia Museum to two man-made cairn features located on the southeast site of their property. According to local inhabitants, the cairns had been on the property for as long as anyone could remember.

Both of the cairns were partially disturbed. The northernmost cairn had been damaged by a bulldozer during the construction of the Robertson's house. The southernmost cairn had presumably been disturbed by pothunters. The latter cairn was more intact than the first. The author took measurements of this feature and made a preliminary sketch, which is on file at the Nova Scotia Museum.

At that time, it was uncertain whether the cairns were of Aboriginal or Euro-Canadian origin. No artifacts were found on the surface of either cairn. Several historic ceramic and glass fragments were collected from a cellar feature on the northwest side of the Robertson property. These indicated that the cellar was in use during the late 19th century and early 20th century. The cellar walls were constructed of large slate blocks, probably from the same source as the slate used to construct the two cairns. However,

archaeological sources indicate the extensive aboriginal use of mounds to cover burials in Northeastern North America. In particular, an historic "copper kettle" burial recently found on Prince Edward Island was also covered by a stone cairn, which had similar dimensions to the Stonehurst feature (David Keenlyside 1986, p.c.; for a discussion of copper kettle burials in the Maritimes, see Turnbull 1984). It was agreed that the author would return to the site in May to do test excavations, in order to determine the cultural affiliation of the cairns.

Survey and excavation:

On Saturday, May 31, the author and seven members of the St. Mary's Summer Field school met with Brian Preston at the Nova Scotia Museum, and drove out to the Stonehurst site. While Brian Preston searched for a site reported on Heckman Island, the St. Mary's crew mapped the southern portion of the Robertson property and test excavated the southern cairn feature (see Figure 2). The site map was made using a surveyor's allidade, and included both cairn features, the Robertson house, the historic cellar, and features of the local geography. Elevation measurements were recorded along a north-south axis, at 10 meter intervals.

The cairn was excavated using the Quadrant technique. A tape measure was extended across the long axis of the feature, and a second tape measure was extended along the wide axis of the feature. A wooden peg was planted in the top of the cairn at the mid point, where the two tape measures crossed. The four quadrants formed by this method were numbered in opposition, rather than in a circular manner (see figure 3).

Except for a 20 cm balk on both sides of the center peg, the two opposing

quadrants 1 and 2 were excavated, while quadrants 3 and 4 were left untouched. Before excavation, scale drawings of the quadrants were made, with the aid of two one square meter drawing frames. Only two workers could excavate at one time in each quadrant. Trowels and dustpans were used for excavation. The slate slab matrix of the cairn was removed in 10 cm courses until the slate bedrock was reached. A scale profile drawing was made of the south wall of quadrant 1 (see figure 4).

Materials collected:

No artifacts were recovered from the cairn, and no secondary features (such as post-holes or hearths) were identified.

Description of feature

The stonehurst cairns are roughly oval shaped, man-made features, consisting of slate slabs of varying sizes and fill taken from the surrounding natural soils. The southern cairn has a maximum depth of 45 cm, while the maximum length of the feature is 4.1 m, and the maximum width is 2.9 m. The probable source for the slate slabs is an outcrop on the east side of the property, where there is evidence that such slabs had been pried loose. The north face of the southern cairn (especially quadrant 3) is constructed of uniform courses of large slate slabs, while the remainder of the feature is more loosely constructed.

The southern cairn is located on the southern bank, at the outlet of a small stream which runs through the southeastern portion of the Robertson property. To the west of this cairn is a small sand beach. The northern cairn is located on the opposite side of the stream, and formerly overlooked a salt marsh, which has recently been filled in with gravel.

Discussion

While the original function of the cairns remains a mystery, the absence of aboriginal material culture on the property (including the beach) suggests that the cairns are of Euro-Canadian origin. The fact that the abandoned cellar is also constructed from slate slabs supports this argument. The cairns seem too elaborate to have been boundary markers or merely stones removed from the site to facilitate construction or gardening (e.g., Gow 1893: Tarbert, St. Ann's photograph). The construction of stone cairns **en route** to graveyards is a traditional practice in the Scottish Highlands (Grant 1961:369), but this is an equally unlikely reason for the construction of the Stonehurst features. Apparently, similar features are sometimes built as cribs for utility poles in locations where there is not enough soil to support them (Ralph Pastore 1987, p.c.). However, there is no post mold or depression in the center of either cairn to suggest such a function for the Stonehurst cairns. If the forested point of land between the two cairns and Mahone Bay were barren of vegetation when the features were built, then the cairns might have served as the bases for movable beacons indicating the location of the property to passing vessels. However this is merely conjecture. A more satisfactory resolution of this problem may yet to be found in a study of local folkways.

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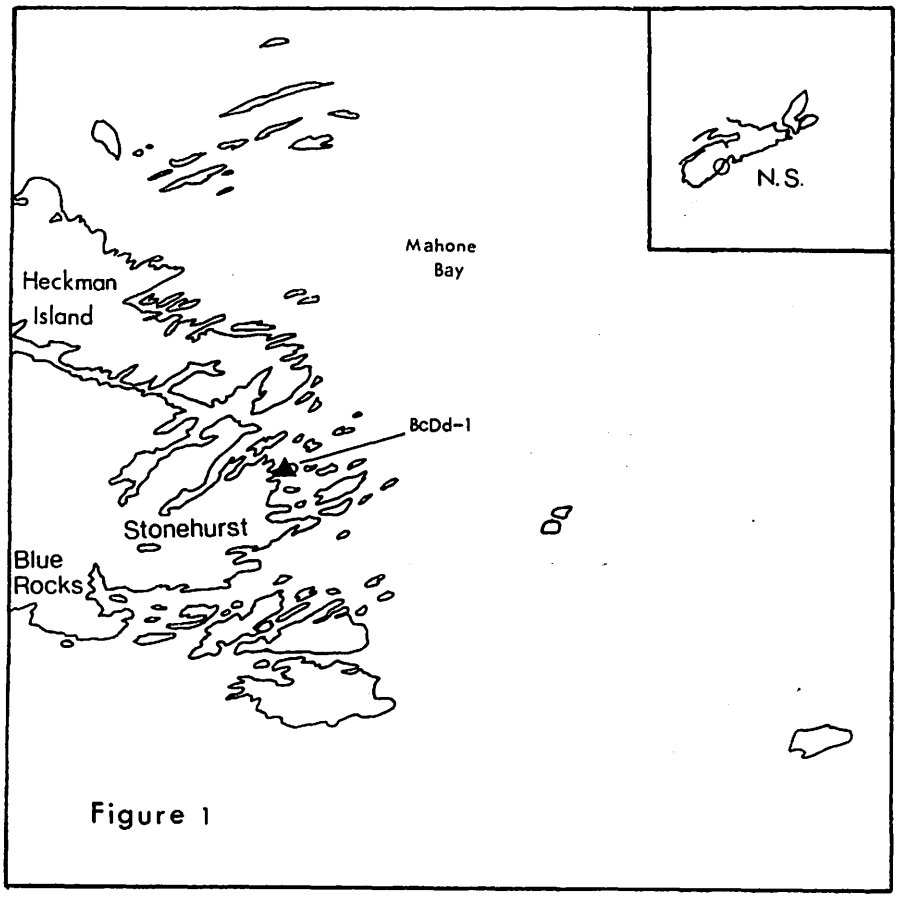


Figure 1

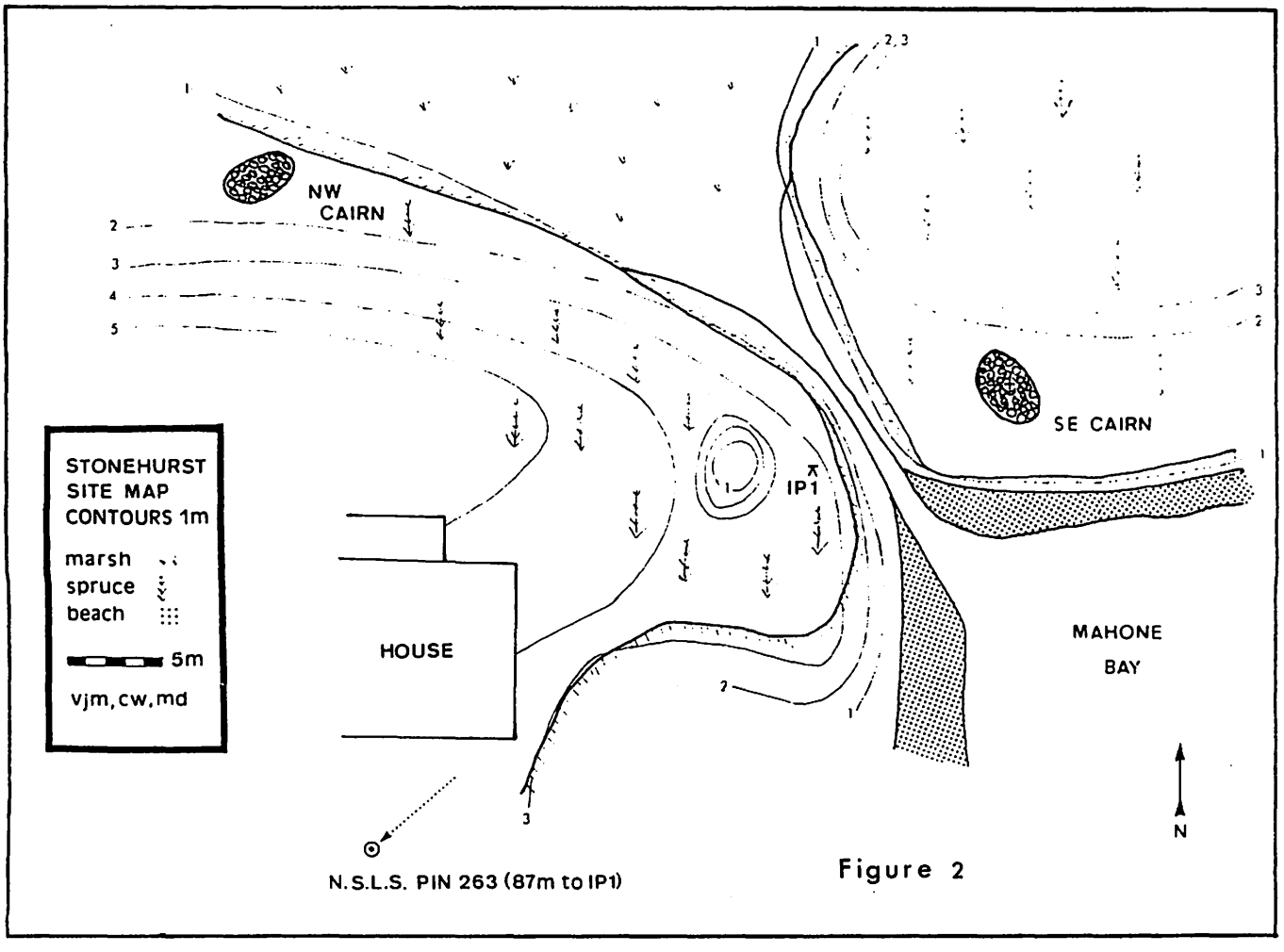


Figure 2

Figure 3

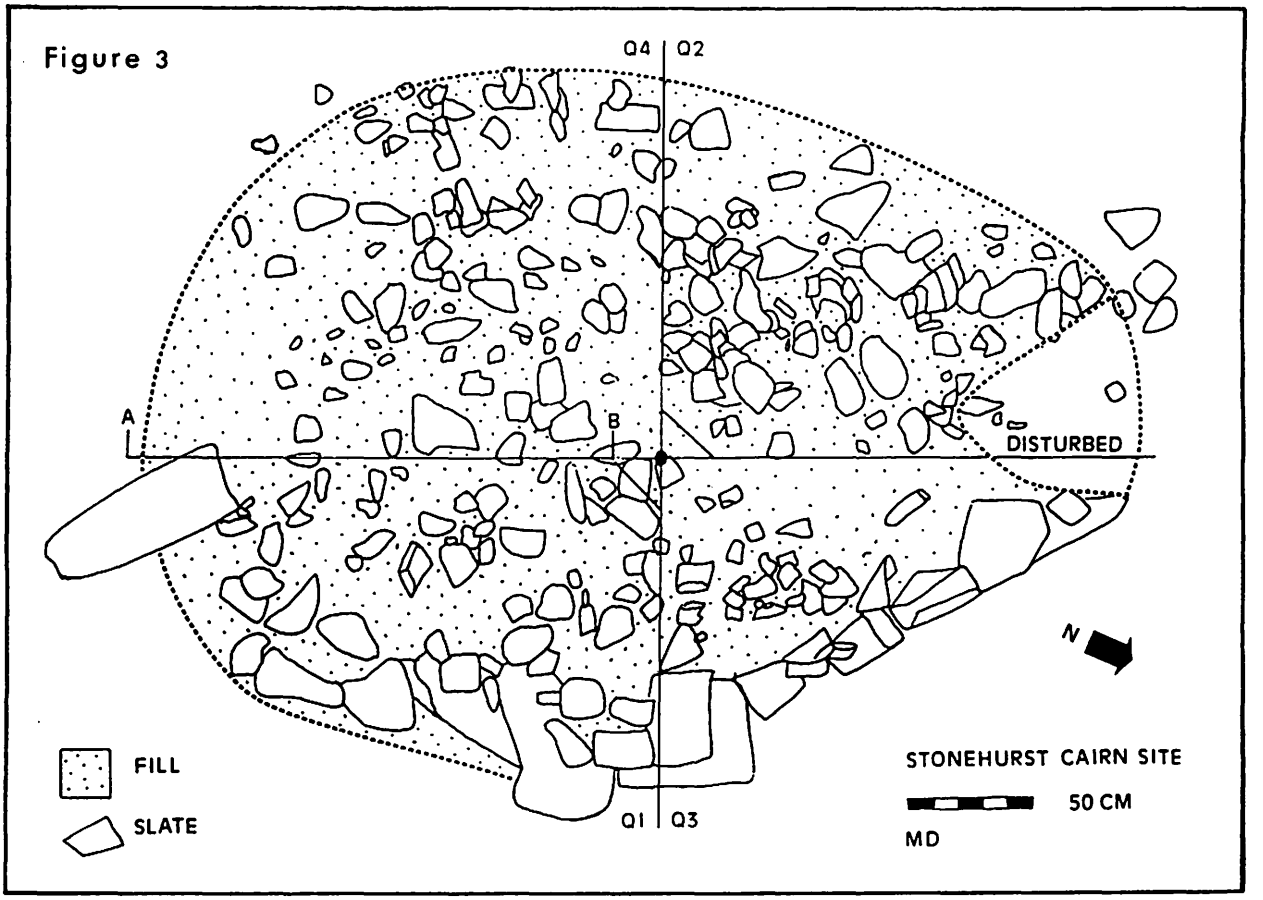
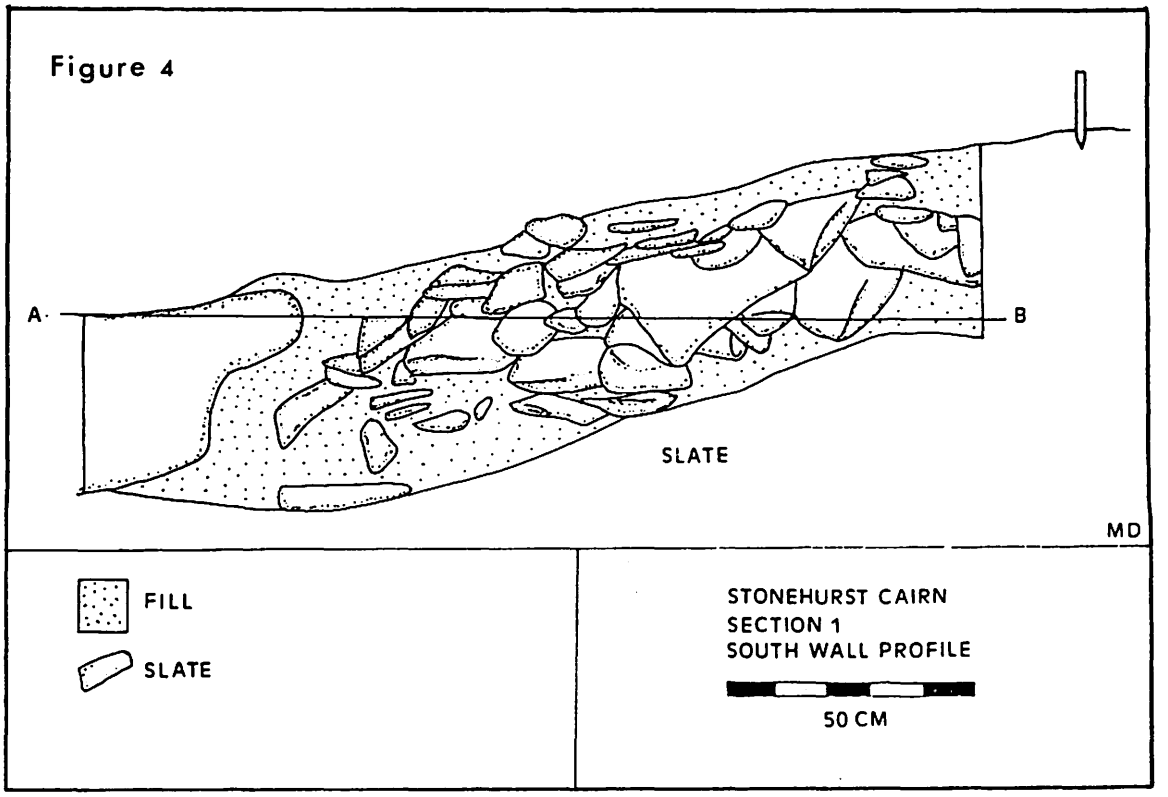


Figure 4



Archaeological Survey, 1986

KEJIMKUJIK NATIONAL PARK SEASIDE ADJUNCT

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1986 Survey

The purpose of the survey was to provide an inventory of pre-historic and historic cultural resources within the area designated the Seaside Adjunct of Kejimkujik National Park, consisting of the headlands and lagoons between the bays of Port Joli and Port Mouton. This will be one of a series of resource inventories prepared prior to the development of a management plan for the park area.

Survey work was conducted primarily by foot survey along the coast, testing areas considered to have potential for supporting occupation. Testing was conducted by shovel, at 5-m intervals, except where conditions such as vegetation density prohibited a regular distribution. Particularly promising areas and those with visible historical remains were frequently tested by controlled trowel excavation of $1m^2$ test pits. Structural remains were mapped. Surveys of St. Catherines River and Little Port Joli Basin lagoons were conducted both on foot and by canoe, using similar methods for sampling suitable areas.

Only one prehistoric site (25B36) was recorded within the park boundaries, although numerous Ceramic Period sites are found throughout the bays to either side. A stemmed projectile point was found by visitors to the park at the

eastern end of St. Catherines River Beach. Stylistically it is attributable to Late Archaic occupations in the area. Its presence in isolation from any site deposit probably indicates a transient use of the coast by native peoples settled in the more protected inner harbours of Port Joli and Port Mouton.

Documented historic occupation begins with pre-Loyalist and Loyalist land grants in the late 18th century. One site within the park (25B30) appears to have remains dating to this period. Specific documentation on the dwelling site has not been found. It falls within a plot of land granted in 1784 to John Thomas, a Loyalist and prominent merchant in Liverpool (Nova Scotia. Department of Lands and Forests 1974; Tulloch 1987). The occupant may have been a tenant fisherman or farmer, although the occurrence of Chinese export porcelain among the ceramics excavated suggests a rather higher socio-economic status. Since Thomas himself remained in Liverpool, the identity of the occupant has not been determined.

Occupation in the 19th century is found on both sides of the Port Joli headland, on the Black Point headland and in New Building Cove where a cluster of 3-4 house remains were located. Land use consisted of isolated homesteads and small family groups of dwellings scattered along the coast. Most occupants were probably fishermen and their families. Scattered summer camps would also have been in use, although their existence is not clear in the archaeological record. A stone foundation and cellar pit (25B32), recorded on the east side of Black Point, constitute the visible remains of a dwelling which may actually have been built in the late 18th century. It was certainly in use by the early 19th century, as indicated by the presence of hand-forged wrought iron nails among the architectural debris and the predominance of

creamware and pearlware in the ceramic materials from an adjacent midden. This building was also probably the first to be occupied by the Kinney family, in 1877, when they began their acquisition of the lands which today make up the Kejimkujik Seaside Adjunct (Nova Scotia. Department of Lands and Forests 1974). It may be the longest occupied site in the park, surviving to the 20th century.

Another 19th century site of interest lies on the western shore of Port Joli Head at Boyds Cove. This was the site of a free Black homestead (25B3) occupied by Jeremiah Downey and his family. Downey was living in the Liverpool area as early as 1826 (Long 1926:690). He may have moved to the site in the mid-19th century since only a few pearlware ceramic sherds were recovered and later refined white earthenware dominates the ceramic assemblage. Downey sold the land in 1874 to Christopher Wagner (Nova Scotia. Department of Lands and Forests 1974). Wagner may never have occupied the site. As such, then, it contains potentially valuable deposits relating to the early ethnic Black population of southern Nova Scotia.

Twentieth century land use saw the consolidation of numerous land grants into a single large property owned by William A. Kinney and his son, Ansel (Nova Scotia. Department of Lands and Forests 1974). The Kinneys established a large livestock farm, primarily for sheep, with a residential base in the central headland, including large barn structures. Other outbuildings were set up on the two main headlands. Some occupation of the houses on Port Joli Head and in New Building Cove continued at this time. By 1925, the Kinney farm had collapsed financially. Ten years later the land was sold at a tax sale to Fred and Howard Burgess of South West Port Mouton. During this time, local families maintained fish camps on Port Joli Head for summer use (Fred

Burgess 1987: pers. comm.). In 1949 the property was bought by Bourdette Wood, an American who spent summers with his family in Nova Scotia. The province of Nova Scotia expropriated it from his widow, Dorothy Wood, in 1974, and subsequently transferred it to Environment Canada - Parks in 1985.

Evidence of recent hunting cabins and shore remains from clam bakes were noted around both lagoons. These features are not considered of significance for the cultural resources inventory.

Site Designations

The Kejimkujik Seaside Adjunct has been designated under the Environment Canada - Parks system by the provenience number 25B. Individual areas tested or recorded have been assigned separate numerical 'operation' numbers. Individual sites or clusters of sites of historical significance have been assigned Borden numbers.

Sites Investigated

Note: Universal Transverse Mercator grid co-ordinates (UTM) are taken from sheet #20P/15 and 20P/10 of the National Topographic Series, 1976.

Operations	Borden #	Description
1	AlDe 5	Wood/Kinney residence and adjacent outbuilding; 20th century. Shovel-tested around buildings; house demolished in 1986. UTM 541569.
2	N/A	Wood terrace, eastern shore of Port Joli. Shovel-tested; no site. UTM 503551.

3	AkDf 4	Downey/Wagner lot; stone piles & 19th century domestic refuse in cleared field; free Black homestead. Shovel tests & trowelled test pits. UTM 504542.
4	N/A	Boyds Cove Ponds, gravel bar. Shovel-tested; no site. UTM 508540.
5	N/A	Boyds Beach; small depression in heath. Shovel-tested; no site. UTM 513535.
6	AkDf 5	Cameron property; house & barn foundations, well, hollowed hill; 20th century occupation. Shovel-tested. UTM 524529.
7	N/A	MacLeods Cove; grassy terrace. Shovel-tested; no site. UTM 524533.
8	AkDf 6	Issacs Harbour; rectangular grassy field; 19th century debris. Shovel tests and trowelled test pits. UTM 524538.
9	AkDf 6	Isaacs Harbour; well depression; 19th century debris. Shovel tests & trowelled test pit. UTM 524540.
10	AkDf 7	Wagner house foundations; 19th and 20th century domestic occupation. Trowelled test pit. UTM 522542.
11	N/A	St. Catherine River road; rock mound; function unknown. Shovel tests. UTM 519544.
12	AkDf 8	Freeman house foundation, barn remains & well; 19th and 20th century. Surface collected. UTM 516546.
13	N/A	Harbour Rocks, St. Catherines River Bay; grass-covered rocky point; wave-tossed refuse. Shovel-tested; no site. UTM 523543.

14	N/A	SW end. St. Catherines River Lagoon; grass pasture. Shovel-tested; no site. UTM 521553.
15	N/A	St. Catherine River Lagoon. Shovel-tested at various locations; no sites, except for furrows under water at UTM 524561: 1920s Kinney farm activity. UTM 520-530/550-570.
16	AlDe 6	New Building Cove; unidentified building foundation, Roy family (?); 19th & 20th century occupation. Shovel tests & trowelled test pit. UTM 560605.
17	AlDe 6	New Building Cove; house foundation, 19th-20th century (?). Shovel tests & trowelled test pit. UTM 560605.
18	AlDe 6	New Building Cove; unidentified cellar depression, 19th century. Shovel-tested. UTM 561605.
19	AlDe 7	Mouth of Little Port Joli Creek; outbuildings of 20th century Kinney farm. Shovel-tested; neither features nor occupation debris located. UTM 552583.
20	N/A	Bridge across Little Port Joli Basin; wooded terrace at narrows. Shovel-tested; no site. UTM 539587.
21	N/A	Little Port Joli Basin; clearing on small island at west end. Shovel-tested; no site. UTM 541588.
22	N/A	Little Port Joli Basin; clearing on small island at west end. Shovel-tested; no site. UTM 538583.
23	N/A	Basin Lake; wooded terrace at west end, access to Little Duck Hole. Shovel-tested; no site. UTM 534590.
24	N/A	Meadow Lake; low terrace at head of stream to Basin Lake. Shovel-tested; no site. UTM 534598.

25	N/A	Basin Lake; low terrace at foot of stream from Meadow Lake. Shovel-tested; no site. UTM 537595.
26	N/A	Little Port Joli Basin; wooded terrace, north shore. Shovel-tested; modern clam shell deposit; no site. UTM 544587.
27	N/A	Little Port Joli Basin; collapsed hunting cabin on north shore. Surface collection of modern ceramics; not considered a site. UTM 547587.
28	N/A	Little Port Joli Basin; north side of stream at east end. Shovel-tested, no site. UTM 549587.
29	N/A	Little Port Joli Basin; south side of stream at east end. Shovel-tested; no site. UTM 550587.
30	AlDe 8	Little Port Joli Basin; grassy mound at east end. Shovel tests and trowelled test pits; late 18th century material; domestic site property of John Thomas, Loyalist. UTM 551585.
31	AlDe 5	Large livestock barn of Kinney farm, 20th century. Feature recorded; no excavation. UTM 541569.
32	AlDe 5	House Cove; residence foundation, early 19th century. Shovel tests & trowelled test pits. UTM 542570.
33	AlDe 5	Sheep shed near Black Point; 20th century Kinney farm. Surface examination, but no features located. UTM 541565.
34	AlDf 20	St. Catherines River schoolhouse foundation; on S. C. R. road. Feature recorded; no excavation. Original frame structure now stands in town of St. Catherines River. UTM 508553.

35	N/A	Little Port Joli Basin, west end. Shovel tests at various locations; no sites (burnt remains of modern hunting cabin at UTM 537578). UTM 535-541/573-579.
36	AlDe 9	St. Catherines River Beach; stemmed projectile point; Late Archaic. Surface find by park visitors. UTM 537564.

Subsequent documentary research suggests that other structural remains, related to early 20th century occupation, may be found within the survey area. They include:

Davenport Point - unidentified building shown on early air photos and topographic maps (Canada. Department of Energy, Mines and Resources. National Air Photo Library 1927; Canada. Department of Energy, Mines and Resources. Geological Survey of Canada 1931). UTM: 565588.

New Building Cove - unidentified residence shown on early air photos and topographic maps (ibid); may be Roy family. UTM: 559605.

St. Catherines River Beach - sluice gate for canal built by W. A. Kinney at east end of beach, early 20th century (Windsor Wood 1986: pers. comm.). UTM: 539563.

Artifact Collection

Artifacts from the 1986 survey are stored with the Archaeology Unit of Environment Canada - Parks in Halifax. Materials, including kitchen ceramics and glass, bone refuse, and clothing items reflect the domestic role of most of the areas tested. Artifacts from 25B30 include late 18th century ceramics, while early 19th century material is found at 25B32. The material from most others sites dates to the late 19th and 20th centuries.

Field Records

Archaeological field notes, drawings and photographs from the survey are catalogued and stored with the Archaeology Unit of Environment Canada - Parks in Halifax.

References Cited

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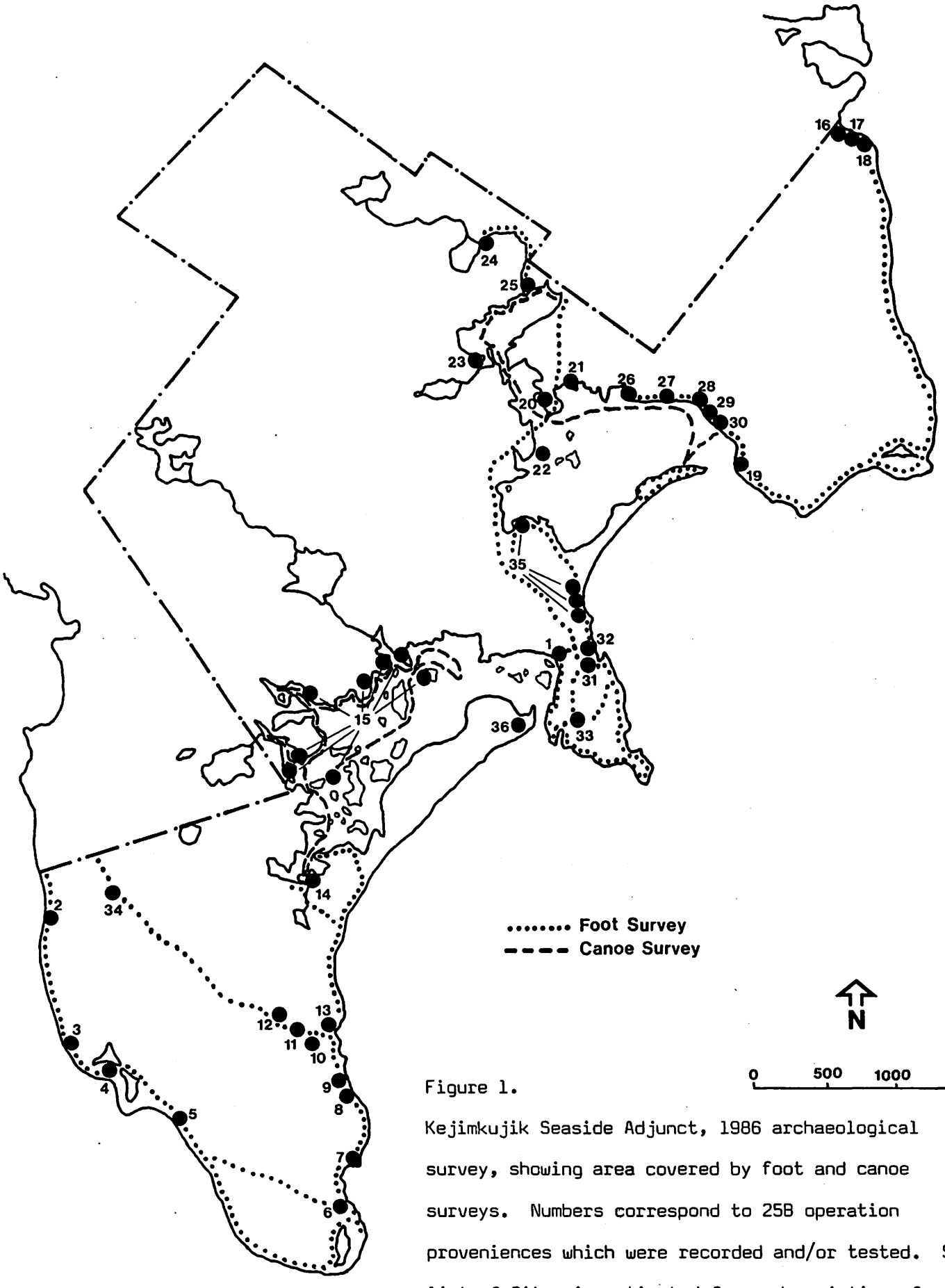

Figure 1.

Kejimkujik Seaside Adjunct, 1986 archaeological survey, showing area covered by foot and canoe surveys. Numbers correspond to 258 operation proveniences which were recorded and/or tested. See list of Sites investigated for a description of each.

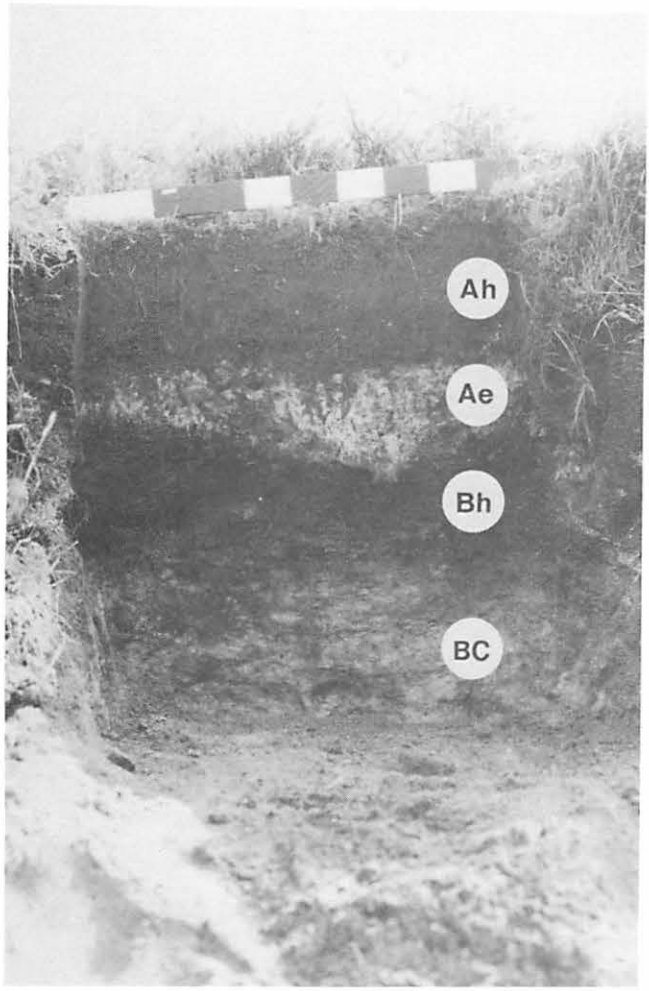

Figure 2.

Typical podzol soil horizons encountered on most sites in the Kejimkujik Seaside Adjunct (Canada. Department of Agriculture 1978):

Ah - accumulation of organic matter in mineral horizon.

Ae - mineral horizon from which organic matter has been leached.

BC - transition to unaltered parent mineral horizon (C).

Cultural resources are invariably located within the upper Ah horizon.

Figure 3. Line of shovel tests on the property of Jeremiah Downey, a free Black from the Liverpool area (25B3). Occupation of this open field began around the mid-19th century.

Figure 4. One of 25 piles of stone scattered over the Downey property (2583). In this case, smaller field stones have been piled around a large boulder. The piles were probably created by the Downeys when clearing the land for farming.

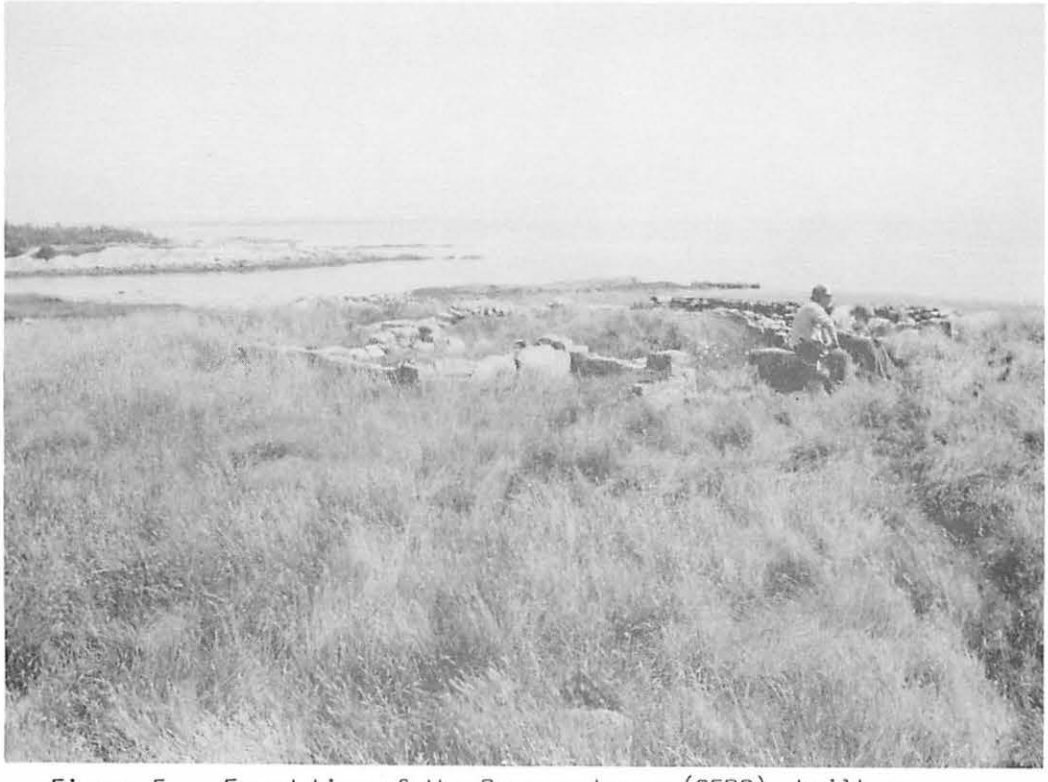

Figure 5. Foundation of the Cameron house (2586), built ca. 1912 for Hugh Cameron, a shepherd employed by W. A. Kinney for the St. Catherines River Farm.

Figure 6. Early 19th century occupation sites on Port Joli Head: a small clearing and possible house site (25B8) and a probable cellar depression (25B9).

Figure 7. Section through the southwest corner of the stone-lined depression in 25B9. The build-up of thin layers of organic and leached soils outside the depression (to the left) may have resulted from repeated flooding and overflow.

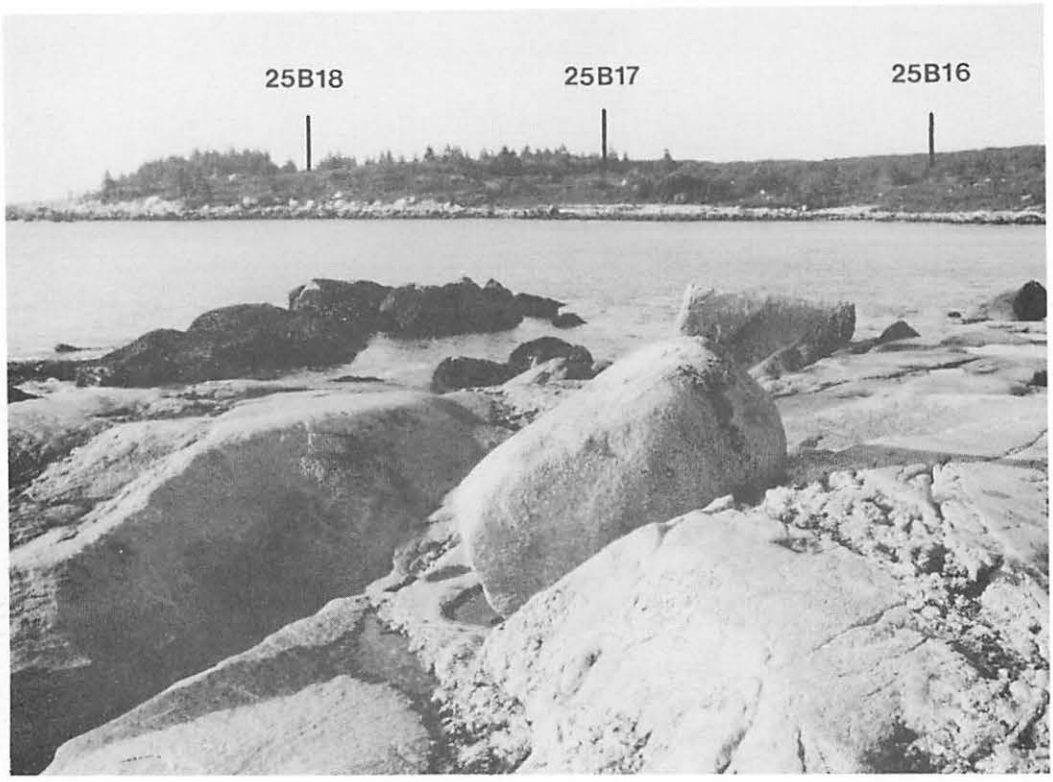

Figure 8. House sites in New Building Cove (25B16, 17 & 18), dating to the 19th century.

Figure 9. House foundation and cellar (25B16) in New Building Cove.

Figure 10. House foundation and cellar (25B17) in New Building Cove. This house had burned, leaving charred boards, melted window glass and burnt artifacts of household use.

Figure 11. Cellar depression (25B18) on height of land overlooking New Building Cove.

Figure 12. Small terrace (25B30) among trees on east shore of Little Port Joli Basin. This is the site of the earliest European occupation yet found in the park and probably dates to the original Crown grant of the property of John Thomas, a Loyalist, in 1784.

Figure 13. View towards mouth of Little Port Joli Basin from the same 18th century site (25B30). The terrace is in the foreground.

Figure 14. Stone foundation and cellar of old Kinney house (25B32) on Black Point. This house was first occupied in the early 19th century, before William Kinney purchased the land in 1877, and was still in use at the end of the century.

Figure 15. Remains of large barn (25B31) built by William A. Kinney after 1912 as part of the St. Catherines River Farm.

Figure 16. Stone foundation remains of St. Catherines River schoolhouse on Port Joli Head.

Figure 17. St. Catherines River schoolhouse at its present location in the community of St. Catherines River.

FORT EDWARD NATIONAL HISTORIC SITE

Robert Ferguson, Project Archaeologist,
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Site Designations

The Borden number for Fort Edward is BfDa3. Its archaeological provenience number under the Environment Canada - Parks system is 26B. Excavations in the 1986 season have been combined under a single 'operation' designation of 26B1. Individual excavation units ('sub-operations') are designated alphabetically and sequentially from 'A' to 'S'. A further sub-operation designation, 'T', has been used for surface recovery of a stone boundary marker.

Site Location

Fort Edward N.H.S. is located in Windsor, Nova Scotia, on a promontory overlooking the town and its harbour, as well as the confluence of the Avon and St. Croix Rivers.

U.T.M.

104829 for sheet #21A/16 of the National Topographic Series, 1976.

Scope and Objectives

The purpose of the project was two-fold:

1. To determine the extent of evidence for an 18th century palisade on the fort's parapet and for a later fraise (inclined palisade) on the glacis.
2. To test and monitor excavations around the blockhouse for floodlights and their requisite wiring.

Significance

Fort Edward has been designated a national historic site, commemorating its role as a British military outpost on the road between Halifax and Annapolis Royal and as a centre for the gathering of local Acadians during the deportation of 1755. The site includes the oldest standing blockhouse in Canada, built when the fort was founded in 1750 (Figure: 1).

The initial examination for the palisade features was required to provide information on the archaeological potential for possible future site developments. Subsequent testing and salvage excavation was required to protect historic features and recover archaeological data which would otherwise be lost as a result of the installation of lights and wiring around the blockhouse.

Research Plan and Methodology (Figure: 2)

1. A 2x6 m test trench (26B1A) was laid across the north parapet (the least disturbed) to recover possible evidence of the palisade line. A second trench (26B1B), 1x3 m, was placed on the eastern glacis in a location where historic plans suggested the wooden fraise would be located.

2. Two 1 m^2 pits (26B1C&D) were excavated to a depth of 1 m or more at the sites chosen by the contractor for floodlight locations. As the test in the parade uncovered a significant cobbled feature, this pit (26B1C) was expanded to a 1x2 m unit to further expose the feature and suggest the least damaging location for the fixture. Three trenches (26B1E, F, G), 0.5 m wide and of varying lengths, were excavated at key locations in the path of the wiring trenches, one at either end of the entrance ridge and one on the west parapet. These were excavated to ca. 0.5 m below

surface, the depth required for the wiring. Time did not permit a full excavation to the base of the occupation strata. Intervening areas within the fort (26B1H to P) and to 20 m down the western slope (26B1Q&R) were dug by labourers, with the excavated material examined by archaeologists for artifacts. A further stretch of ca. 60 m (26B1S) was excavated by backhoe, with spot-checking by archaeologists. Features located during excavation were skirted where possible or recorded before removal.

Investigations of 1750 Palisade

Local concern for the reconstruction of Fort Edward N.H.S. has recently focussed on the original palisade around the fort. A watercolour of Fort Edward (Figure: 3) by Captain John Hamilton, 40th Regiment, indicates that in 1753, three years after its founding, the fort was enclosed by a palisade, with a ditch running parallel around the outside. Hamilton's sketch suggests a simple structure set into the ground. An undated, but closely contemporary plan of the fort by Edward Wright (Figure: 4) indicates a possible parapet around the fort but provides no information on the palisade. Written documentation is insufficient to provide further clarification. In any event, by the time of the American Revolution the configuration of the outer defences of the fort had changed. The palisade had been removed and placed at the bottom of the ditch at the base of the revetment for an earth parapet. Two plans, dated 1779 (Figure: 5) and 1799-1800 (Figure: 6), show this configuration, and also give cross-sections through the parapet, ditch and glacis in the southeast bastion (Figure: 7). The palisade posts are depicted as approximately 10' (3.05 m) in length, with about 7 1/2' (2.3 m) standing above ground and 2 1/2' (0.75 m) set into the earth. The earlier of the two plans also shows a 'fraise', or inclined palisade, at the foot of the glacis,

outside the ditch.

North Parapet Location: Between the 15th and 19th of September we addressed the problem of locating the original palisade. Our assumption was that it had been constructed on top of the earth parapet. Today, only the northern section of the parapet is well preserved. Consequently, to provide a cross-section through the parapet and the palisade line a 2 m x 6 m trench (26B1A) was laid across its centre, running from the edge of the parade over the top and 2 m down the revetment slope (Figures: 8, 9). The limited time available did not permit us to excavate a complete cross-section of the parapet, but did allow us to reach what we believe is the original level of parapet fill. This was indicated by a distinct soil change accompanied by changes in the types of artifacts recovered. While artifacts from the upper levels include 19th century British military buttons and contemporary ceramics, the few artifacts from the lower level, which include sherds of Chinese export porcelain and English fine salt-glazed stoneware, are more typical of the 18th century. The surface of the early parapet fill was carefully uncovered to expose any post molds or construction trench which might remain from the palisade. No such evidence was found. At the time we felt that the top of the parapet, including any palisade remains, must have collapsed into the ditch. Hamilton's painting suggests, alternatively, that the palisade remains may be located in the ground surface below the parapet fill. If so, continuation of the excavation through to the base of the parapet would be required to recover the information.

An area of cobblestone pavement, probably dating to the 19th century, was uncovered at the inside foot of the parapet. This, presumably, would have been part of a walkway along the inside perimeter of the parapet. Artifacts

in the sub-operation were most densely concentrated over these cobblestones and in a dark silty loam which had accumulated on the lower slope of the parapet. Both 18th and 19th century materials of the British military occupation were recovered (Figure: 10). They include pewter and brass buttons of the 57th Regiment of Foot and the Royal Artillery, a Jew's harp, marble, gunflint, musket balls and a British George II halfpenny pre-dating 1755, along with ceramic and glass fragments and food refuse from domestic activities.

West Parapet Location: Very little is left of the earth parapet along the east, south and west sides of the fort. Surface contours across the south parapet, for example, indicate a rise of no more than 0.4 m or just over 1 ft. Evidence of the original palisade, if it was built into the original ground surface as Hamilton's sketch suggests, may lie not too far below the surface in these areas.

Salvage excavations, 27-31 October and 17-26 November, touched on areas below the west parapet north of the entrance to Fort Edward (26B1D,E,K,N). These excavations, however, were constrained by the need to serve engineering rather than research concerns, and were unable to confirm the existence of palisade remains here.

The only standing section of the west parapet appeared to be an original part of the fort. The recovery of a golf ball at the base of the 'parapet' fill (Figure: 11), however, indicated that it was a feature of a golf course which covered the site in the 20th century. Closer to the fort's entrance, where no parapet was evident, a single post was found, but this showed no relationship

to other posts and cannot be construed as evidence of the palisade.

East Glacis Location

During the September excavations, a trench (26B1B) was placed at the foot of the glacis beside the southeast bastion to look for evidence of the fraise, with negative results. This could be because we were unable to determine the precise limits of the glacis on the slope and/or possibly because of the small size of the archaeological trench (1 m x 3 m) necessitated by time limitations. Dimensions indicated on the 18th century plans are probably idealized, and actual glacis and fraise locations may vary considerably with varying slope around the fort. A more extensive testing strategy would be required to address the question of evidence for the fraise.

Other features

During the course of test excavations for the palisade and the salvage operations a number of well-preserved extant features were uncovered. An undisturbed area of cobblestone paving (26B1C,J) was discovered in the centre of the parade beside one of the collapsed barracks. This pavement displayed a complex pattern of construction combining the use of local field stone cobbles with cut pieces of a dark quartz sandstone. The sandstone blocks form a drain down the centre of the pavement and a boarder along the edge (Figures: 12, 13, 14). This darker stone is probably not native to Nova Scotia (R. Grantham, Nova Scotia Museum, 1987: pers. comm.) and may have been brought in as ship's ballast.

At the entrance to the fort, a mortared stone abutment for the bridge was revealed (26B1G; Figure: 15), as well as a later cobbled road across the ditch (26B1P; Figure: 16). Extensive deposits of 18th and 19th century British

military debris were found throughout the interior of the fort and continue undisturbed down the west slope to the edge of the modern parking lot.

One final intriguing feature occurred in a layer of soil below the northwest bastion (26B1D) at 110 cm below the surface. This soil contained numerous fragments of tamped clay similar to pieces found in an Acadian house site excavated at Belleisle in the Annapolis Valley (Christianson 1986: 69-70). Alex Wilson of the Nova Scotia Museum (1987: pers. comm.) has identified plant impressions in the clay as salt marsh grasses, Spartina sp, (Figure: 17). The predominant species used seems to be the common salt marsh hay, S. patens, valued by Acadians as livestock fodder. Less useful species, S. alterniflora and S. pectinata, may also be present. The presence of tamped clay below British military deposits may indicate Acadian craftmanship in the initial construction of Fort Edward or may hint at earlier Acadian activity on the hill prior to 1750. The only associated artifacts from the stratum consist of a wrought iron nail and two probable sheep bones (Frances Stewart, Department of Anthropology, University of New Brunswick, 1987: pers. comm.) none of which clarify the date or cultural affiliation of the deposit.

Artifact Collection

Artifacts from the 1986 excavations are at present being processed by the Material Culture Research section of Environment Canada- Parks in Halifax. The collection will be inventoried and stored in Halifax except where use is required at the park.

Artifacts recovered include a cross-section of the material culture of an 18th-19th century British military outpost. Uniform buttons, musket balls and gunflints; a Jew's harp and marbles; and clay tobacco pipes reflect the

military role of the site and the leisure activities of the men garrisoned there. Foodways remains include numerous wine bottle fragments, ceramics from tin-glazed earthenwares and Chinese porcelains to later creamwares, pearlwares and refined white earthenwares, a few pieces of table glass, and an extensive quantity of bone refuse, the latter found particularly down the western slope outside the fort's entrance (Figure: 18). Of two George II half-pennies found, one dates to 1752, the first year that a supply of British currency was shipped directly to Halifax from England in an effort to relieve a currency crisis in Nova Scotia (Shortt 1933: x1, 364-372; Rompkey 1982: 43).

Later material not related to the British military but of some interest include a plastic pin of Edward, "Our Prince", probably from the Prince of Wales' tour of the province in 1919, and a collection of 20th century golf tees from early wooden varieties to multi-coloured plastic ones.

A 19th century stone boundary marker (26B1T; Figure: 19) of the British War Department, # 7 of 12, had been broken from its base and was found by Roland Meuse of Windsor, lying on the ground beside the modern railway tracks. This was retrieved and placed in the blockhouse.

Field Records

Archaeological notes, drawings and photographs from the excavation are catalogued and stored with the Archaeology Unit of Historical Resources Research, Environment Canada - Parks, in Halifax.

Terminology (Sheridan 1973: 75-88)

Bastion: A projecting part of the fortification, usually pentagon-shaped and made of earthenworks.

Fraise: A palisade made horizontally or slightly inclined ... (At Fort Edward it is located at the foot of the glacis.)

Glacis: A gentle, sloping earthwork ... stretching towards the country. Every part of it should be covered by fire.

Palisade: Strong, pointed wooden stake. A number of them fixed deep in the ground and in close proximity create a defensive work. They are often placed parallel to the covered way on the glacis and also in the ditch and ramparts.

Parapet: A defence of earth or stone to cover the troops and armament from the enemy's fire and observation.

Revetment: A retaining wall of masonry supporting the face of the ramparts. (At Fort Edward, there is no rampart. The revetment here is a sod wall from the parapet into the ditch.)

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Shortt, Adam

1933 Documents Relating to Currency, Exchange and Finance in Nova Scotia, with Prefatory Documents, 1675-1758. J. O. Patenaude, Acting King's Printer, Ottawa.

Sheridan, S.

1973 "Glossary of Military Terms used in Fortifactions." Archaeological Excavation Manual. Ed. Jervis D. Swannack. National Historic Sites Service, Ottawa.

1. Salvage excavations around the 1750 blockhouse at Fort Edward National Historic Site, 20 November, 1986.

2. Plan of 1986 excavation units at Fort Edward:

A-S Sub-operation designations for 1986 excavations (26B1)

a controlled excavation by trowel

b controlled excavation by shovel

c excavation by shovel (labour crew); Sub-op. 'S' by backhoe

d extant structures

e former structures

1 1750 blockhouse

2 soldiers' barracks

3 storehouse

4 well

5 bridge

6 ditch

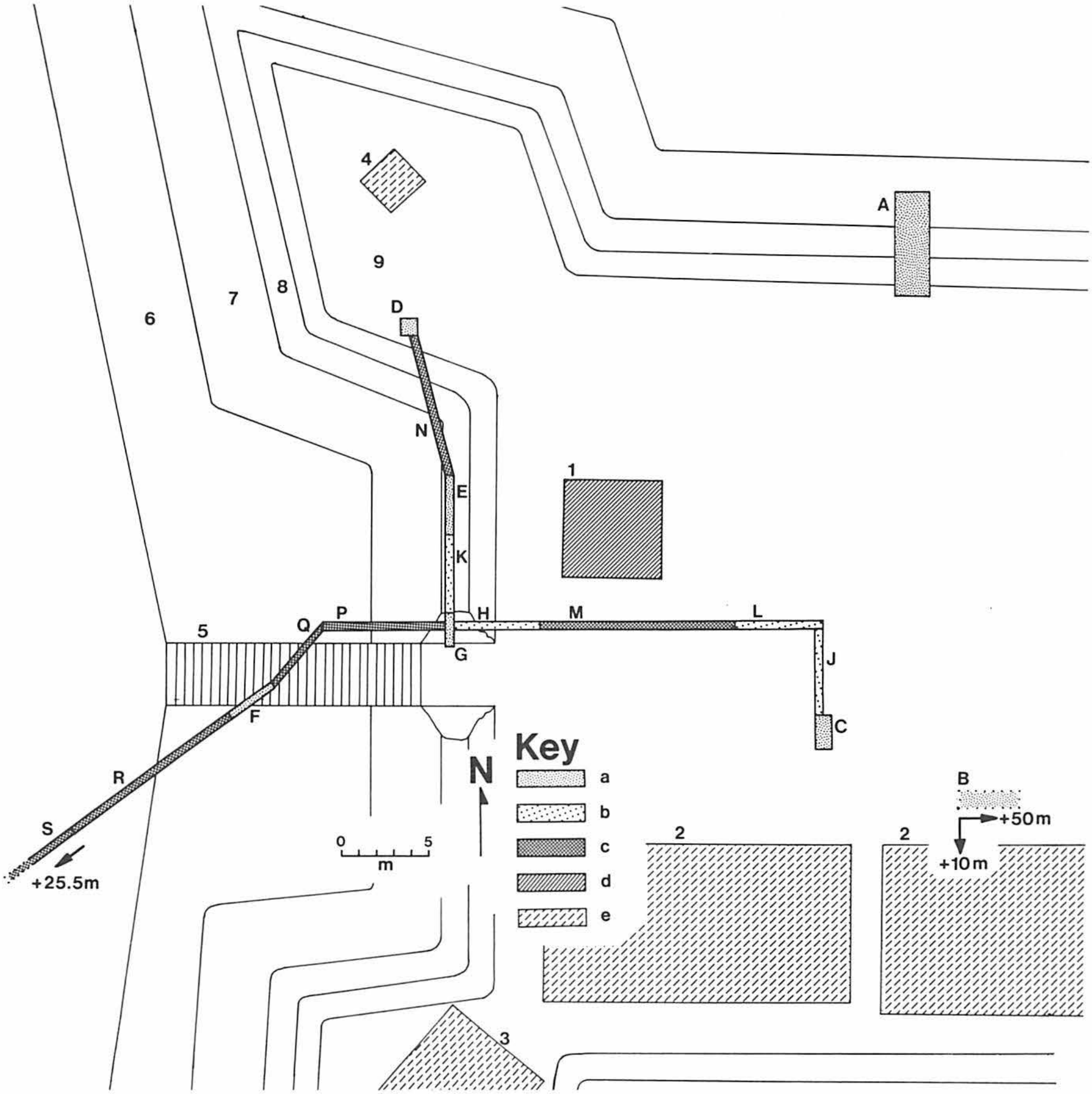
7 revetment

8 parapet

9 northwest bastion

Note: 25B1B is located 10 m south and 50 m east of location shown.

25B1S extends 25.5 m to the edge of the modern parking lot.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R
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+25.5m
0
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m
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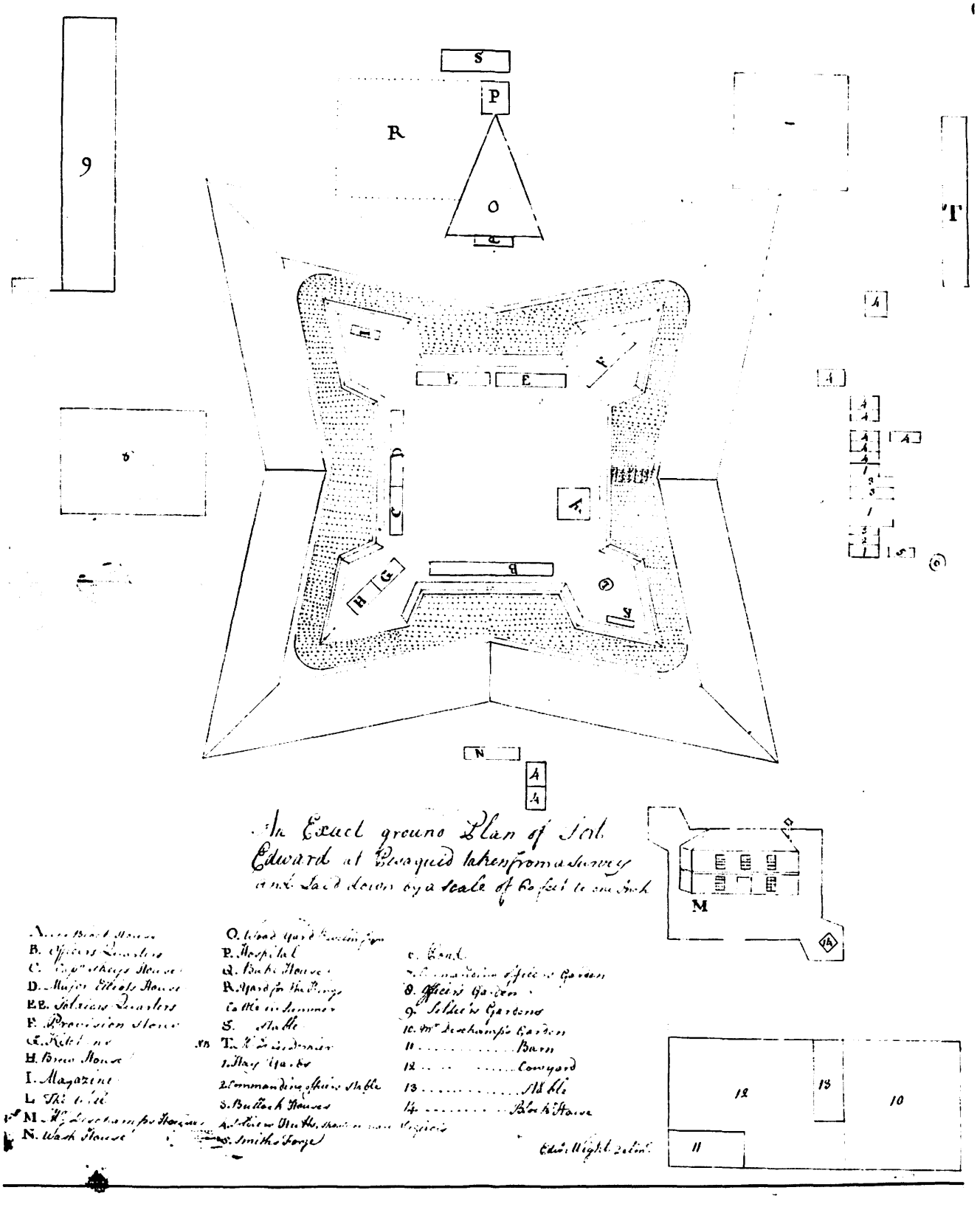
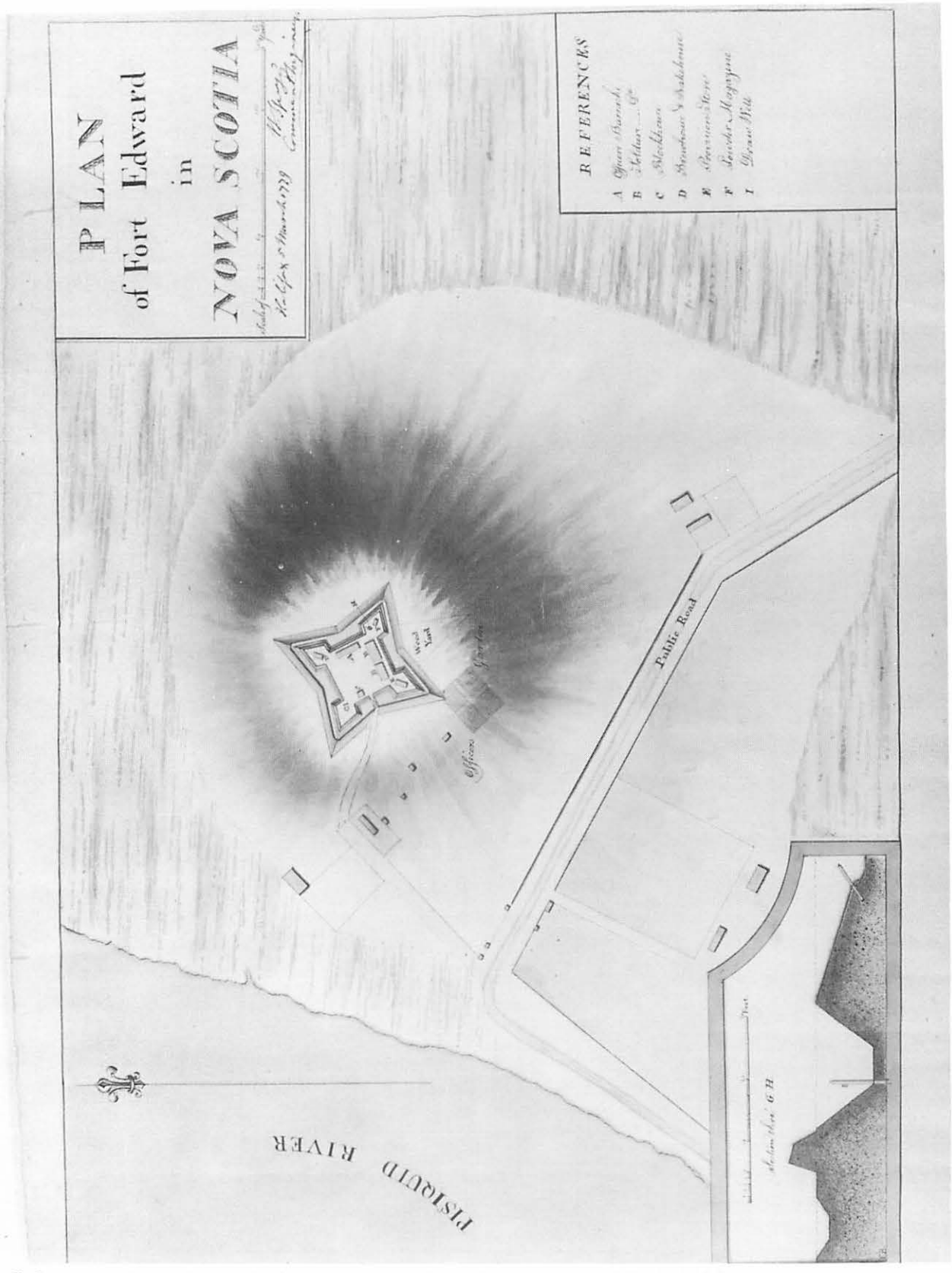
+50m
+10m
2
2
3

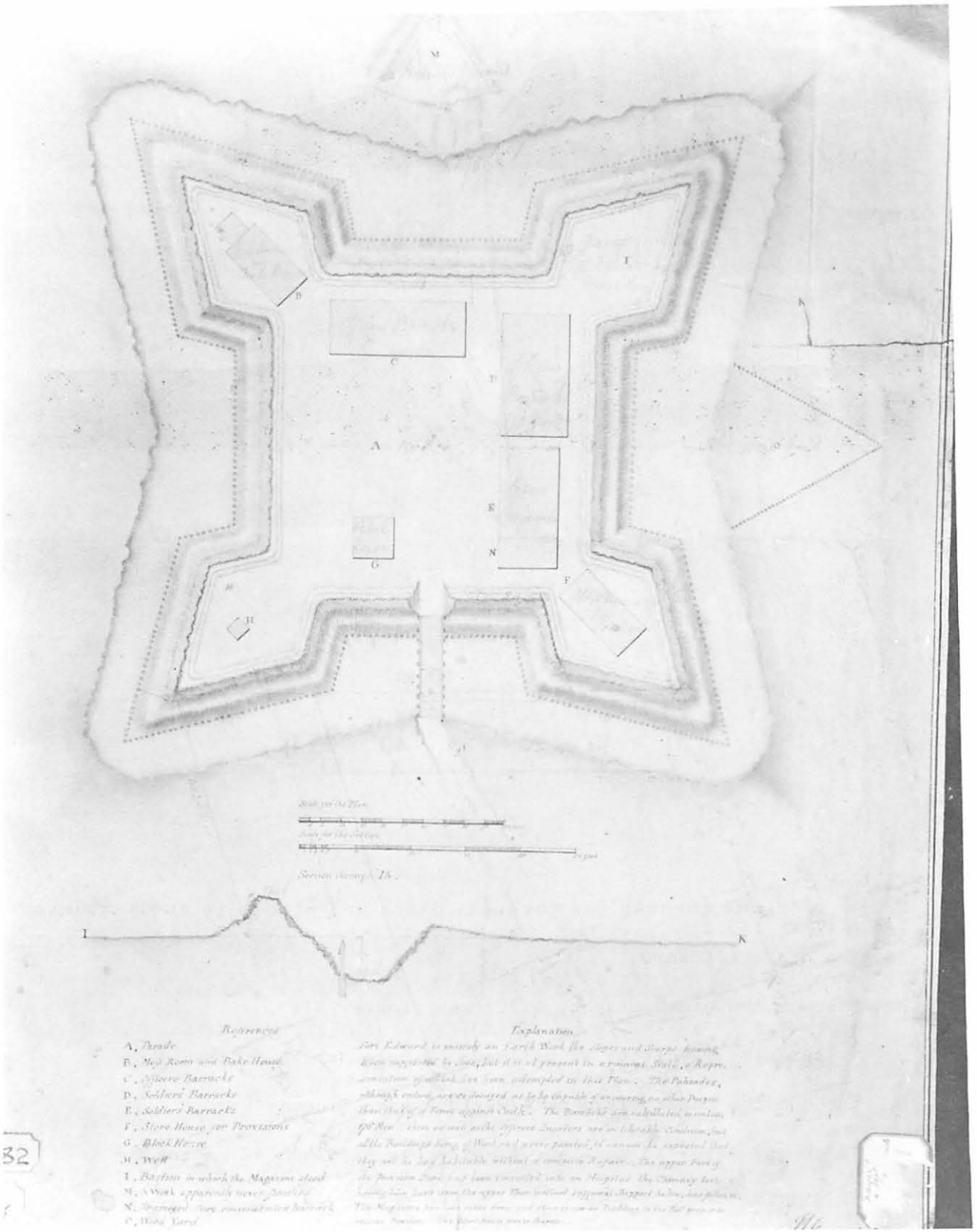
3. "View of Fort Edward in Piziguit River, Nova Scotia, taken in the year 1753 by Cap. John Hamilton of his Majesty's 40th Regt." (National Archives of Canada, C-2708). This early plan shows a simple palisade around the fort with a ditch in front of it.



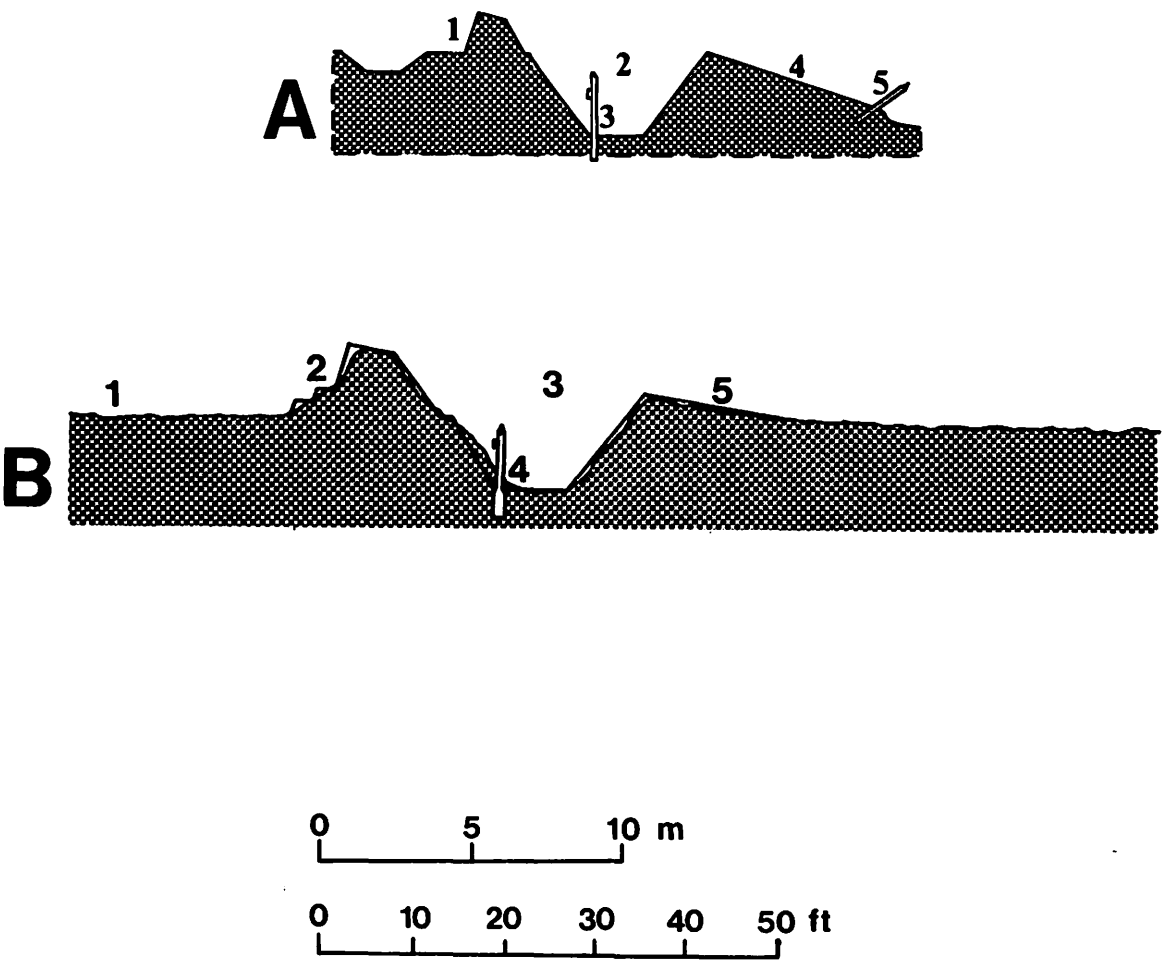
4. "An Exact ground Plan of Fort Edward at Pisaquid taken from a survey . . . ," Edward Wright, pre-1757 (William L. Clements Library, University of Michigan). The parapet is indicated but no palisade is marked.



5. "Plan of Fort Edward in Nova Scotia," W. Spry, 1779 (William L. Clements Library, University of Michigan). By the time of the American Revolution, the palisade had been moved to the bottom of the ditch. A cross-section of the parapet, ditch and glacis is also shown (see Figure: 7A).



6. A plan of Fort Edward by W. Fenwick, 1799-1800 (Public Archives of Nova Scotia). The configuration of the palisade and ditch is similar to that in the 1779 plan. The cross-section (see Figure: 7B) shows the deterioration of the earthworks by the end of the 18th century. The palisade is described as "so decayed as to be capable of answering no other Purpose than that of a Fence against Cattle."



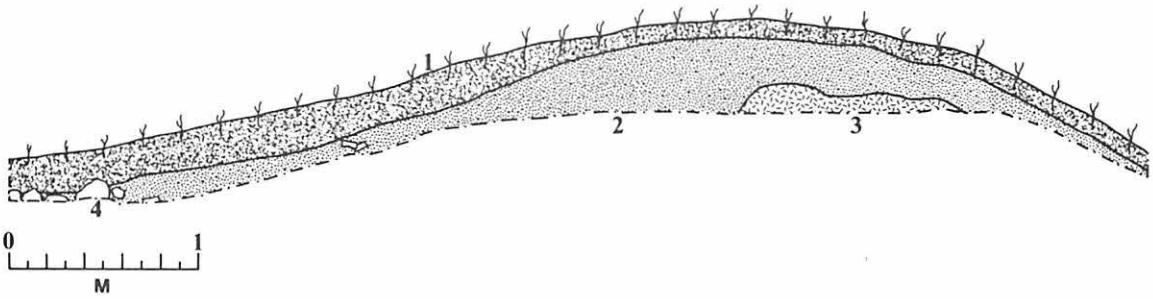
7. Cross-sections through the parapet, ditch and glacis in the southeast bastion of Fort Edward:

   A. through the east parapet, 1779 (see Figure: 5):

      1. parapet; 2. ditch; 3. palisade; 4. glacis; 5. fraise.

   B. through the south parapet, 1799-1800 (see Figure: 6):

      1. ground level in bastion; 2. parapet; 3. ditch 4. palisade; 5. glacis.



8. 26B1A: West wall profile of excavation across the north parapet wall. The inner parade is to the left, the outer ditch is to the right.

   1. modern sod and silt accumulation.
   2. 19th century British military occupation.
   3. 18th century fill for parapet construction.
   4. 19th century cobblestone pavement at the edge of the parade.

   The dashed line denotes the limit of excavation.

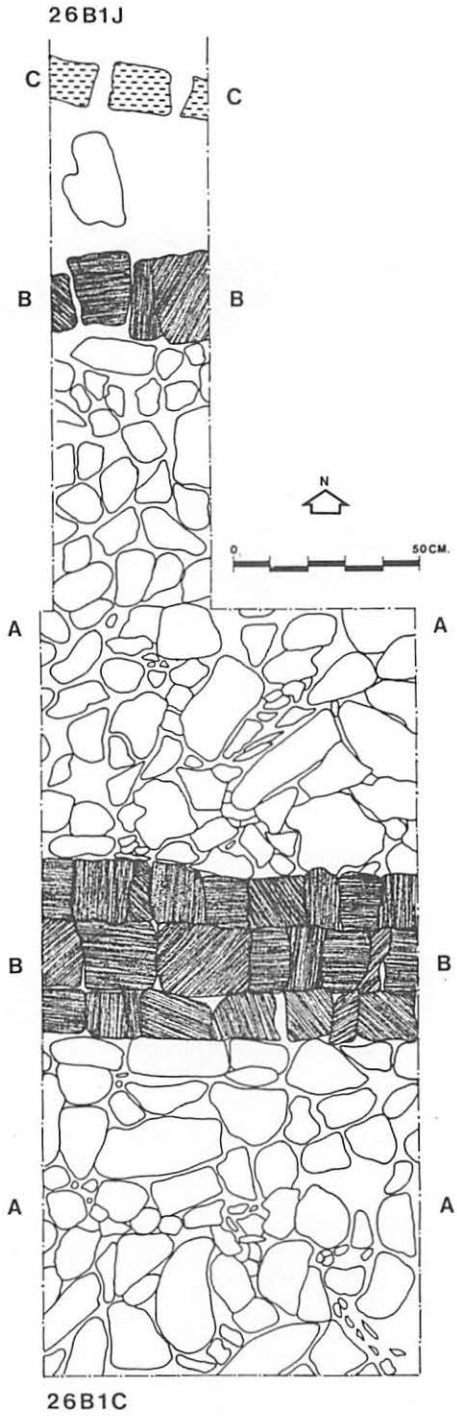
9. 26B1A: East wall profile across the north parapet wall. The cobblestone pavement can be seen to the right.

10. Artifacts from the north parapet wall (26B1A):
    a. 26B1A6-5: George II halfpenny, pre-1755.
    b. 26B1A5-1: copper-alloy Jew's harp.
    c. 26B1A6-4: brass Royal Artillery button, ca. 1785-1802, possibly from the vest of an enlisted man.
    d. 26B1A4-2: brass Royal Artillery button, ca. 1785-1802, probably from an enlisted man's coatee.

11. 26B1D: Golf ball unearthed at the base of the western 'parapet' fill used to create a tee for the 20th century golf course. The darker soil denotes the earlier sod level.

12. 26B1C: Cobblestone pavement in front of soldiers' barracks. The cobbles are local field stones. Cut pieces of an imported dark quartz sandstone have been used to construct a drain along the pavement.

13. 26B1J: Similar cut pieces of quartz sandstone line the outer edge of the cobble pavement. A line of bricks runs parallel to the pavement 40 cm to the north. Its function has not been identified.

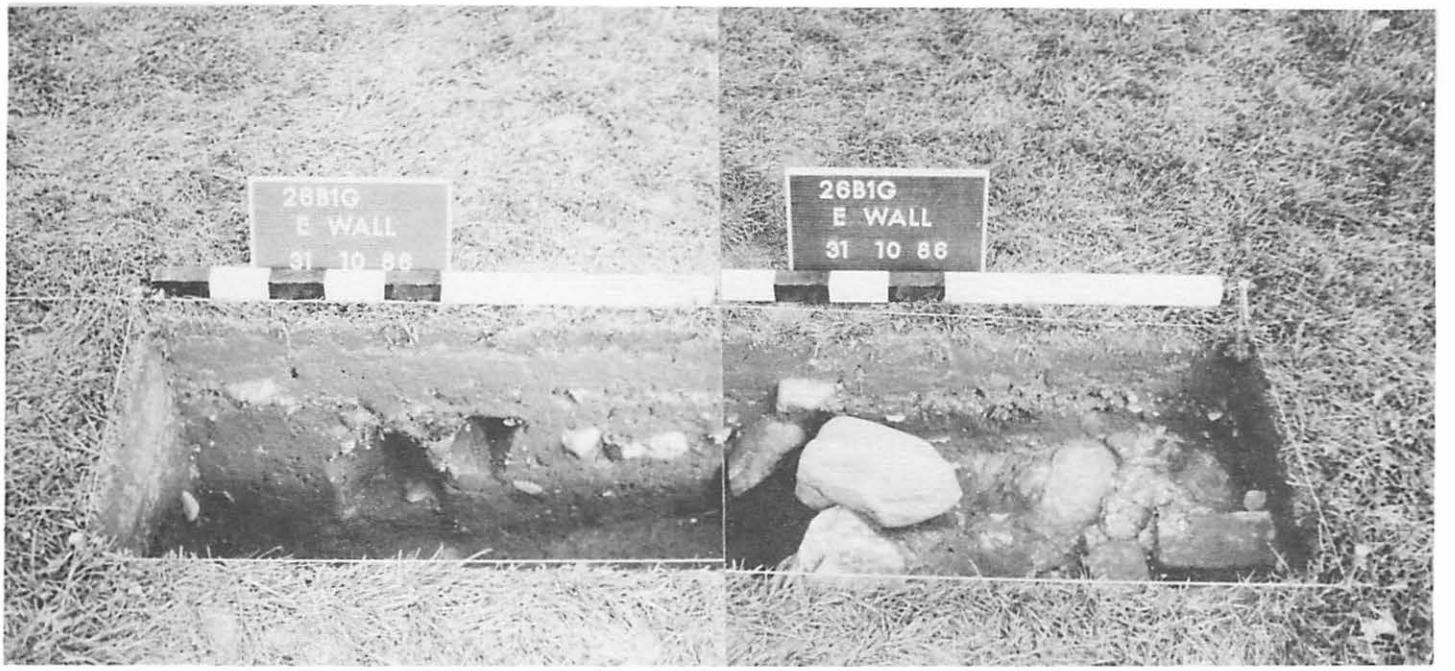


14. 26B1C,J: Plan of cobblestone pavement in front of soldiers' barracks, with drain and edging of cut quartz sandstone.

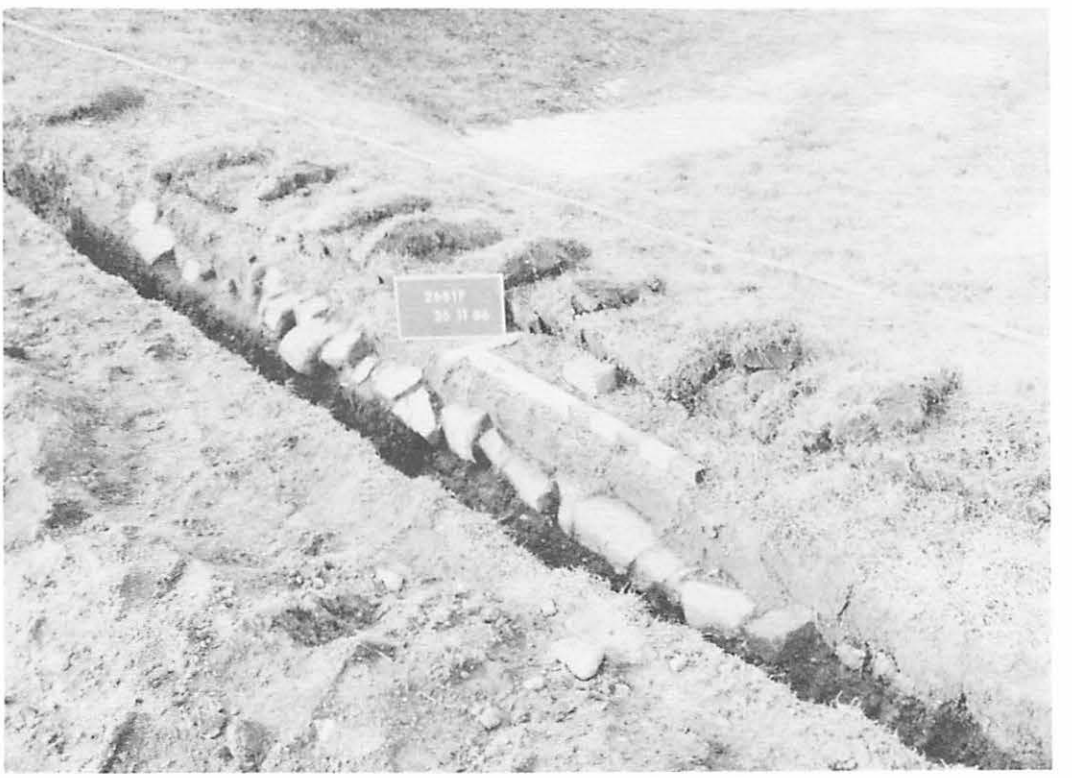
A. cobble pavement of local field stones.

B. cut quartz sandstone blocks forming drain and outer edge of pavement.

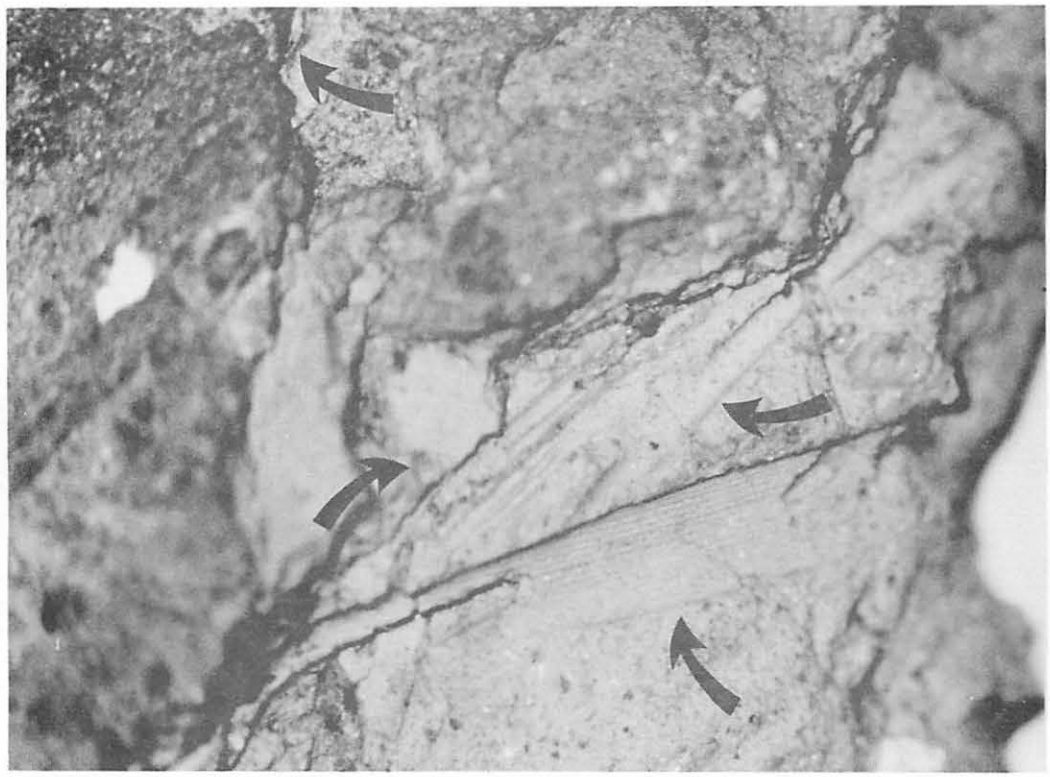
C. line of bricks parallel to the north edge of the pavement.



15. 26B1G: East wall profile of excavation at entrance to fort, showing mortared stone abutment for 18th century bridge across the ditch.



16. 26B1P: Edge of stone pavement on road placed across the ditch in the 19th century.



17. 26B1D: tamped clay from the northwest bastion, showing leaf and stem casts of Spartina sp. (salt marsh grasses).

18. Trenches for electrical wiring across the ditch and down the western slope from the fort. Midden refuse, particularly bones, was abundant on the western slope outside the fort's entrance.

19. Roland Meuse of Windsor, N.S., with stone boundary marker no. 7, one of twelve placed around the fort by the British War Department to delimit the military property.

Preliminary Report For

BeCs:3 and BeCs:4

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The following preliminary report is designed to illustrate briefly excavation results and does not cover the more research-oriented topics of settlement and subsistence patterns and intersite chronology that will be covered in the final report. Detailed accounts of artifact analyses, lists of artifact attributes, maps, photographs, etc. also will accompany the final report.

BeCs:3, the Brown site, and BeCs:4 are two archaeological sites located at the head of the eastern arm of Jeddore Harbour, on the eastern shore of Nova Scotia. Both sites appear to date from the late Ceramic period. The sites were excavated during the period from May 27 to July 12, 1985 in order to gain a better understanding of the late Ceramic period in Nova Scotia.

$29m^2$ of BeCs:3 had been excavated by Professor S. Davis of Saint Marys University in 1978. Unfortunately all field notes of the 1978 excavation had been lost and the only data available were the artifacts and their catalogue sheets. It was desirable to re-establish the grid used in 1978 on the Brown site and with the assistance of Professor Davis the base line that was used in the 1978 grid was relocated and was used again as the baseline for the 1985 grid.

The central area of BeCs:3 had been excavated in 1978, but little testing had been done to determine the extent of the site. The 1985 excavations were planned in order to discover as accurately as possible the areal extent of the

site and the presence of occupations on the upper river terraces. It also was planned to excavate the periphery of the 1978 excavation area in order to get a good "feel" for that area of the site; this was necessary because of the loss of field notes from the previous excavation. Furthermore, it was decided to test a small, badly eroded site, BeCs:4, located approximately 500 m down the inlet in order to discover possible relations to BeCs:3.

BeCs:3

During the spring of 1985 twenty-one 1x1 m pits and three 1x2 m pits were excavated at BeCs:3 and several 50x50 cm test pits were sunk at strategic locations around the site. The placement of the pits was guided by the objectives stated above as well as by the presence of numerous large trees and boulders, which were avoided. At completion of the project approximately 1/3 to 1/2 of the total area of the Brown site had been excavated and a reliable sample of the site's contents and structure had been obtained.

The immediate objectives of the excavation program were realized in that: (1) the areal extent of the site was determined and the possibility of the presence of occupations on the upper river terraces was ruled out; and (2) excavation of the perimeter of the 1978 excavations permitted a good understanding of the structure of this area of the site. It was found that cultural material existed over an area of approximately 150 m^2 and was found primarily in the central grassy clearing and in a small area in the trees to the northwest of this clearing. No cultural material was found below the first river terrace on that area that constitutes the present river floodplain.

During the excavation of the preliminary pits in 1985 it was discovered that the site contained only two distinguishable horizons - the cultural level which ranged from the surface to approximately 11 to 20 cm below the surface

and the underlying sterile level. Because of the shallow nature of the site it was decided not to excavate using artificially contrived 5 or 10 cm levels, but rather to excavate the site in one level as this would more closely reflect reality. Within each pit the three coordinates of distance to north wall, distance to west wall and depth below surface were measured for all formed tools and diagnostic ceramics such as decorated sherds and rim sherds. Also, within each pit all flakes were bagged together as were all undiagnostic ceramics.

Analyses of artifacts from the Brown site include all artifacts from both the 1978 and the 1985 excavations, with the exception of artifacts from four 1x1 m pits excavated in 1985. The artifacts from these pits were in a knapsack that was stolen in June 1985 and have not been recovered. Although these artifacts cannot be included in the analyses it should be noted that they basically were similar to the rest of the material from the Brown site.

Cultural materials recovered from BeCs:3 included over 10,200 flakes, 7 of which have been identified as Ramah chert (J. Tuck, pers. comm.) which is found only in northern Labrador. The 739 prehistoric lithic tools included 48 projectile points, 29 projectile point bases, 40 bifaces, 197 biface fragments, 228 scrapers, 114 retouched flakes, 20 cores, 37 bipolar cores, 3 gravers, 1 anvilstone, 1 hammerstone, 2 choppers, 4 celts, 1 piece of cut slate, 8 miscellaneous pieces of ground stone and 6 miscellaneous lithic artifacts.

Analyses of the lithic artifacts indicate that they are homogeneous in form. The several hundred prehistoric ceramic sherds recovered from BeCs:3 also are homogeneous; i.e., the only decorative technique used was the cord-wrapped stick technique. The small areal extent of the site, the large number of artifacts recovered and the homogeneous nature of these artifacts suggest that the Brown site was a small, intensively utilized, single component site.

Analysis of the faunal remains - calcined bone and shell - should help to reveal the season or seasons during which the site was occupied.

Only one feature was identified at B3Cs:3 - a large charcoal stain situated in front of two large boulders located at the eastern half of pit N106W100. A radiocarbon date of 1230 ± 70 B.P. (Beta-14052) was determined from charcoal gathered from the feature. The charcoal stain was lying directly upon the sterile level, thus the radiocarbon date can be taken as a base date for the site.

Four ceramic sherds from BeCs:3 were sent for thermoluminescence dating in an attempt to date the site more securely. The dates produced by the sherds, however, were far too young, ranging from 200 to 400 years ago, and have little value for determining the age of the site. The failure of the TL dating may be due to unusually high values of uranium present in the sherds and associated soil from the site (J. Stipp, pers. comm.).

Several items of European manufacture were recovered from the Brown site including 17 stem fragments and 20 bowl fragments of white clay pipes, 5 gunflints, 28 sherds of coarse earthenware, 48 sherds of fine earthenware, 15 sherds of porcelain, 1 dark blue glass trade bead, 1 flintlock mechanism, 1 unilaterally barbed iron harpoon head, 56 complete and 18 fragmented square shank nails and several miscellaneous metal objects. These artifacts are thought to represent sporadic occupations or visits to the site, by either Indians or Europeans, long after the site's original occupants had disappeared.

BeCs:4

Very little was left of BeCs:4. It is estimated that only approximately 20 m^2 remained of the site, the rest having been eroded by the tides of

Jeddore Harbour. Two 50 cmx3 m test pits were excavated in an attempt to gather material that would shed some light on the relationship of the site to BeCs:3.

From the test pits and from the beach in front of the site were recovered 569 flakes, 78 lithic tools and 49 ceramic sherds. The lithic tools included 6 projectile points, 7 bifaces, 18 biface fragments, 14 scrapers, 18 retouched flakes, 2 cores, 10 bipolar cores, 2 gravers and 1 battered flake.

The small size of the artifact sample makes it difficult to generalize about the nature and age of the site. No carbon samples were excavated and two ceramic sherds that were sent for TL dating produced unsatisfactory results for the same reasons as did those from BeCs:3. The assemblage from BeCs:4 appears to be similar to that from BeCs:3 with the major difference lying in the ratio of forms of projectile points: the ratio of contracting stem points to expanding stem points for BeCs:4 is 1:1, while the same ratio for BeCs:3 is 1:27. It is difficult to determine the extent to which this difference in point ratios is due to sample bias rather than to functional or cultural differences between the occupants of the two sites. Preliminary results suggest that BeCs:4 either slightly predates or is contemporaneous with BeCs:3.

Archaeological Investigations at the Low Terrace Site (BaDg2) Indian Gardens, Queens County, Nova Scotia

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Preface

The following report is a compilation of term papers prepared by members of the 1985/1986 Saint Mary's University, Archaeological Method and Theory class. The archaeological materials described in the papers include artifacts recovered at the Indian Gardens, Low Terrace site (BaDg2) during the fall of 1985, and artifacts previously collected at Indian Gardens by Thomas H. Raddall (i.e., the THR Collection). The archaeological investigations at the Low Terrace site were undertaken in conjunction with a survey of the Lake Rossignol area conducted by David Christianson and Brian Preston of the Nova Scotia Museum. The latter work coincided with the draining of Lake Rossignol for repairs to Mersey River Dam No. 1, which had reduced the water level in the lake to its pre-1929 level (see Christianson 1985). The present report has been prepared as partial repayment to the Nova Scotia Museum for generously inviting our class to participate in the work at Indian Gardens.

Due to the diverse nature of the students' projects, the following manuscript does not have the appearance of a typical archaeological site report. However, as my own contribution, besides directing the fieldwork and lab projects, I have tried to edit the papers into a more or less cohesive document, and I have added introductory and concluding sections. The resulting report represents the first comprehensive statement concerning the

archaeology of the Indian Gardens area, and I hope that it will lead to further work in the area at the next opportunity.

Introduction

The Mersey River rises in the uplands area of Annapolis and Queens Counties, Southwestern Nova Scotia, and runs through a series of lakes, including Lake Kejimkujik and Lake Rossignol (See Figure 1). First Lake is the southernmost of the six lakes in the Rossignol chain. Indian Gardens is a complex of archaeological sites which extend for more than a kilometer along both banks of the Mersey River below the point where First Lake drains into the Mersey River (Latitude 44° 09' 45.43"; Longitude 65° 00' 34.94"). In historic times, and presumably earlier, the Mersey along with the Lequille River system formed an important canoe route connecting the Atlantic and the Bay of Fundy shores (Raddall 1974). Indian Gardens was probably the major interior occupation area along this route.

The origin of the name Indian Gardens is somewhat of a mystery. Thomas Raddall (1974:2) speaks of a legend in which the Indians had cultivated the alluvial soil on the eastern bank of the river in prehistoric times. However, writers during the early contact period state unequivocally that the Micmac did not cultivate the land (Biard 1616:79; LeClercq 1691:10; Lescarbot 1609:165), and most modern writers would agree (e.g., Byers 1975:11; Hoffman 1967:13). According to Erskine (n.d.:69), French missionaries introduced agriculture to the Micmac of this area during the early contact period. This is consistent with Raddall's contention that the site was probably abandoned following the introduction of typhus by the French troops camping in the Bedford Basin in 1746 and the subsequent reduction in Micmac population in the area (Raddall 1974:6-8). At the time of the founding of Liverpool in 1759-60, only a few Micmac families survived in the area, and even these had departed by Simeon Perkin's time (Raddall 1974). It seems likely that the name of the site existed prior to the founding of Liverpool, and refers to the time when the French were introducing agriculture to the Micmac.

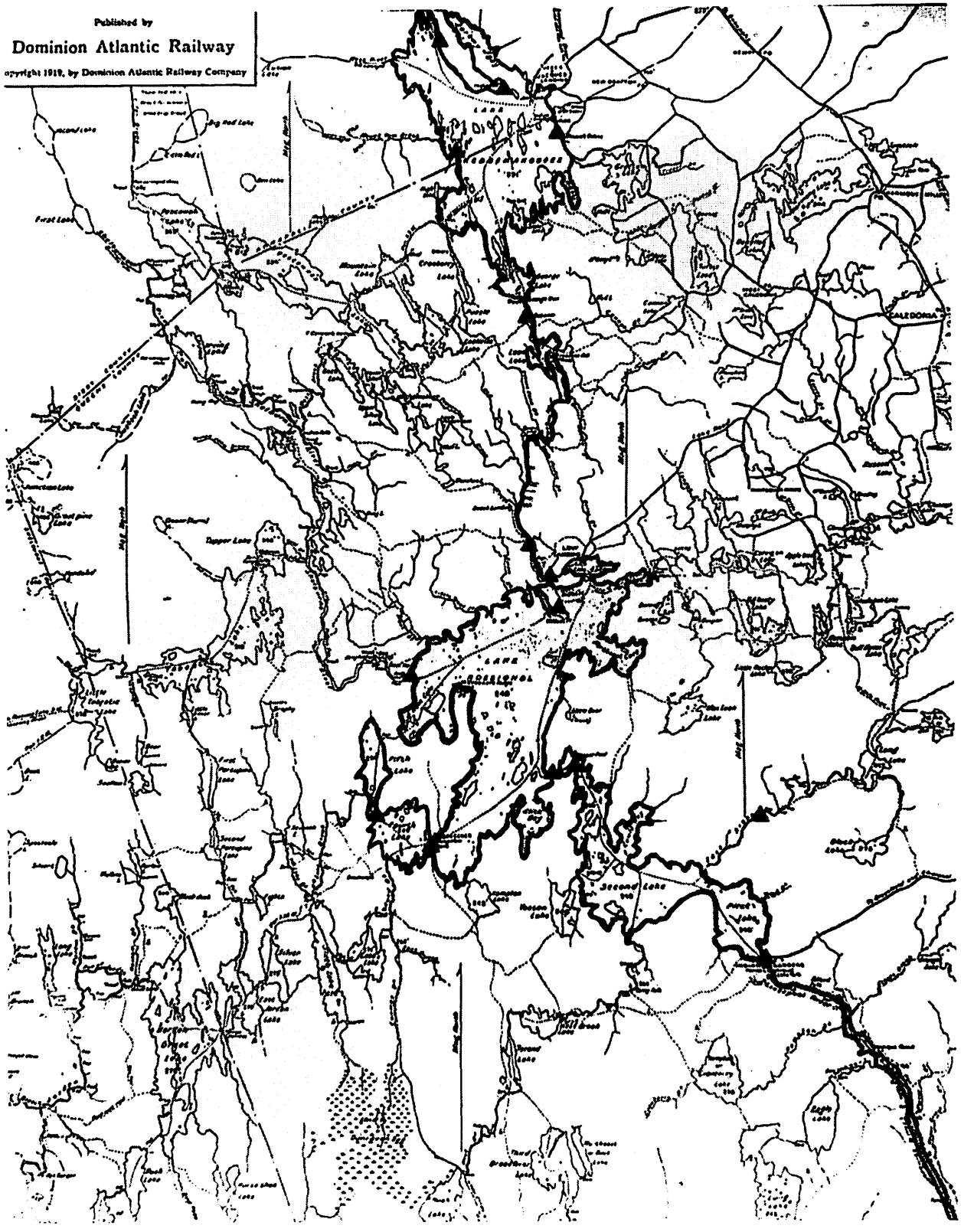

Figure 1: Map of the Mersey River System, indicating the location of prehistoric sites. Each triangle represents a cluster of sites.

The Lake Rossignol area is characterized by a Red spruce-pine-hemlock forest zone (Clark 1968:42-45; Loucks 1962). The latter includes red spruce, balsam fir, and red maple, with scattered white spruce, white birch, and yellow birch. By contrast, the Lake Kejimkujik area is predominantly a hardwood forest, dominated by sugar maple. According to Roland (1982:176), the topography of this portion of Southwestern Nova Scotia is formed mainly on greywacke covered with glacial drift, while in the immediate area around Indian Gardens the underlying material is slate (Kepple 1979). Indeed, angular slate fragments form the major component of the surface materials along the banks of Indian Gardens. The dominant soil type in the area is Bridgewater Sandy Loam (Cann and Hilchey 1959:23). This is a well-drained, highly acidic, light brown sandy loam over a yellowish brown sandy loam, which are derived from a firm, slaty, olive colored, sandy loam till.

Besides being a natural transportation route, the Mersey River system was a resource rich area for the prehistoric Indians of Queens County. Perhaps the most important food resource of the Mersey River and interior lakes was the large fish population. A variety of resident freshwater fish were available, especially the lake trout and striped bass. Interestingly, the Dominion Atlantic Railway map of 1919 designates Indian Gardens as a trout fishing area. In the Spring, runs of anadromous fish which ascended the Mersey to spawn provided a reliable and concentrated food source (see Nietfeld 1981:77-79; Rostlund 1952:74). The Atlantic salmon and gaspereau were particularly important. Salmon could be speared while resting in shallow pools between the series of rapids. Another valuable species was the catadromous American eel. Eels could be fished year-round, but were particularly important between April and October, when they returned to the sea to breed (Nietfeld 1981:79). While descending or ascending the Mersey they could be easily trapped in weirs. A series of V-shaped stone eel weirs

located on the Mersey River, between George and Loon Lakes, were in use during historic times and were probably constructed by the prehistoric Micmac (Ferguson 1985; Myers 1973:57).

The most important large mammal was probably the moose. This animal appears frequently among the petroglyphs at Kejimkujik and McGowen Lakes. In historic times, the moose was hunted for its meat and fat (bone grease), and its hide was used for robes in winter (Bailey 1969:9). Hunting was carried out on snowshoes in winter. Woodland caribou, and possibly white-tailed deer, were also available. Several fur-bearing mammal were hunted, including the black bear, beaver, otter, and mink. Of these, the beaver was valued for its pelts, from which clothing was made, for its teeth for use as scraping tools, and as a food source. Interestingly, beaver represents the major faunal component of virtually all Ceramic period sites in the Maritimes. The black bear was also valued for its fur, and as a food source, and probably had a special ritual significance. It is not uncommon to find perforated bear claw pendants in prehistoric shellmidden sites. The porcupine was another food source, and its quills were valued for ornamenting clothing (Whitehead and McGee 1983:31).

A variety of plant resources were also available to the prehistoric Indians of the Indian Gardens area. White (canoe) birch was not only useful for making canoes, but also for the walls of structures, baskets, coffins, and animal calls (see Speck and Dexter 1951; 1952). The roots of the black spruce could be split and used to sew together birch bark canoes and baskets, and spruce gum was useful for waterproofing. Rock and red maple were useful for canoe paddles and bows. Further, there was a great variety of berries, herbs, and weeds, available seasonally (see Chapter Three). A particularly important plant in the Northeast was the starchy tuber of the groundnut (Speck and Dexter 1951).

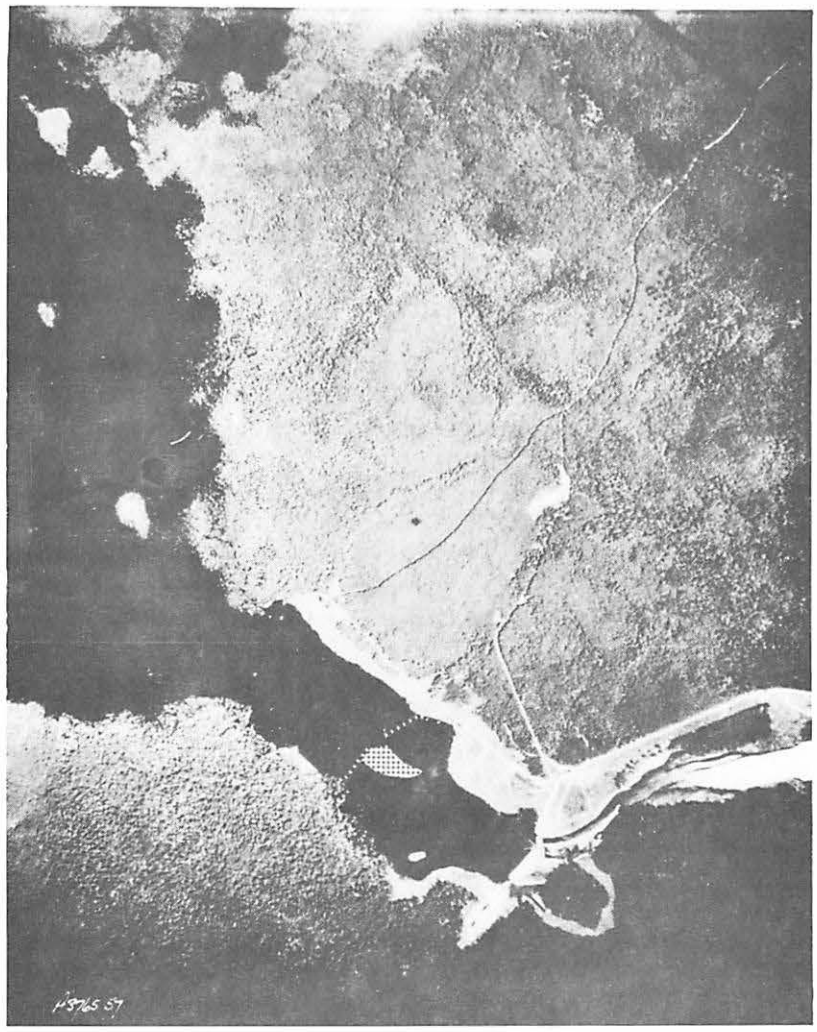

Figure 2: Areal photo of the Indian Gardens area. Dashed lines indicate the locations of existing cofferdams. The stippled area indicates the Low Terrace site. Mersey River Dam No. 1 is located in the bottom right corner of the photo.

Archaeology at Indian Gardens

The archaeological potential of the Indian Gardens area was not recognized until the late 1920s, at the time when the Mersey River Dam No. 1 was constructed (see Figure 2). During the three year period when the water in the lake was rising to its present level, the combination of winter ice movement and spring run-off caused considerable damage to the river banks in the form of erosion. Thousands of prehistoric artifacts were exposed during this period. The Liverpool writer, Thomas H. Raddall, was a bookkeeper with the McLeod Pulp and Paper Company at this time (Raddall 1974, 1976). The company owned a small water-storage dam and a hunting lodge in the Indian Gardens area. Raddall, along with Roy Gordon and Brenton Smith, amassed large collections of Indian artifacts. The area became more accessible when a road was built to the area of the new dam in 1928. Since that time, artifact collecting has become a local mania. Fortunately, Raddall's large collection was recently donated to the Liverpool Museum, and has become the first registered private collection in Nova Scotia.

In 1957, Thomas Raddall introduced John Erskine to the prehistoric sites in the Liverpool area. Erskine, who was working as a curatorial associate with the Nova Scotia Museum at that time, investigated two small sites at Indian Gardens (Erskine 1957; 1986; n.d.). The first site, which he designated Indian Gardens #1 and #2, was located on the east bank of the river, beside a dried-up brook. He uncovered both historic and prehistoric materials at this site, including a half penny token with the date of 1832. It had been perforated, so that it could be worn as a pendant. The second site, Indian Gardens #3, was located on the west bank of the river, above the old McCleod hunting lodge. This site contained only prehistoric artifacts, including a triangular projectile point and a pottery sherd decorated with punctate design elements (Erskine 1986).

The Saint Mary's involvement with Indian Gardens came in October 1985, when the Method and Theory class was invited by the Nova Scotia Museum to take part in a weekend of archaeological investigations at two small sites exposed by the draining of the Rossignol lakes for repairs to Mersey Dam No. 1. The two sites sampled at this time were later distinguished as the West Knoll and Low Terrace sites. While a crew from the Nova Scotia Museum conducted an excavation at the West Knoll site, the Saint Mary's crew investigated the Low Terrace site. These investigations included mapping the site, test excavations, and a surface collection of artifacts.

In order to establish the major area of occupation at the Low Terrace site, a preliminary surface examination was conducted. The majority of artifacts on the site surface tended to cluster near the edge of the terrace, toward the southernmost point of the terrace. The surveying theodolite was set up near the terrace edge, and a row of grid markers was aligned from the first instrument position (hereafter, I.P.1), along an axis bearing magnetic north. This datum line crossed the major artifact clusters, and five two by two meter test units were laid out along the datum line. Due to time limitations, each of these units was taken only to a depth of 10 cm below the surface, and therefore did not penetrate below the initial forest layer. All of the excavated soil was screened, either through a 1/4 inch mesh dry screen or a 1/16 inch nylon water screen. Materials collectd from the water screen were examined in the Saint Mary's Archaeology Lab for charred seed specimens.

In order to produce a detailed contour map of the site, a total of 86 elevation measurements were taken at points along the 45 degree radii from the datum line at I.P.1, as well as along the edges of the terrace, the riverbank, and the mud flats. The height of the theodolite at I.P.1 was 125.5 cm. A surveying bench mark was later discovered near the cofferdam that was constructed to facilitate repairs on Mersey Dam No. 1. The latter is a rock

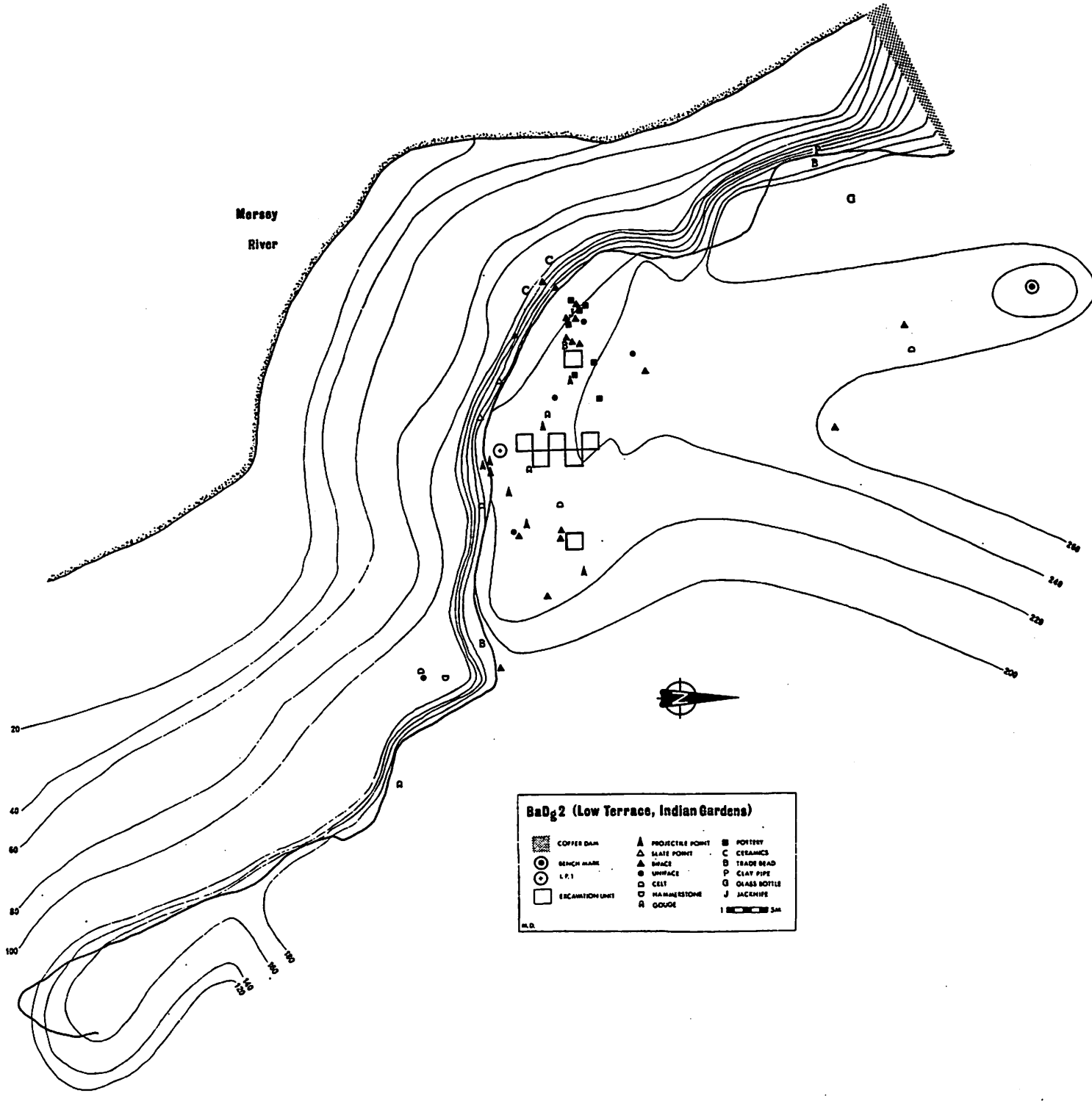

Figure 3: Low Terrace site Map, 1985.

post monument that was planted by A.I. Cumming in 1925 (D.M.T.S. 1960), and has a reported elevation of 274.32 m above mean sea level (David Christianson, per. com.). From I.P.1, an elevation reading of 118 cm (corrected to 1 degree) was taken at the top of the rock post bench mark, at 344 degrees from datum line and a distance of 68 m. The final site map includes contour lines at 20 cm intervals, beginning at water level, 30 m due south of I.P.1, and at an elevation reading of 3.56 m (see Figure 3).

On the second day of investigations, we were joined by the Nova Scotia Museum crew. Two additional excavation units were opened (i.e., D6 and DD6), and a portion of the crew was organized to conduct an extensive surface collection of the site. This was done in order to delimit the boundaries of the prehistoric occupation based on the spatial distribution of surface artifacts. Crew members walked side-by-side, beginning at the terrace edge, in a northerly direction. Each artifact encountered on the surface was marked with fluorescent orange tape and its position was recorded using the theodolite. The locations of these artifacts were included on the final site map.

The remainder of this report focuses on the analysis of the materials collected from the Low Terrace site. Chapter One reviews the historic occupation of the area and the artifacts associated with the historic use of the site. Chapter Two is a study of the botanical remains from the site. Chapter Three is an analysis of the prehistoric material culture from the Low Terrace site, including pottery, and chipped stone and ground stone artifacts. One paper in this chapter reports on the projectile points from the Raddall (THR) collection, and another is a use-wear study of unifacial tools (scrapers) from the Low Terrace site and the Raddall collection. The final chapter presents a discussion of the finds at the Low Terrace site and its place in local prehistory.

Historical Background

Susan McIlquham

By the time of the first contact with the Europeans, the Micmac Indians occupied the whole of Nova Scotia as well as Prince Edward Island, Southern Newfoundland, and the gulf watershed of New Brunswick (Bailey 1969:3). Although many occasional contacts between the New World and the Old by such as th Norse, Irish, Portugese and French have been suggested and hinted at, the first authenticated French voyage to the New World occurred in 1504 A.D. From this time onward a great many expeditions sailed out of Norman and Breton ports (Bailey 1969:4-5).

In the sixteenth century, fishing was the primary industry of the New World, although as early as 1534 the fur trade had also become a slight, if incidental, addition to the former (Bailey 1969:6). The Micmacs developed the habit of barter with the Europeans and such things as iron knives and axes, the steel and flint, and course potteries and beads were among the things the Europeans traded for fur (Bailey 1969:11). Although Cape Breton was the greatest area of contact between Europeans and Micmacs, the expanding fur trade led to the penetration of areas beyond the fisheries. Furthermore, with the development of the new technique of dry-fishing, both increasing competition between the Basque, Portugese, English, and French fishermen to control harbours suitable for this new form and the growing scarcity of timber available for staging stimulated voyages to more remote areas of the coast and brought new bands within the sphere of European influence (Bailey 1969:8).

Throughout the whole of the sixteenth century, French as well as other European vessels fished and whaled off the Atlantic coast of Nova Scotia. In 1604, Sieur DeMonts and Samuel Champlain visited what is today Liverpool Harbour where they found a Frenchman named Rossignol illegally trading for furs with the Indians. After confiscating his ship and cargo, DeMonts named

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the harbour Port Rossignol (Morse 1935:126-127; Mullins 1980:3). Myers' (1973:71) survey of Kejimkujik National Park indicates the presence of bands of Indians in various locations along the aboriginal canoe route which follows the Mersey River through Lake Kejimkujik and onto Lake Rossignol -- an area of major aboriginal occupation. The first inland site documenting European contact with the Indians was at Merrimakedge site (BcDh5) where a large number of European trade goods were located in association with native artifacts (Myers 1973:71).

A succession of rapids (called falls) are spaced at intervals from the sites and these have, in the past, attracted saw mill and pulp-and-paper interests to the Indian Gardens area. One of these interests, the MacLeod Pulp and Paper Company, in the early 1900's had built a saw mill at Milton (three miles above the town of Liverpool), a wood-pulp mill half a mile upstream at Cowies Falls, and another a mile above Cowies at Rapid Falls (Raddall 1976:121). The company also owned a small water-storage dam at Indian Gardens as well as the best sites for future hydro-electric power dams on the river below.

In the early 1900's the MacLeod Company also owned a simple hunting lodge on the west bank of the Mersey at Indian Gardens which was made accessible from the Annapolis road at Sixteen Mile by an 8-mile long logging road (Raddall 1976:131). A narrow dam at the site led across the foaming rapids of the river to a narrow shelf at the foot of the east bank, a glen, which, legend states, the Indians had cultivated (Raddall 1976:131). By mid-summer 1928, however, Thomas Raddall relates that:

> It was a paradise soon to be lost. Within a year a construction army bulldozed a motor road up the east side of the river from Milton, and at Indian Gardens they erected barracks, cookhouse and dining hall and began to build a high dam some distance below the Gardens at what our river drivers used to call The Ledges. As the water slowly rose behind this dam it washed out of the slope on the east side of the river a vast scatter of stone tools, arrowheads,

> bits of pottery and other primitive artifacts. These exposures continued for many months until the water reached the crest of the old glen, revealing the full size of an ancient Indian town extending half a mile along the slope, which in our ignorance we had confined to the small flat once cultivated down by the river. Today the Indian Gardens lie under about seventy feet of water, and the site of our honeymoon lies drowned and buried with them (Raddall 1976:141).

By September of that same year, Raddall adds that the beautiful glen at Indian Gardens was a sorry sight:

> The oaks and birches on both slopes above the river had been sheared and burned to clear the flowage of the new dam below. On the east crest, a camp of wooden shacks held several hundred men, with their trucks, derricks, narrow-gauge railway, gasoline locomotives, and the rest (Raddall 1976:147).

Historic Artifact Description

The historic artifacts recovered at the Low Terrace site include three fragments of glass bottle (BaDg2:123, BaDg2:111), two glass beads (BaDg2:17, BaDg2:53, BaDg2:56), four pieces of pottery (BaDg2:101, BaDg2:110, BaDg2:23, BaDg2:63), two pieces of clay pipe (BaDg2:66; BaDg2:68), and three metal artifacts (BaDg2:10, BaDg2:156; BaDg2:109).

Laird Niven, Saint Mary's University, has provided the following description of BaDg2:123 (see Plate 1):

> This artifact consists of two sections, which probably represent a single bottle. The first section (A) is a finish, neck, and partial shoulder. The second section (B) is made up of a tiny shoulder fragment, three sides of the body, and approximately half of the base.
>
> A. The one-part finish consists of a rounded lip formed by a finishing tool. The short neck has a large, rounded neck ring at the neck/shoulder junction and the sloped-down shoulder has moulded ribs covering the diameter of the bottle. There are two mould seams running opposite one another up from the shoulder over the neck ring and terminating below the finish.
>
> B. The square body has embossed lettering on two of the extant sides and was formed in a two-part mould with a separate base part. The mould lines run down from the shoulder along opposite corners of the body and around the base. The square base has rounded corners and a shallow, round concavity with a small mamelon.

According to Niven (per. com.), several characteristics indicate that

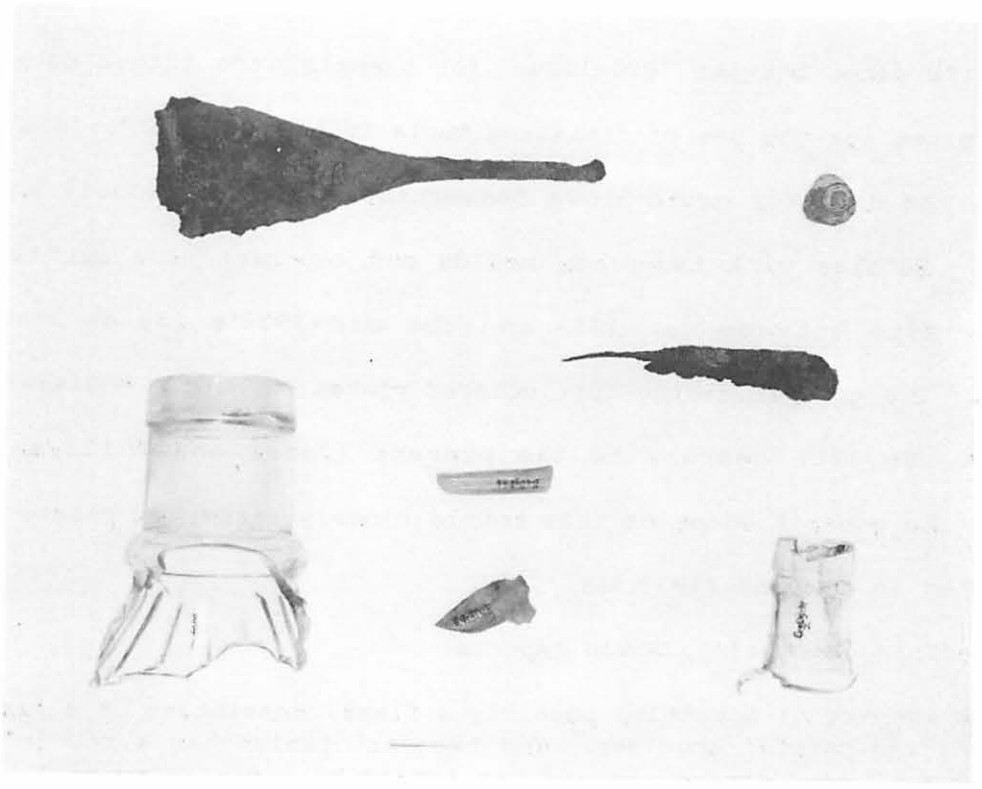

Plate 1

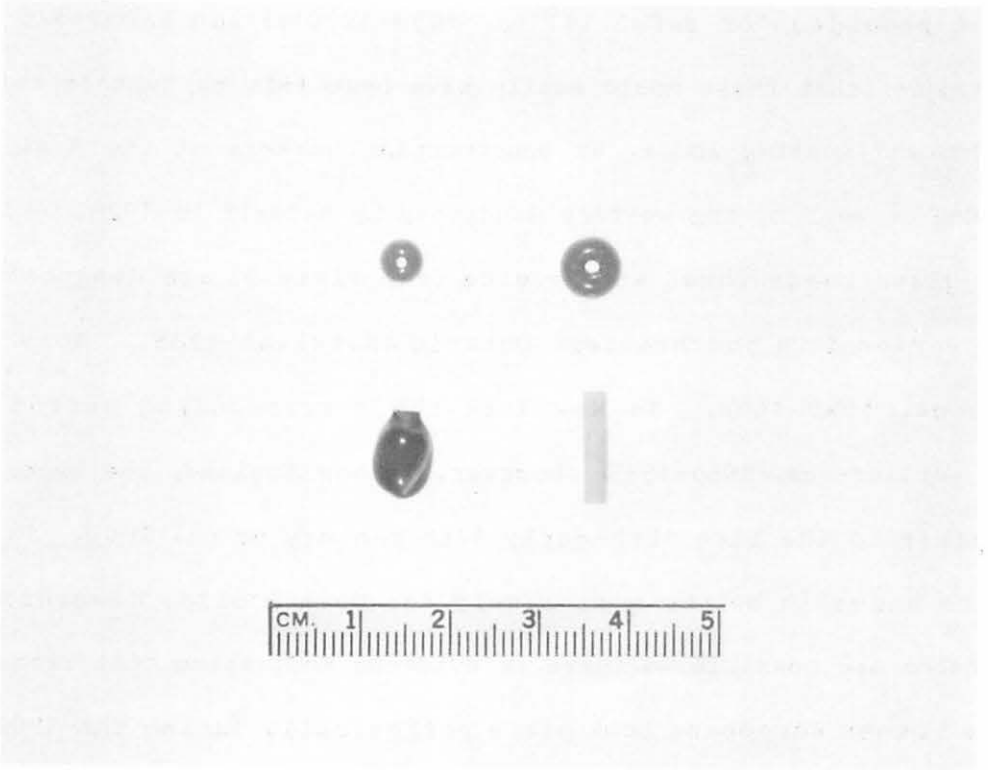

Plate 2

this bottle dates between 1870-1920. For example, the latest dates for Nova Scotian sites for the use of finishing tools is the mid-1920's, and therefore, also the end date for mouth-blown commercial containers (Jones and Sullivan 1985:43). Bottles with two-piece moulds and separate base part manufacture probably date between ca. 1850 and the mid-1920's (Jones and Sullivan 1985:28). The general dating for lettered plates on bottle bodies is the last third of the 19th century to the present (Jones and Sullivan 1985:49). Further, the general shape of this bottle closely resembles pickle bottles as illustrated in Stevens (1979:148, 207).

Concerning BaDg2:111, Niven reports:

> This is part of a bottle, possibly a flask, consisting of a finish, neck, and partial shoulder. The two-part finish has a rounded lip with a rounded string rim and was formed by a finishing tool. The short neck has two neck rings close to the neck/shoulder junction and there is a partial piece of the shoulder. Two faint, wide mould marks travel opposite each other up from the body and terminate below the finish. This indicates that the bottle was possibly from a two-part mould.

The dates provided for BaDg2:111 (c. 1850-1920's) and BaDg2:123 (c. 1870-1920's) suggest that these could easily have been left by hunters and visitors to the MacLeod hunting lodge, by construction workers at the MacLeod water-storage dam or even by the workers described by Raddall in 1928.

The glass beads found at the site (see Plate 2) are diagnostic of Ian Kenyon's Period I in southeastern Ontario (Karklins 1985). This period is dated to ca. 1580-1600. In New York the corresponding period is dated slightly earlier: ca. 1550-1575. However, in New England, the beads would be attributable to the late 16th-early 17th century or ca. 1600. Taking this later date seems to be the most likely for Nova Scotia; however, even the earlier dates are possible as there is evidence indicating that trade with the French and other Europeans took place periodically during the 1500's. This corresponds well with the French origin or Venetian manufacture of the Ontario

beads (Karklins 1985).

The four pieces of pottery consisted of two samples of Pearlware (BaDg2:101, BaDg2:110), 1 sample of transfer-printed ware (BaDg2:23) and 1 sample of banded ware (BaDg2:63). The tentative identifications were made with the help of Susan Crowe, Saint Mary's University. The Pearlware is probably ca. 1840-1868, the transfer-printed ware ca. 1830-1850 and the banded ware ca. 1860 (Savage and Newman 1974).

Alaric Faulkner of the University of Maine has provided some useful background information on the history of clay pipes in the area. From the end of the 16th century through to the 20th century, Europeans of all classes smoked tobacco in clay pipes and thus, bits and pieces of clay pipes are to be found virtually everywhere they travelled or traded, and even beyond into areas of secondary trade (Faulkner 1980:17). It is clear from documentary and archaeological records that European trade pipes were favoured by Indian groups (Faulker 1980:21). Four major pipe sources during this period included English, Dutch, Scotch and local American and Canadian manufacturers. Although a great deal of work has been done on identifying different periods of pipes through the style of the bowls, heels, and stems and through identifying specific markings, the fragments found at Indian Gardens are almost impossible to accurately date or identify.

The three metal artifacts recovered from the site include a pocket knife (BaDg2:109), a lead bullet (BaDg2:156), and a caulking trowel (BaDg2:10). Caulking trowels were used in boat building by the Europeans, and were popular among the Micmac as scraping tools. The specimen from the Low Terrace site may date to the early contact period.

Organic Remains

The organic remains, or ecofacts, recovered from the Low Terrace site, consist of a small sample of faunal remains and macroplant remains recovered from soil samples. The botanical remains from the site are reported below in detail. The faunal remains include only seven specimens. Four of these are unidentified fragments, collected from the surface of unit D1. These are in a good state of preservation, and are no doubt of recent origin. One calcined bone specimen (BaDg2:71) was recovered, but it is much too fragmentary to be identified. The final specimens (BaDg2:83, 84) came from excavation unit C1, and represent the tooth of a cervid, and probably a moose. Similar moose tooth fragments, as well as a moose skull, were reported by Erskine from his Indian Gardens #2 site (1957:6).

Charred Seed Analysis

Barbara Wells

One of the goals of today's archaeology is to try and accurately reconstruct past lifeways and subsistence strategies. The study of seed remains from archaeological sites can be a valuable aid in our understanding of the past. By examining these botanical remains we can speculate as to the uses these plants may have had for prehistoric native populations.

A total of twenty-two soil samples were collected at the Low Terrace site for analysis of paleobotanic remains. Four samples were taken from the surrounding forest, four samples from a test pit dug along the perimeter of the site and two samples were taken from each of the seven test pits excavated. The first sample was taken on the surface level and the second was taken at an arbitrary level of two to five centimeters. Each of the twenty-two samples were then subjected to flotation to remove the botanical remains.

The flotate was dried for a period of twenty-four hours and examined

under a microscope. Botanical identifications were aided by reference to a seed identification manual (i.e., Montgomery 1978). These botanical remains were then grouped according to provenence. Only the four samples taken from the forest yielded uncharred plant material, including one grass seed. All the other samples taken from the site yielded charred plant remains. None of the samples collected at the site were from discernible features.

Results

The majority of seeds were recovered from the surface level of the site. All were in very good condition and easily identifiable.

Of the one hundred and ten samples recovered, fifty-eight were identifiable seeds. Fifty-two were identified as "carbonized spheroids" which have been tentatively classified as fungal fruiting bodies after Hal Hinds, the University of New Brunswick, Fredericton (Deal 1985). Uncharred seeds recovered in flotation are difficult to consider as valuable tools to the archaeologist, due to their unreliability as a guideline to site age and habitation. According to Minnis, "unless there is a specific reason to beieve otherwise, only charred remains will be considered prehistoric" (1981).

Interpretation

The charred plant materials recovered for analysis were probably the plants which were heated or charred during food preparation, or when the site was burned by the Indians or due to natural causes. It is important to note that the most commonly found species may not necessarily be the plants of greatest economic importance (Crabtree 1983). In this case the botanical results may not be an unbiased record of the prehistoric plant use. Even though the record may not directly reflect the prehistoric plant utilization, it can provide important information on the past uses of these plants.

The recovery and subsequent identification of the plant remains was time consuming and, at times, tedious. I feel confident in that of 58 samples there was only one seed I was unable to identify. A detailed summary of the identified charred seeds from the Indian Gardens site can be seen in Table 1.

The plant material remains can be divided into two categories (namely, fruit and seeds). I will describe the findings and then go on to speculate as to the archaeological significance regarding seasonality of the site. The seeds of two varieties of fruit are present in the botanical remains. The first variety is Rubus strigosus; better known as Wild raspberry. The common raspberry seed has a distinctive coarse reticulate surface within elliptic shape to the seed. The second seed present was that of Vaccinium angustifolium, or low sweet blueberry. The blueberry was not represented by an actual seed, but rather a perfectly intact charred immature blueberry, with stem attached. The blueberry has a very distinctive shape, and in this charred condition was easily identifiable. Both of these fruit are found commonly throughout the Maritimes.

The seeds represented four different genus. Five specimens of Vicia angustifolia were present, based on a tentative identification. These five nutlets, based on the size, color and shape comparisons, were placed in the Vicia genus. Vetch is a common weed to Nova Scotia. These nutlets, which measure approximately 3mm x 3mm x 3mm, were dark brown to black and mottled in color (Montgomery 1977:141).

My one specimen of Echinochloa crusgalli is another weed common to Nova Scotia. This barnyard grass is the only uncharred specimen collected outside the site itself. The barnyard grass specimen is straw colored and approximately 3.0mm in length (see Montgomery 1977:118). It was collected from the surrounding forest, that at one time probably covered the entire site area.

The genus Rumex was represented by two species. These specimens, I believe, are also a common variety of weed found throughout Nova Scotia. Five samples of Rumex maritimus were present. This plant, commonly known as golden dock, has an extremely small seed, measuring 1.2mm in length and 0.7mm in width. It has an elliptic shape and a smooth surface and is straw colored (Montgomery 1977:167-168). The other Rumex sample found only yielded two specimens. Rumex crispus is commonly called curled dock. This seed measures 2mm x 1.2mm and closely resembles golden dock. Both members of the Rumex genus closely resemble the Polygonum genus.

The final and most abundant genus found at the Lower Terrace site is that of Polygonum. The sample includes four species of Polygonum. A single specimen of Polygonum scandens, or climbing false buckwheat, is present. This species of Polygonum is quite large, measuring 3.8mm x 2.2mm. Its faces are slightly concave and its surface is black and shiny (Montgomery 1977:167). One specimen of Polygonum punctatum, a variety of water smartweed measuring 2.4mm x 1.7mm, is also present. Its glossy surface is either brown or black (Montgomery 1977:166).

Six samples of Polygonum sagittatum were collected. Arrow-leaved tear thumb, as these seeds are known, measure 2.6mm x 1.9mm (Montgomery 1977:167). These seeds resemble Polygonum punctatum in appearance. My final sample of the Polygonum genus is the most abundant of all collected samples. A total of thirty-one samples of this particular species were recovered. Plygonum natans, or water smartweed seeds, averaged 2.7mm x 2.1mm. The surface is slightly areolate and it's surface can be either dull or glossy and appear in brown or black color (Montgomery 1977:166).

Table 1

Summary of Identified Seeds from the Low Terrace site

Number of samples	Taxonomic name*	Common name
5	Vicia (angustifolia?)	Common vetch
31	Polygonum (natans?)	Water smartweed
2	Echinochloa crusgalli	Barnyard Grass
6	Polygonum (sagittatum?)	Arrow-leaved Tear thumb
1	Polygonum (punctatum?)	Water Smartweed
5	Rumex maritimus	Golden Dock
3	Rubus (strigosus?)	Wild Raspberry
1	Polygonum (scandens?)	Climbing False Buckwheat
1	Vaccinium (angustifolium?)	Low Sweet Blueberry
2	Rumex (crispus?)	Curled Dock
52	Carbonized spheroids	Fungal Fruiting Bodies
1	Unidentified seed	----------

*Polygonum and Rubus genera identifications were confirmed by C. Crompton, Biosystematics Research Institute, Agriculture Canada, October 16, 1986, Lot #V86-45.

Plant Use

A summary of the identified charred seeds from the Lower Terrace site is presented in Table 1. From my seed identification, it is obvious that the majority of seeds were of the genus Polygonum. The seed samples recovered that represent edible berries were Vaccinium angustifolium (blueberry) and Rubus strigosus (raspberry). Both these types of berries were collected by the historic Indians of the Maritimes. These berries could be dried for use throughout the winter (Speck and Dexter 1952).

The three varieties of weeds present can be found commonly throughout the Maritimes, and were not a surprising find. What was surprising was the amount of samples found that belonged to the genus Polygonum (See Table 2). A total of thirty-nine specimens of this genus were collected. This accounts for approximately 67% of my total seed sample and Polygonum natans (water smartweed) alone accounts for 82% of the entire number of seeds of the Polygonum genus. What could account for such relativesly large amounts of Polygonum being found at this particular site?

At first, I was baffled by the huge amounts of water smartweed collected at Indian Gardens. But further investigation has helped to address this question. The seeds of the water smartweed themselves are not the important clue, but rather it is the tubers of the smartweed that are of significance. The tubers are edible and were probably consumed by the native population (also see Crabtree 1983).

Seasonality

These seed samples from Indian Gardens could also give us clues as to the seasonality of the site. Both the blueberry and the raspberry were known to have been gathered during the late summer and the early fall (Speck and Dexter 1951). The water smartweed would have been utilized in the summer or fall, in

Table 2

Percentage Breakdown of Charred Seeds

Recovered from the Low Terrace Site

	Number of Samples	Genus name	Percentage Breakdown
	5	Vicia	8.6%
	2	Echinochloa	3.5%
	3	Rubus	5.2%
	7	Rumex	12.0%
	1	Vaccinium	1.7%
	39	Polygonum	67.2%
	1	unidentified	1.7%
Total	58	----------	99.9%

order to give the tubers time to grow and mature. This evidence, however small, leads me to believe that this site might have been used only in the summer and fall, when plant foods were the mainstay of the diet.

Conclusion

Even though this information may give some insight into the possible diet of the natives, it is difficult to make summary statements concerning the usage of plant material. It is impossible to reconstruct the entire balanced human diet based on the carbonized plant remains alone. In order to best interpret the plant remains from a site, as much knowledge as possible about the site and the surrounding area should be obtained. Once analyzed and taking this information into account, the plant remains will be more understandable. In many instances these plant remains will provide valuable information concerning seasonality of the site.

Artifact Analysis

The artifacts recovered from the Low Terrace site are analyzed according to attribute variation. The methodology and terminology are similar to that used in the Teacher's Cove (Davis 1978) and Mud Lake Stream (Deal 1985) site reports. Three major artifact categories are addressed; namely, pottery, chipped stone, and ground and pecked stone. These are divided into artifact series which reflect variations in workmanship (e.g., bifaces versus unifaces) and subseries, or groups, based on morphological or decorative attributes (e.g., stemmed biface or cord wrapped stick pottery).

Pottery Analysis

Dora Kemp

The total number of sherds discovered in the excavation of the Low Terrace site was thirteen; representing seven vessels. Each piece was analyzed in terms of paste characteristics, dimensions, and design elements. Sherd provenience was also taken into account after the preceding attributes had been determined in order to gather like sherds together. This process enabled me to determine the approximate number of vessels recovered.

Vessel #1 is represented by sherds BaDg2:88, 89, and 91. The first two sherds had the same provenience and they were also conjoinable. BaDg2:91 was found only slightly apart from the other two, but had similar attributes. All three have grit temper in which quartz and mica grains are present. The hardened paste has curving fissures in it which run on a diagonal to the parallel surfaces of the sherd. These three sherds are approximately 1 cm thick and are complete sherds; meaning that they have both the interior and exterior surfaces intact. The primary design element is cord-wrapped stick. In this case, the impression of the stick is not apparent which indicates that the cord was thicker than the stick. Also present is a drag design, where a

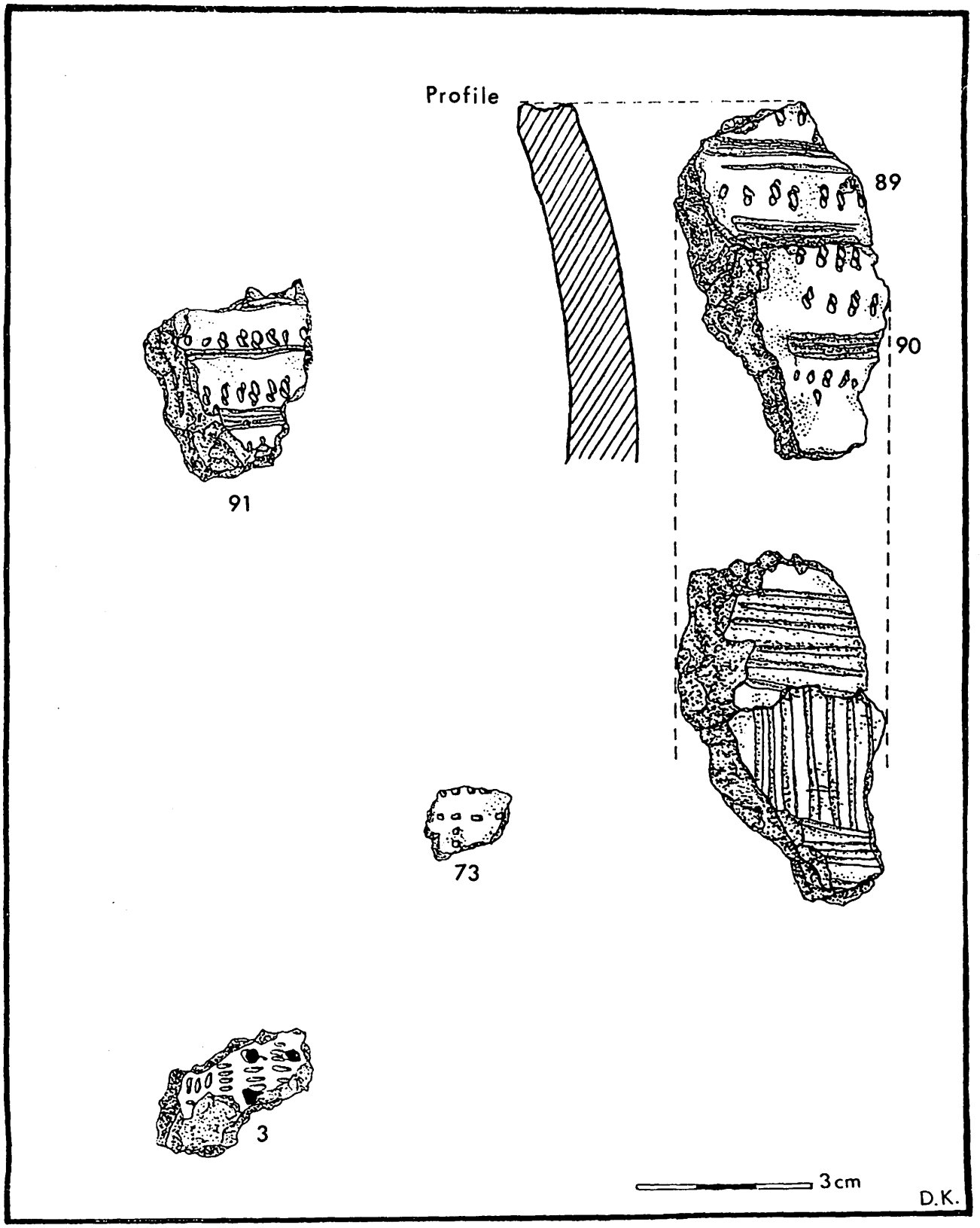

Figure 4: Line drawings of pottery sherds recovered from the Low Terrace site.

blunt instrument was dragged over the surface of the vessel. The interior surface exhibits a grooved pattern, which was apparently made with a fairly large scraping tool. This was probably done to consolidate the surface of the vessel interior. Specimens BaDg2:88 and 89 can be joined together to give a profile, thus enabling one to determine that these sherds were part of the upper body area of the pot (see Figure 4). Further, the design on BaDg2:89 appears to stop near the bottom. This makes sense because designs are usually contained in the zone from the rim to the shoulder.

Vessel #2 is determined by two sherds (BaDg2:22) having the same provenience but not joined together. Only one of these has a design, which is cord-wrapped stick along with two rows of dragged lines. They have a similar grit temper to the latter vessel. Both of the sherds are complete and are 1.1 cm thick.

Vessel #3 is represented by sherd BaDg2:3. It is a partly complete sherd and also has a grit temper with slightly larger quartz and mica grains than the previous two vessels. It has three punctate designs, as well as three parallel rows of cord-wrapped stick and one other row at a right angle to these. Unlike the other cord-wrapped stick designs the cord impressions on this sherd are straight across rather than at a diagonal (see Figure 4).

Vessel #4 is represented by a single small sherd. It is incomplete and only contains the exterior side. However, it has a design element that none of the others do; that is, linear dentate. There are three rows of 2mm x 2mm square impressions made by a bone or wooden comb-like implement.

Vessel #5, made from two sherds with the same provenience (BaDg2:77), is interesting not because of its design, like the above vessel, but rather because of its temper. There are holes present in the paste where shell used to be. The original pot had a shell temper but the shell has disintegrated in the acidic soil of the area.

One sherd constitutes vessel #6. It has no design but it is a complete sherd. It has a grit temper similar to vessel #1 but it is thinner, being only .95cm thick.

The last vessel (#7) is made up of one large, incomplete sherd and four small fragments, all of which were found within close proximity to each other. The large sherd has been poorly fired and therefore cracks quite easily. It again has a grit temper with large grains of quartz and feldspar. They have no designs, indicating that they probably formed part of the lower body of the vessel.

It is difficult to make any generalizations about the pottery found on this site due to the fact that only thirteen artifacts (sherds) were found and only six of these have designs; the most common combination being cord-wrapped stick with secondary designs.

Chipped Stone Artifacts

The chipped stone category includes 1404 specimens. These are discussed under three series headings, including (1) Bifaces (i.e., projectile points and formed bifaces), (2) Unifaces (i.e., scraping tools), and Non-formed chipped stone. The latter category consists of unutilized flakes (1110 specimens) and core fragments (43 specimens). A summary of the chipped stone raw materials is outlined in Table 3. Local quartz predominates as raw materials, followed by Scott's Bay agate. The former is used primarily for bifaces, while the latter is used primarily for unifaces (see below). The terminology used to describe knapped artifacts follows McKay and Sanger (1972; also see d'Entremont and Moore 1977).

Table 3: Chipped stone raw materials from the Low Terrace site

Biface series:										
Projectile Points	4	1	4	4	2	8	0	0	0	23
Bifaces	1	2	10	1	0	13	0	0	0	27
Uniface Series:										
Scrapers	14	0	1	0	0	3	5	0	0	23
Non-utilized:	134	7	10	0	0	1153	18	8	1	1331
Totals	153	10	25	5	2	1177	23	8	1	1404

Biface Series

Jeff McClair

The biface series consists of projectile points and formed bifaces (See plate 3). The latter group includes 32 specimens, fifteen of which were characterized by straight bases, one by a concave base, one by a convex base, while the remainder were merely tips (10 specimens) and body fragments (five specimens). The projectile point subseries is divided into four groups, based on basal treatment. The average dimensions of projectile points are summarized in Table 4. Group 1 projectile points are characterized by straight stems and bases, biconvex blade shapes and convex blade edges (see Table 5). Group 2 points are characterized by narrow corner notching, straight bases, biconvex or planoconvex blade shapes and convex or asymmetrical blade edges. Group 4 includes only one specimen, which is triangular in shape, with a concave base, biconvex blade shape and straight blade edge.

Two Group 1 specimens (BaDg2:14, 120) may date to the Late Archaic. Some of the Group 2 artifacts (e.g., BaDg2:93, 104) are similar to the Jacks Reef corner notched points of New England (Ritchie 1961:26-27; Snow 1980). Other Group 2 specimens (e.g., BaDg2:29) are similar to Davis' group 2 points from Teacher's Cove (Davis 1978:plate 6) and Deal's Group 3 points from Mud Lake Stream (Deal 1986:plate 7). One Group 3 specimen (BaDg2:97) has a similar appearance to Meadowood points of the Early Woodland period of New York and New England (Ritchie 1961:35-36; Snow 1980). Other Group 3 points are similar to Deal's Group 4 points from Mud Lake Stream (Deal 1985:plate 8). One Group 3 specimen (BaDg2:87) seems too frail to have a practical use. It is a crudely serrate point made of slate, and is only 2.8mm thick. It may represent a child's experiment at knapping. The one Group 4 point (BaDg2:57

Table 4: Summary of Projectile Point Dimensions

	Group 1 N = 5	Group 2 N = 13	Group 3 N = 4	Group 4 N = 1
Length				
Mean	41.8	31.6	37.8	30.0
s.d.	7.5	8.4	8.6	0.0
Width				
Mean	24.0	19.9	23.5	27.0
s.d.	6.0	2.6	6.4	0.0
Thickness				
Mean	6.7	5.9	5.6	5.0
s.d.	1.1	1.2	2.0	0.0

Table 5: BaDg2 Summary of Projectile Point Morphologies

	G1					G2													G3				G4
Artifact #	78	50	58	120	20	14	31	27	105	45	113	29	104	93	86	44	36	12	42	92	97	87	57
Stem	ST	EX	ST	ST	ST	--	--	--	--	--	--	--	--	--	--	--	--	--	EX	EX	EX	EX	--
Notch	--	--	--	--	--	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	W	NC	--
Base	ST	ST	U	ST	ST	ST	ST	ST	ST	--	ST	CX	ST	ST	--	--	--	--	ST	ST	ST	ST	CV
Shoulder	NR	WA	NR	NR	NA/WR	WA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Max L	48	30	47	39	45	37	40	36	25	34	28	25	29	26	18	21	34	28	36	30	35	50	30
Max W	17	22	22	33	26	24	22	20	16	21	20	22	19	18	19	16	18	24	17	21	24	32	27
Blade Edge	CX	CX	CX	CX	CX	CX	CX	CX	CX	BP	PC	BC	BC	BC	BC	PC	PC	--	PC	PC	BC	BP	ST
Blade Shape	BC	BC	BC	BP	PC	BC	CC/CX	BC	PC	ST	CX	IC	ASY	ASY	ASY	ASY	ASY	ASY	ASY	ASY	ST	ASY	BC
Max. Thick.	5	7	8	6.5	7	6	5	7.6	5	6.5	6	6.2	6.6	7	2.2	3.6	4.2	5	5	7.6	6.6	3	5
Material	F	S	F	S	S	S	A	A	Q	Q	Q	Q	Q	C	Q	Q	SL	F	F	Q	AG	SL	A
L/W Ratio	2.8	1.4	2.1	1.2	1.7	1.5	1.8	1.8	1.6	1.6	1.4	1.1	1.5	2.0	.9	1.3	1.9	1.2	2.1	1.4	1.5	1.1	1.1

Abbreviations used in this table.

ST= straight
EX= expanding
NC= narrow corner
W = wide notch
U = undetermined
NR= narrow-rounded
WA= wide angle
CX= convex
CC= concave
BC= biconvex
PC= plano-convex
IC= incomplete
ASY= assymetrical
BP= biplano
F = felsite
A = agate
Q = quartz
SL= slate
C = chert
S = sandstone

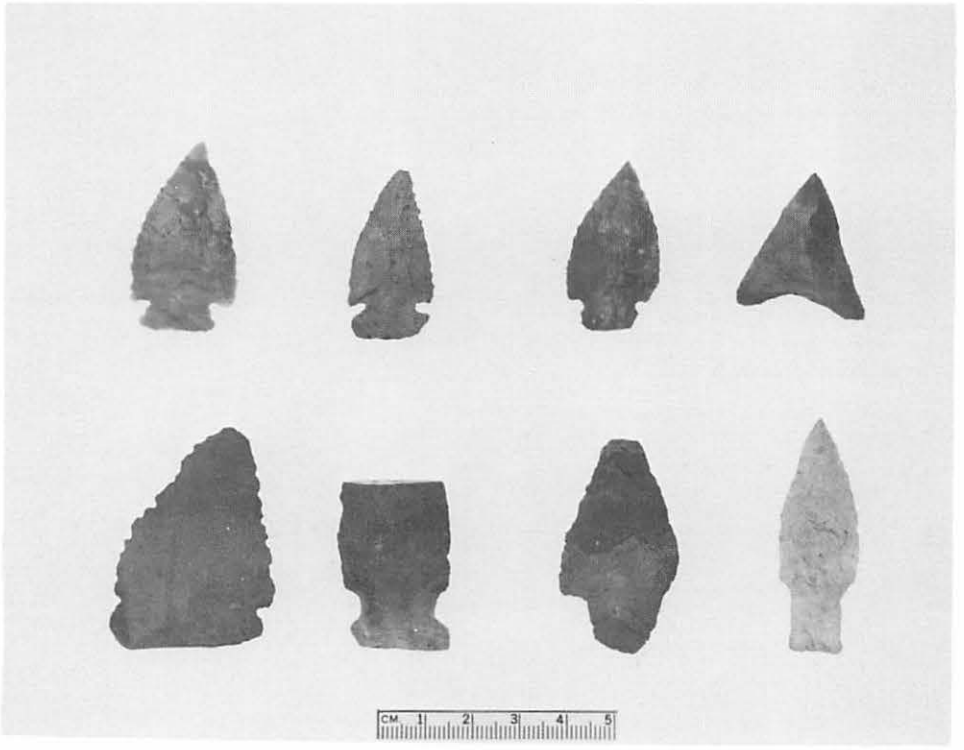

Plate 3

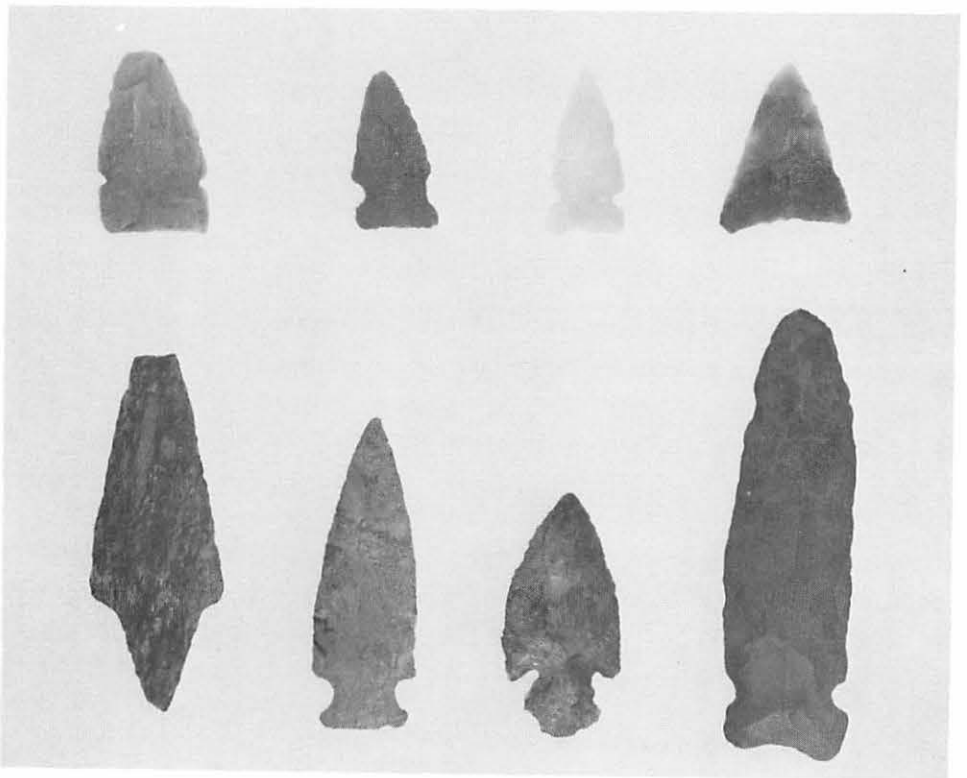

Plate 4

is triangular in shape and is very similar to the Lavanna points of New England (Ritchie 1961:31-32; Snow 1980). Five of the fragmentary bifaces recovered have concave bases, and were probably also originally triangular in shape.

Raddall Collection - Projectile Points

Judy Corkum

Mr. Raddall's collection of projectile points from the Indian Gardens area has been classified into six groups: corner-notched, narrow side-notched, wide side-notched, small stemmed points, triangular points, and large stemmed points (Plate 4). Many of the smaller points were worked from quartz, which is a commonly found material in the area. Certain characteristics are common to all groups: bifacially worked, basal thinning, expanding stems, non-serrated blade edges, and bi-convex cross-sections (see Table 6). Convex blade edges are more common than straight, although the combination of convex and straight is the majority. The majority of bases are either asymmetrical or straight. The larger points have better defined characteristics, and are more symmetrical. Many of the points have a less defined notch on the base of the convex edge (i.e., those points with combination edges).

Group 1: These are corner-notched points, the average dimensions being 37mm long, 23mm wide, and 7.5mm thick. Many were produced from quartz. Most blade edges were non-serrated, but can be grouped almost equally between convex, straight, and a combination (one side convex, the other straight). All but one point have expanding stems. Again, three almost equal groups exist regarding base forms; convex, straight, and asymmetrical. The majority of points are bi-convex in cross-section, with a minority being plano-convex.

Group 2: The narrow side-notched points are on average slightly smaller than the corner-notched: 34.5mm long, 18.5mm wide, and 6.5mm thick. The

Table 6: Summary of Projectile Points - Dimensions:

The Raddall (THR) Collection

Index	Group 1* N = 28	Group 2 N = 32	Group 3 N = 6	Group 4 N = 4	Group 5 N = 20	Group 6 N = 15
Length mean	37.4mm	34.7mm	57.6mm	31.6mm	38.2mm	56.1mm
Width mean	23.1	18.5	25.2	24.3	23.1	28.1
Thickness mean	7.7	6.6	6.8	6.4	6.5	8.4

Formal Characteristics - Projectile Points

Blade Edge	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Convex	8	14	4	0	8	3
Straight	8	2	1	1	7	4
Convex & Straight	10	16	1	0	5	8

Stem Form	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Expanding	24	26	6	0	0	2
Contracting	0	0	0	1	0	9
Straight	1	2	0	3	0	2
No Stem	0	0	0	0	20	1

Base Form	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Convex	8	6	1	0	0	0
Concave	2	3	1	0	10	0
Straight	7	8	2	3	7	5
Asymmetrical	7	9	1	0	2	3
Pointed	0	1	1	0	0	0
Bifurcated	0	2	0	0	0	0

Blade Edge	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Serrated	5	3	0	0	0	0
Non-serrated	20	26	6	3	20	15
Combination	3	4	0	0	0	0

Cross-section	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Bi-convex	22	20	5	4	15	10
Plano-convex	5	11	1	0	5	5

*The Artifacts studied included,
Group 1: THR: 41-56, 62, 69, 70, 73, 90-93, 99; Group 2: THR: 57-61, 63-68, 71-72, 74-88, 97, 105, 295-296; Group 3: THR: 98, 100-104; Group 4: THR:106-109; Group 5: THR: 124-135, 137-144; Group 6: THR: 89, 110-123.

majority have non-serrated blade edges, although the shape is either convex or a combination of convex and straight. All but two points are expanding (stems). This group has the most variety of basal forms, with the most common being asymmetrical, straight, and convex. Most of the points are bi-convex in cross-section. Plano-convex cross-sections seem to be associated with the less common basal forms.

Group 3: This is the wide side-notched group of points, and is one of the smallest in terms of quantity collected. The average dimensions are: 57.5mm long, 25mm wide, and 6.5mm thick. All have non-serrated edges, most being convex in shape. All stems are expanding, and all but one point have bi-convex cross-sections. There are bases of every shape except bifurcated.

Group 4: This group isolates the small stemmed points. All are incomplete, being broken near the base, but the average width, 24mm, and thickness, 6mm, are similar to those of notched points. All stems except one are straight, all bases are straight, and all cross-sections are bi-convex. The only blade edge existing is straight, all appear to have been non-serrated.

Group 5: Triangular points make up this group and average dimensions are 38mm long, 23mm wide, and 6.5mm thick. All have non-serrated blade edges, and all three shapes exist. The combination of convex and straight blade edges is less frequent, which is contrary to the notched points. Bases are mostly concave, but almost as many straight bases exist. The majority of cross-sections are bi-convex.

Group 6: The large stemmed points average dimensions are: 56mm long, 28mm wide, and 8mm thick. All blade edges are non-serrated, and about half have combination edges (convex, and straight). Although all types of stems exist, the majority are contracting. Bases are either straight or asymmetrical. Most of the cross-sections are bi-convex.

Plate 5

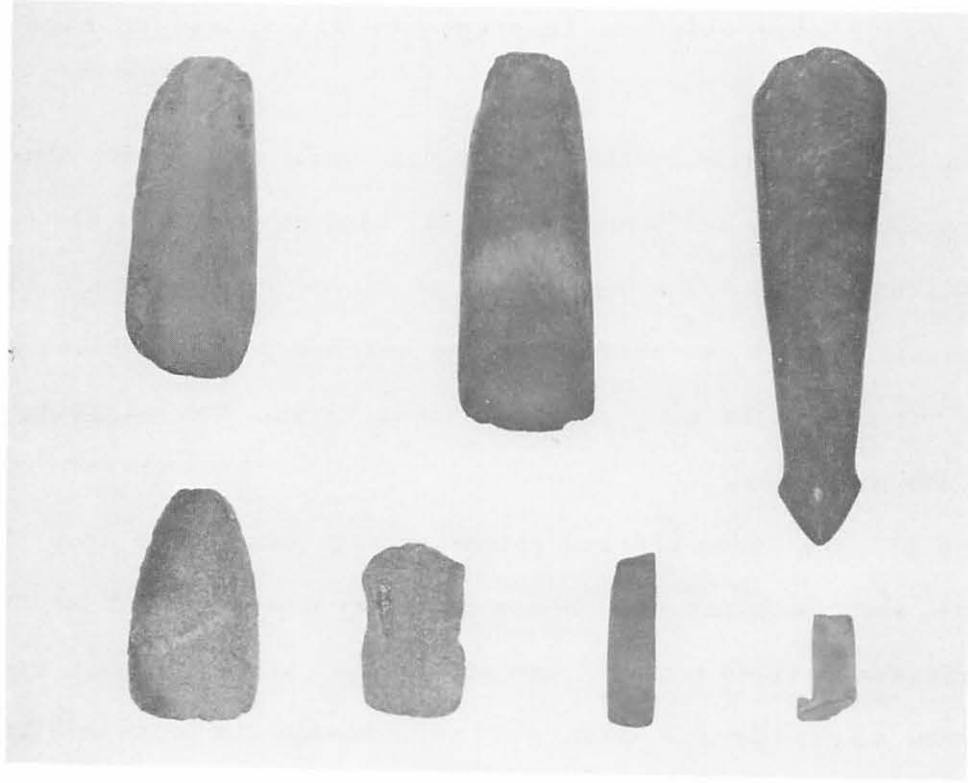

Plate 6

Uniface Series: a use-Wear Analysis

Alex Murchison

The primary goal of this study is to determine the possible functions of a series of chipped-stone unifaces (scrapers) and retouched flakes by use-wear analysis. In addition to this, the relationship of "inherent material characteristics" and the use scars on these tool forms will be considered.

The artifacts in question are from the Thomas Raddall (THR) Collection and the Low Terrace site (Plate 5). The scrapers were divided into five broad categories, based on material type (i.e. Quartz, Felsite, Chert, Jasper and Agate). After the features of each tool were measured and recorded they were grouped according to category. The common (inherent) characteristics were noted, followed by a brief description of the individual tools in that group. The working edges were examined under a microscope and overall comparison made by the unaided eye. The use-wear (scar type) was determined with the aid of photographs in published monographs (Brink 1978; Hayden 1979; Semenov 1964). Edge angle has also been used in the determination of tool function (Semenov 1964; Wilmsen 1967) and is used as additional support in this paper. Each of the artifacts examined is described below according to its associated material category, and a summary of the terminology used is presented in Table 7.

1) Quartz

With the exception of THR: 272, these samples are semi-translucent, white quartz, with large fractures; THR: 272 is more opaque and granular in nature. Crushing, minimal rounding (and polish) as well as larger unidentified scars are common to all. Material also appears to have been lost from the ventral surfaces of most, though less from THR: 272. The fractured, inherent, qualities of this rock make it difficult to determine and identify specific wear damage.

Table 7: Summary of Use-Wear Terminology Used in the Present Study (see Brink 1978)

Feather (scar or flake)	Gradual transition (at distal end) between scar and rock surface.
Step (fracture or flake)	Ends in a right angle break at distal end of flake, breakage occurs just below rock surface and "step" is formed.
Hinge scar	Similar to step but distinguished by overhanging lip at distal end.
Crushing and Nibbling	Common configurations flake scars may take. Crushing: dense concentration of scars, usually near tool edge. Nibbling: an orderly parallel arrangement of flake scars.
Polish	Visual appearance of reflected light on tool edge.
Rounding	Smoothing or wearing down of rock surface or rounding due to removal of grains or clusters of grains from tool edge (called pitted rounding).
Scalloped	Similar to feather scars but deeper and sometimes affecting both dorsal and ventral surfaces. Serration is a finer form.

Artifact number

BaDg2:11 End scraper. Slight crushing along working edge with several larger scars higher up the dorsal face.

BaDg2:13 End scraper. Crushing along edge, some larger scars. Distal end is roughly scalloped.

BaDg2:85 End scraper. Crushing, larger scars with step scars more apparent.

THR: 272 Side scraper. Crushing, slight rounding. Somewhat serrated working edge.

THR: 274 Bi-facial, side scraper. Considerable loss of material from both ventral and dorsal surfaces at distal end.

2) Felsite

This is a relatively soft material with a smooth, granular make-up which appears to be reflected in the pitted and lightly serrated wear along the working edges of these samples. All exhibit a lack of polish and slight rounding with multiple, overlapping step and hinge scars prominent on the dorsal face. There are, as well, some larger nicks and gouges.

Artifact number

BaDg2:26 End scraper. Multiple step and hinge scars to 4mm high on dorsal face. Edge is pitted and shows some nibbling and crushing.

THR: 269 End scraper. Edge crushing, step and hinge scars to 3mm high on dorsal face. The edge is noticeably rounded.

THR: 281 Side scraper. Some crushing, step and hinge scas to 1.5mm high. Face has comparatively deep retouch scars.

3) Chert

These two samples are of fairly dense material. It is granular in nature but finer and glossier than felsite. The construction scars are thin, broad and flat. Each exhibit step and hinge scars close to the working edges with some feather scars higher up on the dorsal face.

Artifact number

THR: 277 Broken side scraper. Edge wear is predominantly crushing with slightly serrated edge. Some rounding, no polish.

THR: 279 Three worked edges with a blunted proximal end. Multiple step and hinge scars to 1.5mm high, feather scars to 2-3mm high. Some rounding and slight polish.

4) Jasper

The jasper artifacts are composed of a smooth, granular material. It is more "plastic" than chert and though the construction scars are broad, they are more (convex and concave) than flat as they were in the case of the chert. All show varying degrees of crushing along the working edge, although BaDg2:82 and BaDg2:69 are still relatively sharp to the touch. Multiple step and hinge scars are close to the edge with little flaking on the ventral surface.

Artifact number

BaDg2:52 Utilized flake with minimal reworking, localized crushing with some step and hinge flaking on both ventral and dorsal faces. No rounding or polish.

BaDg2:69 Endscraper. Some rounding and polish, predominant hinge flakes with numerous feather scars to 3mm. Slight crushing close to working edge.

BaDg2:82 Endscraper(?). No rounding or polish, very fine crushing close to edge with hinge scars. Attritional edge wear is suggestive of a cutting edge. Large area of localized scarring to 3mm.

BaDg2:108 Utilized flake. The working edges are indicated by series of scalloped scars, similar to feathering, on both ventral and dorsal surfaces. Slight rounding and polish.

BaDg2:276 Worked on three edges (possibly four but one side is broken). Heavy crushing close to edge (multiple step and hinge scars). Feathering common higher on dorsal face, to 3mm. No rounding.

Reworked projectile. Distal end is like an endscraper although lateral edges appear to have been utilized also. Some crushing, step and feather scars. No rounding or polish.

5) Agate

Of all the materials studied, this is the most dense and fine grained. Many samples exhibit extreme multiple step and hinge flakes. Also crushing. There is little polish though there is rounding of a roughly pitted type. Construction scars are generally similar to those of jasper but somewhat more angular (it is more brittle than jasper). Of twenty pieces in this group, seven have been broken with a clean snap at the approximate mid-section.

THR: 270 and BaDg2:46 are more translucent and do not have the "mossy" look common to the others.

Artifact number

BaDg2:24 Endscraper. Shows considerable wear by attrition along distal edge, step and some hinge scars. Proximal end suggests percussion platform.

BaDg2:40 Endscraper. Extreme hinge scars to 7mm high on dorsal face. Crushing along two edges, feather scars from both ventral and dorsal faces on lateral edge.

BaDg2:41 Endscraper. Some hinge scars to 4mm high, crushing along edge numerous feather flakes. No rounding or polish.

BaDg2:43 Utilized flake with some retouch. Small step and hinge scars, crushing along the edge. No rounding or polish.

BaDg2:46 Endscraper with possible lateral use. Roughly serrated edges, some crushing and nibbling. No rounding or polish. Is more quartz-like than other samples.

BaDg2:54 Worked on three sides, possible use on all edges. Step and hinge scars, some feathering. Crushing close to working edge, slight rounding, no polish.

BaDg2:55 Broken. One edge exhibits retouch and wear, mainly large feather scars from two faces. Some crushing on distal edge.

BaDg2:74 Endscraper. Step and hinge scars to 3mm high. Crushing and some feathering. The edge is jagged, localized rounding and no polish. Possible use on right lateral edge. Shows loss of material from ventral surface.

BaDg2:95 Endscraper with utilized lateral edges. Crushing on distal end, feathering on ventral surface (lateral edges). Pitted rounding.

BaDg2:106 Endscraper (thumbscraper?). Light hings scars. Predominant nibbling. Some rounding and polish. One large snap fracture.

BaDg2:118 Endscraper, broken. Some crushing, mainly hinge scars with larger feathering to 4mm up dorsal face. Large concoidal scar on ventral surface. Some rounding, no polish.

BaDg2:128 Endscraper showing use on several edges. Slight scalloping confined to working edge but on both ventral and dorsal faces.

BaDg2:133 Thumbscraper? Broken. Thin and sharp. Serrated edge with some crushing.

BaDg2:144 Endscraper, broken. The one remaining edge is serrated, slight crushing, several step scars.

BaDg2:270 Endscraper. Multiple hinge and step scars with large flat flakes lost from ventral surface. Scars to 9mm on dorsal face.

BaDg2:271 Endscraper. Small hinge flakes with some crushing and slightly serrated working edge. Some rounding with polish. Smooth ventral edge.

THR: 275 Endscraper. Extensive crushing with large and small hinge flakes. Scars to 5mm on dorsal face. Pitted edge, slight rounding.

THR: 278 Endscraper, small. Multiple step and hinge scars. Crushing. Several flakes lost from ventral surface. Pitted edge, slight rounding.

THR: 280 Endscraper, broken. Hinge scars and crushing along working edge. Edge is pitted, no rounding or polish.

THR: 282 Endscraper, broken. Step and hinge scars, several large snap features to 5mm on dorsal face. Some crushing near edge with slight rounding.

Though this study has been highly methodical in its approach to measurement and recording to artifact features it can claim, in no way, to be exhaustive in its conclusions about the functions of stone scrapers and retouched flakes. The reference material was based on tools and cultures, quite possibly much different from those that were examined here and there was no ethnographic or experimental evidence to support my conclusions.

To begin with, it should be mentioned that many, if not all, of the scrapers and retouched flakes in this study have been affected by environmental conditions extraneous to average depositional wear. The majority of scrapers studied were removed from the surface or within several centimeters of the surface, from a site that had been covered by water for

approximately sixty-one years. Though the coverage was backwater caused by a dam and might be considered relatively still, the Low Terrace site was located next to a former stream. From this and the fact that most artifacts were close to the surface it can be assumed that the scrapers were subjected to localized movement after original burial, thus silt and water abrasion. This tends to be confirmed by the lack of identifiable striations and conclusive use-wear abrasion scars visible on the tools when examined under magnification. Another factor which may have influenced the scarring of the scrapers was the construction of a cofferdam in close proximity to the Low Terrace site. It cannot be determined what effect, if any, this may have had on either transport of the artifacts or their present condition.

The importance of edge angle relationship to function of scrapers has been considered in several studies including those by Semenov (1964), Wilmsen (1968) and Frison (1968), the theory being that particular angles are appropriate to particular tasks (i.e. cutting, shredding, tanning, etc.). It should also be considered that angle steepness might well increase with resharpening (Wilmsen 1968:159).

According to Wilmsen (1968) edge angles of 46-55 degrees are indicative of one or more of the following uses: A) skinning or hide scraping, B) sinew and plant fiber shredding, C) heavy cutting and D) tool back blunting. Of the thirty-five samples studied from Indian Gardens sixteen (45.7%) exhibited angles between 45 and 60 degrees (see Table 8). Agate is the most common material in the collection and nine of twenty fell in this range; quartz, four of six; jasper, three of six; felsite, two of three and chert, nil.

Edge angles of 66-75 degrees (Wilmsen 1968) might infer A) wood working, B) bone working, C) skin softening and D) heavy shredding. Nine of the thirty-five exhibited angles between 70-75 degrees (25.7%) with 11.4% of the total thirty-five being steeper than 75 degrees. Five agate tools came within

Table 8: Summary of Uniface Dimensions and Row Material Type:

Low Terrace Site and Raddall Collection

Artifact Number	Length	Width	Edge Span	Height	Edge Angle	Type
11	29.5	25	25	12	45	quartz
13	40.5	30	28.5	5	45	quartz
24	21.5	20	19	6	85	agate
26	46.5	33	20.5	5	30	felsite
40	29.5	27	26	3.5	85	agate
41	34	30	27.5	8	45	agate
43	14	15.5	15	3	75	agate
46	37	22	21	8	45	agate
52	26.5	15	16	3	45-50	jasper
54	25.5	23.5	23	6	70	agate
55	32	14	14	5	30	agate
69	21.5	18	5	4	50	jasper
74	37	26.5	25	7	30	agate
82	20	23	19	5	70	jasper
85	19.5	24	19	6	70	quartz
95	34	16	16	5	70	agate
106	21	22	18	4	15-70	agate
108	28	21	21.5	2	45	jasper
118	13	27	29	6	45	agate
	33.5	26	23	6	70	jasper
128	22	24	26	9	45-50	agate
133	16	21	16	4	60	agate
144	15	25.5	16	5	45	agate
Thomas Raddall Collection						
269	27	19	17	6	45	felsite
270	32	19.5	16.5	11.5	45-50	agate
271	24.5	24	26	5	45	agate
272	27.5	23	23.5	5	46-60	quartz
274	23	18	21.5	3	15-30	quartz
275	32	27	27	10.5	90	agate
276	24.5	25	25	4	70	jasper
277	19	21.5	18	4	30	chert
278	22	12	13	5	60	agate
279	29	28.5	28	5	90	chert
280	20	20.5	20	5	15-30	agate
281	45.5	23	20.5	10	60	felsite
282	17.5	22.5	22.5	5	70	agate

the 70-75 degree angles; quartz, one; jasper, three; felsite, nil; chert, nil.

Semenov (1964) suggests that angles of 35-40 degrees are optimum for whittling knives, of the total six have angles of 30% or less (17%) but it is inconclusive as to whether or not they might have been used in this manner.

Agate or agate-like stone is the most abundant material in the Indian Gardens collection, with twenty of the thirty-five scrapers and retouched flakes belonging to this category. Though we cannot say that this percentage is representative of all collections, it is probably safe to assume that it was highly sought after for its inherent material qualities and that it was fairly easy to obtain due to Indian Gardens access to the Fundy Shore where it is common. Agate is a fine-grained, dense stone that appears to hold its edge well. The use-wear scars are evident both to the unaided eye and under the microscope.

Quartz is the second most common and this might be attributed to its ready availability throughout Nova Scotia. It is by far an inferior material, but since it was so sharp and easy to get, it was likely to be popular. Use-wear is very difficult to distinguish from the chunky, fractured nature of this stone.

Jasper is also well represented in the collection and has inherent qualities similar to agate and availability in the same general areas. It is more "plastic" in nature and it would seem to be possible to work it with considerable accuracy. The use scars are overall, apparent and retouched flakes make up a good percentage which may be indicative of its value.

Chert and Felsite are the least common and might have been more difficult to come by, though both have seemingly good workability and durability. They are close in qualities though chert is more dense and more glossy than felsite. The use-wear is fairly easy to determine.

The study of lithic tools has produced a variety of results and

conflicting hypotheses as to what functions particular kinds of use-wear might indicate. Functional ascriptions can often be supportd by ethnographic analogy or confirmed by residues of the materials worked. However, in many ways, it is not possible to know how (in what manner) the tools were used (i.e., whether the motion was away or towards the user), whether or not abrasives were added, whether the material was worked wet or dry, and whether the tools were basically unifunctional or multifunctional. All of these will influence the location, type and extent of use-wear apparent on the tool form.

Scrapers from the Indian Gardens and Thomas Raddall collections were very probably used on the basic materials available to most woodland peoples; meat, hide, antler, bone and wood. However, it is not so easily determined which tools were used for which purpose and on which material. Wylie (1975) has examined this area and defined four general activities with nine specific functions. Two of these general activities are of particular interest to this study. The first is scraping, which he characterizes as hard scraping and soft scraping, and the second is cutting, which he characterizes as carving and sawing. According to Wylie, wood and bone were representative of hard scraping and exhibited mainly step fracture scars, and edge and lip polish on the tool. Hide-working was representative of soft scraping and caused edge perpendicular striae, asymmetrical edge abrasion, and edge and lip polish. The carving of meat, skin and wood produced oblique striations and the sawing of wood and bone resulted in edge parallel striae, concoidal flake scars, polish and edge spalling. As mentioned above, it was not possible to accurately identify striae on tools from the collection and therefore I cannot compare this aspect of Wylie's study with my own observations. Many of the samples examined displayed all (and often more) types of the wear described by Wylie. It was difficult to tell how much of the damage to tools in the

collection can be attributed to use and how much is 'background noise' caused by extraneous influence. No residue of worked material was apparent on any of the tools.

Of all the features studied, tool edge angles show the most distinct patterning and may tell the most precise story of function. Inherent material qualities, I suspect, also strongly influenced the form and subsequently the function of lithic tools. Almost 46% of the total thirty-five forms recorded edge angles of 45 to 60 degrees (agate, the most common material at 57.1% of the total, made up 25.7% of the total in this category). Adhering to Wilmsens' (1968) proposed uses for tools in this range I would suggest that between 40 and 50% of the artifacts are indeed scrapers used for skinning, hide scraping, shredding and cutting. Wylie (1975:4) suggests that steep angles (X=75 degrees) may characterize 'hard scraping' on wood and bone. In the study collection, 37% have edge angles of 70 degrees or greater and can perhaps be assigned these functions. The apparent wear damage is also more extreme on the more steeply angled tools which may be indicative of, at least, more intense use if not use on harder materials. Agate and jasper both have high percentages in the 70% plus range (eight of twenty and three of six, respectively). Tools with edge angles of less than 45% make up the remainder of the sample and might have been used for carving and sawing hide, meat and wood. Scrapers in this category are of a random material mix, thin and in several cases broken.

In closing, I would like to say that lithic tool analysis might benefit from the consideration of several points, including a more standardized and defined terminology, and a more universal and agreed upon approach to the methodology of tool recreation, comparison and observation. The study of use-wear on recreated tool forms is revealing when materials, conditions, and other factors are matched to the excavated artifacts, but these results are

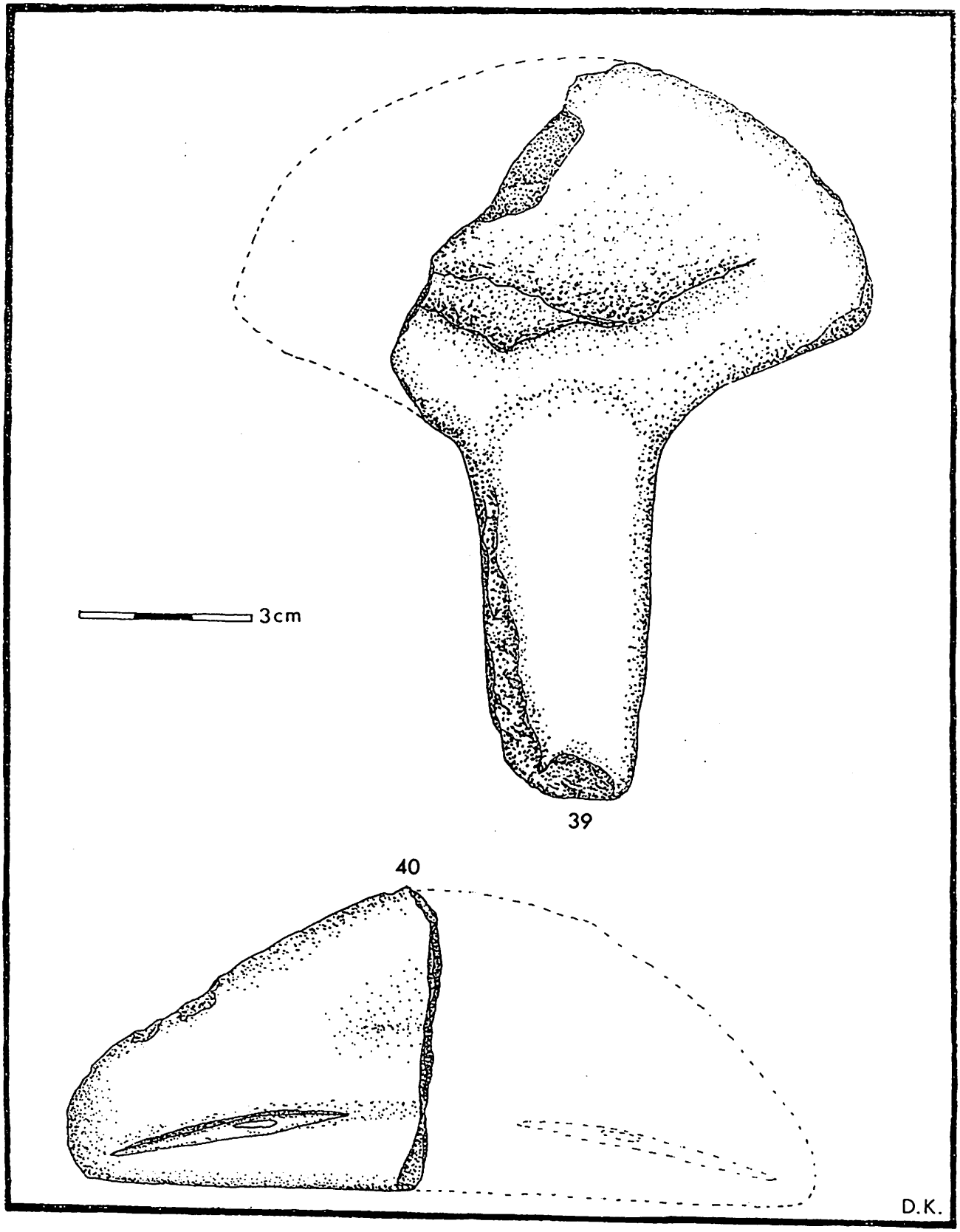

Figure 5: Line drawings of two ulus recovered from the Indian Gardens area (THR:39, 40).

difficult to apply to a general study. Until more concise definitions and standards are applied to the study of lithics use-wear studies may provide only a somewhat clouded view into the past.

Groundstone Analysis: Low Terrace and Raddall Collections

Dora Kemp

The groundstone material found at the Low Terrace site includes three gouges, two celts, an axe, two small adzes, some slate points and a few groundstone fragments. This is not many artifacts for one site; however, combined with Raddall's collection of artifacts found in the same area, we are able to form a basic outline of the types of ground stone artifacts found in southwestern Nova Scotia (Plate 6).

Since there is a large collection of groundstone axes, adzes, celts and gouges, the information has been summarized below in tables 9-12. Attribute descriptions follow the classification developed in Sanger's Cow Point study (Sanger 1973). The axes range in size from a small 6.5cm long constricted body (BaDg2:34) to an extremely large and heavy specimen that is 6.5cm thick (THR:13). The adzes range from a large 18.3cm long tool which has a knob to aid in hafting, to a delicate ground slate one 6.1cm long and 1.7cm wide. The gouges have the most variation: from the deep, long depression (THR:24) to the extremely shallow groove (BaDg2:114). BaDg2:24 is fairly smooth, boat-shaped and has a knob to facilitate hafting, whereas specimen BaDg2:114 is flat, shaped like an isosceles triangle and is quite rough. The others have a whole range of depression depths between these two extreme examples.

There are three ulu fragments in the Raddall collection. The most striking of these and most recognizable is artifact THR:39 (see Figure 5). The hafting shaft is approximately 6.5cm long and ranges frm 3.2cm in width at the top to 2.5cm at the base. Its maximum thickness is .4cm. The blade or

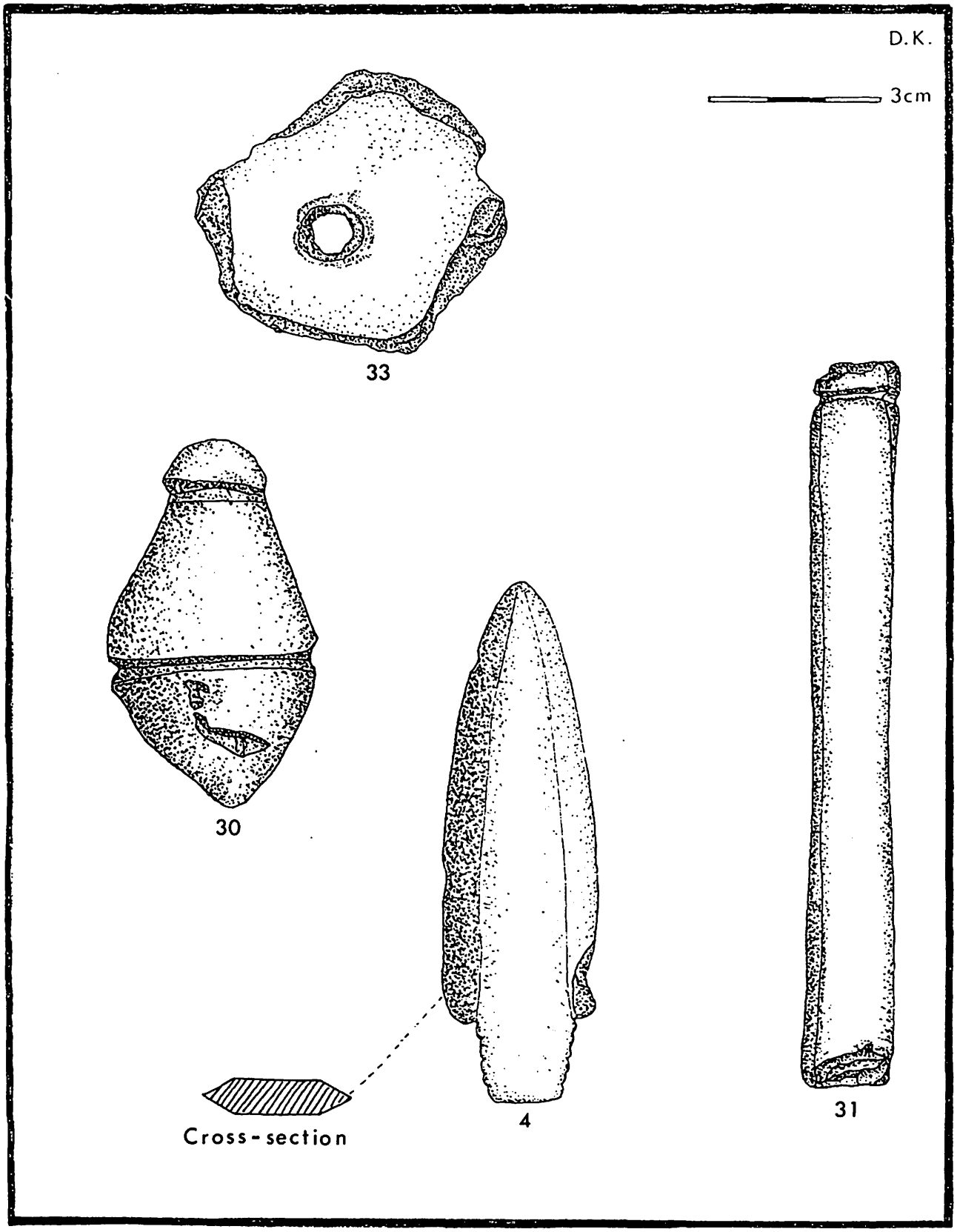

Figure 6: Line drawings of selected ground stone artifacts from the Raddall Collection (THR:33, gorget; THR:30, plummet; THR:4, slate point; THR:31, plummet).

cutting edge is a semi-circle with a radius of approximately 5.5cm. The left side of the blade is missing but we know what it looks like because the tool is symmetrical. It is fashioned from ground slate and use-wear is exhibited in the form of scratches along the edges of the tool. Artifact THR:38 is a much smaller ulu. Its hafting shaft is 2.5cm in length and ranges from 3.2cm to 2.2cm in width from the top to the bottom. Its maximum thickness is 1cm. This artifact has been severely worn by wind and water so that the cutting edge is quite dull. The blade now has a 2.5cm radius but when in use it would have been slightly larger. Unlike the former artifact this ulu is made out of sandstone; therefore, the surface is quite rough. The third ulu (THR:40) is not a semi-circle but rather a rounded triangle. Its base would have been approximately 12cm long but it is broken in half. The widest part of the blade is about 5cm. The most interesting element of this artifact, however, is that on the bottom of the blade, on a slight angle to the base, there is an indentation on both sides and a small slit in the middle of it. Hide strips would be put through this hole (as well as the one on the missing half of the blade) and thus be attached to a haft.

There is only one fragmentary gorget represented (THR:33). It has a length of 5cm and a width of 4.2cm. Its maximum thickness is .5cm. It is made from slate and has various rust patchs on its surface. There is a hole .4cm in diameter and slightly off-center through which a hide strip could be strung. There are also a couple of small spalls off the edges of this tool as the rounded top becomes a sharp ridge when it meets the bottom.

There are five plummets in the sample, and they display various different attributes (see Figure 6). THR:32 is an elongated oval with a length of 8.3cm, a maximum width of 3.7cm and a maximum thickness of 3cm. It weighs 107.65 g and is made from fine-grained, mica-rich granite. The neck groove, which goes all the way around the top, is not well-defined but visible due to

wear.

THR:30 is only half a plummet. Its length is 66cm, its width 3.6cm and it weighs 37.27g. If it was complete it would weigh twice as much and its maximum thickness would be approximately 3cm. This artifact is the only one of the five which has (besides a well-defined neck groove) a large groove encircling it at its widest point. This probably had the same function as the neck groove which was to facilitate the attaching of the plummet to a net. This plummet is made from highly polished sandstone for one can see the laminations in the rock, made by layered windblown sand.

Artifacts THR:28 and THR:29 are smaller plummets; the former being 5.7cm in length, 3cm in maximum width and 2.1cm in maximum thickness; and the latter 4.6cm long, 2.5cm wide and 1.7cm thick. They are both roughly made and have large spalls. THR:28 has a well-defined neck groove and weighs 44.3g whereas THR:29, being made from sandstone, has been badly damaged and its neck groove is not easily apparent. It weighs 21.5g.

The last plummet (THR:31) is different from all the rest because it is not ovate but rather rectangular (see Figure 6). It weighs 54.4g and has a length of 12.7cm. Its maximum width is 1.7cm and its maximum thickness, 1.3cm. It is fashioned from ground slate; therefore, it is very smooth. The end appears to have been broken off or not worked.

The single specimen classified as a punch (THR:35) is very finely crafted. It is 16.7cm long and 2.5cm at its widest part which tapers down to 2mm at its point. It is made of ground slate and is very smooth. The handle is not faceted like the blade, but it has been slightly workd so that it fits the hand comfortably. It probably would have been used as a leather punch to punch holes in animal hides in order to make clothing.

The projectile point class includes both slate points, which were

probably used for ceremonial purposes only, and a ground slate bayonet (see Figure 6). There are three fragments of slate points, one of which is Raddall's (THR:34) and two from the Low Terrace site (BaDg2:61 and BaDg2:61). THR:34 is the tip of a slate point. It is 5.5cm long, has a maximum width of 1.6cm and is .5cm thick. It is made from slate but not highly polished. Artifact BaDg2:59, like the latter, is a slate point tip. It is 2.5cm long, has a maximum width of 1.4cm and it has a maximum thickness of .6cm. This tip, however, is worked more than the latter. These tips, of course, are only fragments of much larger points. The last slate point fragment (BaDg2:61) is a stem with one shoulder. The stem is 3.2cm in length, 1.7cm in width and its thickness tapers from .7cm to .4cm from the shoulder to the base. The shoulder, instead of being straight and of a right angle to the stem, hooks up slightly, close to the stem. Therefore one could call it barbed.

The fourth artifact in this category (THR:4) is a ground slate bayonet. It is 9.1cm long, 2.8 cm at its widest point and has a maximum thickness of .8cm. Its stem, which is 1.5cm long, is notched and the blade has been worked so its cross-secion is in the shape of an elongated hexagon. It is very smooth and without flaw except for two 2mm x 1mm spalls on one edge and a 1cm x 3mm spall just above the right shoulder. This artifact is very finely crafted and it is evident that it was used because the edges and point are no longer sharp.

There are four artifacts which can be classed as problematicals and they all come from the Raddall collection. THR:26 is shaped like a lop-sided plummet. It is 9.4cm long, has a maximum width of 5.3cm and a maximum thickness of 4.7cm. It has a neck, like a plummet, but it does not come to a point at the bottom. Instead there is a ridge approximately 1cm wide around this part. This artifact is made out of rough sandstone and is fairly heavy. however, it fits well in the hand, so it could possibly be a tool used to

crush nuts and seeds to prepare them for cooking.

Artifact THR:36 was found at Glode's Falls, on the Medway River. It is very interesting but it is difficult to determine its original function. Further, it is not possible to find any information about artifacts like it found in this area. At first glance it appears to be a plummet or weight of some sort, but its neck does not have a groove, only an indentation on either side. Also, it seems too highly polished to perform a menial task. It is 18.3cm long, has a maximum width of 5.1cm and a maximum thickness of 1.5cm. The top of the artifact is shaped like a triangle whereas the body tapers from 2.7cm at the neck to 5.1cm at the base. Another interesting thing is that there is a diamond depression in both sides of the top triangle. It doesn't penetrate through, therefore seemingly serving no purpose but that of design. Threfore, I must conclude that it is some sort of ceremonial ornament.

THR:1 is a cobble, shaped like a tear drop. It is 9cm long, its maximum width is 4.9cm and its maximum thickness is 2.6cm. It could be classed as a plummet but it has no neck groove. The only other explanation would be that it is a fairly thick ulu (like ulu THR:38) which was hafted to a short stick. If this is so the cobble has undergone severe weathering by wind and water, for the cutting edge is rather dull.

The last problematical artifact is THR:37, which is a piece of slate in the shape of a heart. Its length is 10.4cm, its maximum width 9.1m, and its maximum thickness 1cm. In the middle, starting from one edge, there is a 5.5cm x 2cm x .5 cm depression where the rock has been worn away. It is possible that this tool was used either to straighten wooden shafts for spears or to sharpen groundstone points, for one can see grooves imprinted in the depression where something was scrapd along the rock.

There are five specimens classified as ground stone fragments. Four of

these are from Raddall's collection (THR:18, 294, 292, 293) and one is from the Low Terrace site (BaDg2:98). The latter specimen, as well a THR:294 and THR:292, are between 7.3cm and 10.3cm long. They are all rounded on one side, but otherwise they are fractured. There is no special faceting on these, so it is likely that they were worn smooth by natural causes.

The other two, however, appear to have been crafted. THR:293 is 8.2cm long, .6cm wide and .7cm thick. It is made of slate and is rectangular in shape, except the edges have been rounded. It looke like the blade of a ground slate point as both ends have been broken off.

Artifact THR:18 is the most worked of these five and appears to be a ground slate adze. It is 5.9cm long, 2.2cm wide, and has a maximum thickness of .7cm. It is faceted on both the ventral and dorsal surfaces. It is quite small, so it was probably used for detailed work.

Table 9: Summary of ground stone axe attributes.

Artifact #:	LENGTH	WIDTH	BIT LENGTH	THICKNESS	GENERAL TEXTURE	DAMAGE
BaDg2:39	6.5	3.9	1.5	1.9	smooth	poll missing; hafting alteration
THR: 9	3.4	5.7	1.5	1.0	rough	poll end missing
THR: 5	13.5	5.0	1.4	2.0	smooth	spalled at poll
THR: 7	12.8	4.2	N/A	2.5	rough	bit missing; spalled, left side
THR: 8	8.5	4.5	1.4	2.0	smooth	poll damage; bit spalled
THR: 3	12.7	6.5	4.1	4.1	smooth	poll missing
THR: 6	19.5	4.8	2.0	2.5	smooth	poll damaged; edges damaged; body incomplete

Table 9: continued.

ARTIFACT #:	BIT ELEMENT*: PLANAR VIEW	LONG. SECTION	LATERAL SECTION	BODY ELEMENT: PLANAR VIEW	LONG. SECTION	LATERAL SECTION
BaDg2:39	A-3	E-1	F-3	G-1	H-4	I-3
THR:9	A-3	E-1	F-3	N/A	N/A	I-3
THR:5	A-3	E-1	F-3	G-3	H-4	I-3
THR:7	N/A	N/A	N/A	G-3	H-4	I-3
THR:8	A-1	E-1	F-2	G-3	H-1	I-2
THR:3	A-2	E-1	F-1	G-1	H-4	I-3
THR:6	A-1	E-1	F-1	G-4	H-4	I-2

ARTIFACT #:	POLL ELEMENT: PLANAR VIEW	LONG. SECTION	LATERAL SECTION
BaDg2:39	N/A	N/A	N/A
THR:9	N/A	N/A	N/A
THR:5	J-1	K-3	I-3
THR:7	J-1	K-1	I-3
THR:8	J-1	K-4	I-2
THR:3	N/A	N/A	N/A
THR:6	J-1	K-2	I-2

*ATTRIBUTE DESIGNATIONS AFTER SANGER 1972:FIGURE 5: A-1 = convex-symmetric; A-2 = convex-asymmetric; A-3 = straight; E-1 = symmetric; F-1 = biconvex-symmetric; F-2 = biconvex-asymmetric; F-3 = plano-convex; G-1 = parallel; G-3 = expanding; G-4 = expanding-contracting; H-1 = plano-convex symmetric; H-4 = biconvex-asymmetric; I-2 = subrectangular; I-3 = triangular; J-1 = rounded; K-1 = bevelled symmetric; K-2 = bevelled asymmetric; K-3 = rounded symmetric; K-4 = rounded asymmetric.

Table 10: Summary of ground stone adze attributes.

Artifact #:	LENGTH	WIDTH	BIT LENGTH	THICKNESS	GENERAL TEXTURE	DAMAGE
BaDg2:94	6.8	2.8	1.0	1.0	grainy	poll missing; dorsal spall
BaDg2:99	6.4	1.7	1.0	1.0	smooth	poll missing
THR: 16	14.0	5.2	2.2	2.7	smooth	poll missing; ventral spall
THR: 10	8.0	5.9	3.3	3.0	smooth	poll missing; bit damaged
THR: 15	12.0	4.2	5.5	3.4	rough	poll missing; bit damaged
THR: 14	18.0	6.4	2.5	2.7	rough	poll damaged;
THR: 12	18.3	6.3	4.0	3.5	smooth	poll damaged; hafting alteration
THR: 20	14.5	5.1	n/a	3.0	rough	poll damaged; bit missing

Table 10: continued.

	BIT ELEMENT*:			BODY ELEMENT:		
ARTIFACT #:	PLANAR VIEW	LONG. SECTION	LATERAL SECTION	PLANAR VIEW	LONG. SECTION	LATERAL SECTION
BaDg2:94	A-1	E-2	F-1	G-4	H-2	I-2
BaDg2:99	A-1	E-2	F-3	G-1	H-4	I-3
THR:16	A-1	E-2	F-3	G-1	H-4	I-3
THR:10	A-1	E-2	F-3	G-1	H-2	I-1
THR:15	A-1	E-2	F-3	G-3	H-2	I-1
THR:14	A-1	E-2	F-3	G-3	H-2	I-1
THR:12	A-2	E-2	F-3	G-3	H-2	I-1
THR:20	A-1	E-2	N/A	G-3	H-2	I-1

	POLL ELEMENT:		
ARTIFACT #:	PLANAR VIEW	LONG. SECTION	LATERAL SECTION
BaDg2:94	N/A	N/A	N/A
BaDg2:99	N/A	N/A	N/A
THR:16	N/A	N/A	N/A
THR:10	N/A	N/A	N/A
THR:15	N/A	N/A	N/A
THR:14	J-1	K-3	I-1
THR:12	J-1	K-1	I-1
THR:20	J-1	K-3	I-1

*ATTRIBUTE DESIGNATIONS AFTER SANGER 1972:FIGURE 5: A-1 = convex-symmetric; A-2 = convex-asymmetric; E-1 = symmetric; E-2 =assymetric; F-1 = biconvex-symmetric; F-3 = plano-convex; G-1 = parallel; G-3 = expanding; G-4 = expanding-contracting; H-2 = plano-convex asymmetric; H-4 = biconvex-asymmetric; I-1 = plano-convex; I-2 = subrectangular; I-3 = triangular; J-1 = rounded; K-1 = bevelled symmetric; K-3 = rounded symmetric; K-4 = rounded asymmetric.

Table 11: Summary of ground stone celt attributes.

	LENGTH	WIDTH	BIT LENGTH	THICKNESS	GENERAL TEXTURE	DAMAGE
Artifact #:						
BaDg2:28	7.3	4.9	n/a	2.5	rough	bit missing
BaDg2:38	10.0	4.5	n/a	3.3	rough	bit missing
BaDg2:155	21.2	6.7	3.4	3.5	rough	body spalled
THR: 11	12.8	5.2	n/a	3.4	smooth	poll missing; bit missing
THR: 2	8.3	4.8	n/a	1.6	smooth	bit missing
THR: 13	11.0	3.4	n/a	3.0	rough	bit missing

	BIT ELEMENT:			BODY ELEMENT:		
	PLANAR VIEW	LONG. SECTION	LATERAL SECTION	PLANAR VIEW	LONG. SECTION	LATERAL SECTION
ARTIFACT #:						
BaDg2:28	N/A	N/A	N/A	G-1	H-2	I-3
BaDg2:38	N/A	N/A	N/A	G-3	H-2	I-1
BaDg2:155	A-1	E-1	F-3	G-4	H-2	I-1
THR:11	N/A	N/A	N/A	G-3	H-2	I-1
THR:2	N/A	N/A	N/A	G-1	H-2	I-1
THR:13	N/A	N/A	N/A	G-3	H-2	I-1

	POLL ELEMENT:		
	PLANAR VIEW	LONG. SECTION	LATERAL SECTION
BaDg2:38	J-2	K-4	I-3
BaDg2-38	J-1	K-2	I-1
BaDg2:155	J-1	K-1	I-2
THR:11	N/A	N/A	N/A
THR:2	J-1	K-1	I-2
THR:13	J-1	K-3	I-1

*ATTRIBUTE DESIGNATIONS AFTER SANGER 1972:FIGURE 5: A-1 = convex-symmetric; E-1 = symmetric; F-3 = plano-convex; G-1 = parallel; G-3 = expanding; G-4 = expanding-contracting; H-2 = plano-convex asymmetric; I-1 = plano-convex; I-2 = subrectangular; I-3 = triangular; J-1 = rounded; J-2 = straight; K-1 = bevelled symmetric; K-3 = rounded symmetric; K-4 = rounded asymmetric.

Table 12: Summary of ground stone gouge attributes.

Artifact #:	LENGTH	WIDTH	BIT LENGTH	THICKNESS	GENERAL TEXTURE	DAMAGE
BaDg2:114	8.5	4.6	1.4	1.5	rough	poll spalled
BaDg2:2	11.4	4.2	2.2	2.5	rough	poll missing; bit smooth
BaDg2:121	11.6	4.4	1.0	2.2	rough	poll damage; ventral damage
THR: 17	15.4	5.3	6.0	1.5	rough	poll damage; bit spalled; dorsal spalled
THR: 19	16.3	4.0	5.6	1.5	smooth	bit poll spalled; dorsal damage; body damage
THR: 21	6.5	3.5	3.5	2.0	smooth	hafting alteration
THR: 22	10.0	5.5	n/a	2.5	smooth	dorsal damage; ventral damage: bit/poll missing
THR: 24	11.8	4.3	2.0	3.3	smooth	bit hafting alteration poll spalled; body damage
THR: 23	15.5	4.0	4.2	3.1	rough	bit missing poll spalled
THR: 25	9.1	3.5	1.7	2.0	smooth	poll damaged
THR: 27	9.2	3.7	1.4	2.6	smooth	poll missing

Table 12: continued.

ARTIFACT #:	BIT ELEMENT: PLANAR VIEW	LONG. SECTION	LATERAL SECTION	BODY ELEMENT: PLANAR VIEW	LONG. SECTION	LATERAL SECTION
BaDg2:114	A-3	E-1	C-1	G-3	N/A	I-3
BaDg2:2	A-1	E-2	C-6	G-4	H-2	I-1
BaDg2:121	A-2	E-2	C-6	G-3	H-1	I-1
THR:17	A-1	E-1	C-1	G-3	H-4	I-3
THR:19	A-2	E-2	C-1	G-4	H-2	I-3
THR:21	A-3	E-2	C-5	G-3	H-4	N/A
THR:22	N/A	N/A	C-5	G-1	H-2	N/A
THR:24	A-2	E-1	C-6	G-4	H-1	I-1
THR:23	N/A	E-2	N/A	G-3	H-4	I-1
THR:25	A-1	E-2	C-6	G-3	H-2	N/A
THR:47	A-1	E-2	C-6	G-1	H-4	N/A

ARTIFACT #:	POLL ELEMENT: PLANAR VIEW	LONG. SECTION	LATERAL SECTION
BaDg2:38	J-1	K-4	I-1
BaDg2:2	N/A	N/A	N/A
BaDg2:121	J-1	K-2	I-3
THR:17	J-1	K-3	I-3
THR:19	J-1	K-1	I-3
THR:21	J-2	N/A	N/A
THR:22	N/A	N/A	N/A
THR:24	J-1	N/A	N/A
THR:23	J-1	K-3	I-1
THR:25	N/A	N/A	I-1
THR:27	N/A	N/A	N/A

*ATTRIBUTE DESIGNATIONS AFTER SANGER 1972:FIGURE 5: A-1 = convex-symmetric; A-2 = convex asymmetric; A-3 = straight: E-1 = symmetric; E-2 = asymmetric G-1 = parallel; G-3 = expanding; G-4 = expanding-contracting; H-1 = plano-convex symmetric; H-2 = plano-convex; H-4 = biconvex-asymmetric; I-1 = plano-convex; I-3 = triangular; J-1 = rounded; J-2 = pointed K-1 = bevelled symmetric; K-3 = rounded symmetric; K-4 = rounded asymmetric.

Discussion

Michael Deal

We have attempted, in this short report, to describe the recent preliminary archaeological investigations conducted at the Low Terrace site at Indian Gardens, and to bring together the relevant source materials on archaeological research in the Indian Gardens area. In the course of preparing this report, we also catalogued the extensive Raddall collection from Indian Gardens, and many of the artifacts from that collection were used as comparative materials in the sections concerning chipped and groundstone tools.

The Raddall collection is composed primarily of artifacts dating to the Late Archaic and Ceramic periods of the Maritime Provinces (for discussion see Tuck 1985). While the materials surface-collected at the Low Terrace site seem to represent a similar time range, the materials recovered from the test excavations near the terrace edge probably all date to the Late Ceramic and Protohistoric periods (See Figure 7). The Late Ceramic artifacts include the diagnostic cord-wrapped stick design impressed pottery and small corner-notched projectile points. The trade beads and iron caulking trowel probably date to the French presence in the area, in the early seventeenth century. These materials were all recovered within the initial organic soil layer (i.e., within the first 10cm of the site), and it is likely that they overlay earlier cultural deposits.

The Indian Gardens area was undoubtedly an important source of fish and wildlife, as well as a major aboriginal transportation route. Although no cultural features have yet been uncovered at the Low Terrace site, the wide range of tool forms found seems to indicate that the site served as a general, rather than specialized, camping area, used periodically for more than a millennium. The use wear study on scraping-tools suggests that hide

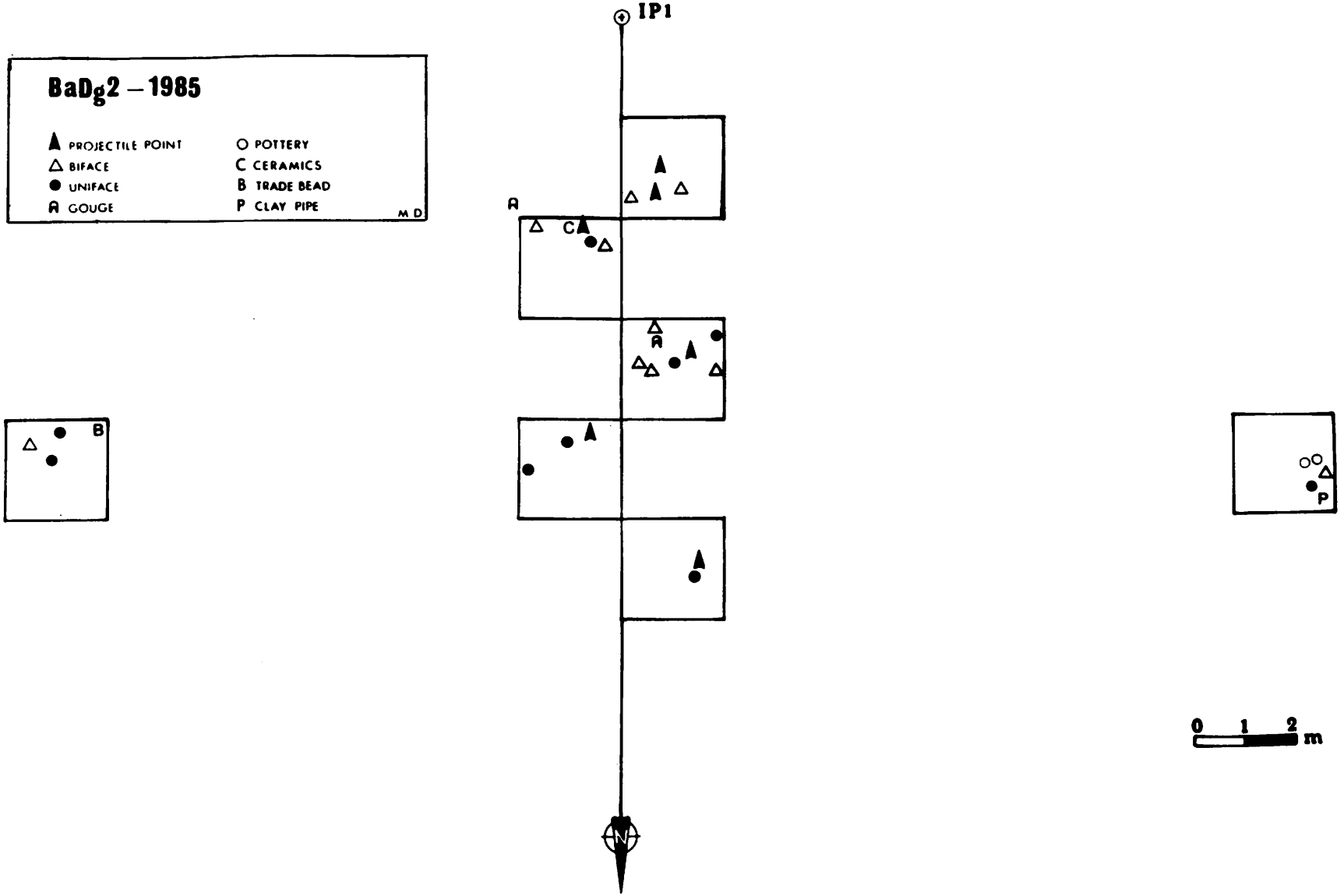

Figure 7: The distribution of excavated artifacts at the Low Terrace site.

processing was probably an important activity at the site. Two small gouges can be construed as evidence of woodworking. Botanical remains indicate at least a late summer and fall utilization of the site.

Although the terrace edge has obviously eroded considerably since the construction of Mersey Dam No. 1, we found no evidence of cultural disturbance at the Low Terrace site. A profile cut along the terrace edge indicates that up to 40 cm. of archaeological sediments may remain intact at this site. The fact that the site has been inundated for several decades has no doubt saved it from the spades of local collectors. It is the opinion of the writers that the site may contain earlier undisturbed deposits and that excavation should be continued at the next opportunity.

Appendix 1

Artifact Provenience Information*

Number	Specimen	Excavation Unit	Coordinates N	E/W	Distance	Elevation (m)	Angle
1	biface frag.	C2	4.52	E .38		1.25	
2	gouge	B3	3.72	E 2.07		1.25	
3	pottery (CWS)	S			13.68	1.255	53°20'
4	biface tip	S			13.24	1.175	53°20'
5	uniface	S				1.205	316°40'
6	uniface	D1				1.13	
7	stemmed biface	D1				1.12	
8	biface	S			no provenience		
9	uniface	D1	6.31	W 1.90		1.185	
10	metal tool	C2	4.11	E .88		1.135	
11	uniface	E2	9.00	E 1.85		1.125	
12	point (CN)	B1	3.50	W .61		1.19	
13	biface frag.	B1	3.44	W 1.08		1.175	
14	point	B1	3.60	W .17		1.165	
16	biface	S			14m	1.855	278°20'
17	trade bead (Ia5)	S			15.24	1.15	302°40'
18	biface tip	S			15.53	1.15	302°40'
19	uniface	S			15.93	1.15	302°40'
20	stemmed biface	S			16.20	1.13	307°20'
21	biface base	S			15.53	1.125	302°40'
22	pottery (2)	S			15.80	1.11	317°40'
23	ceramic (transfer)	S			15.80	1.11	317°60'
24	uniface	S			19.96	1.04	324°40'

*S = surface-collected artifact; CN = corner-notched; SN = side-notched; ES = expanding stem; CWS = cord-wrapped stick.

Number	Specimen	Excavation Unit	Coordinates N	E/W	Distance	Elevation (m)	Angle
25	biface frag.	S			21.24	1.04	332°00'
26	uniface	S			32.74	.975	343°20'
27	point (CN)	S			45.00	.831	346°20'
28	celt	S			51.00	.805	346°40'
29	point (CN)	S			53.00	.774	343°20'
30	biface frag.	S			29.60	1.85	356°40'
31	point (CN)	S			18.04	1.386	55°00'
32	point (CN)	S				1.258	47°00'
33	biface base	S			12.28	1.16	52°20'6"
34	biface tip	S			18.50	1.375	72°20'
35	biface base	S			26.47	1.515	90°20'
36	hammerstone	S			28.15	1.489	103°40'
38	celt poll frag.	S			41.20	1.236	107°00'
39	celt bit	S			12.50	1.217	76°20'
40	uniface	S				1.50	80°20'1"
41	uniface	S	5.81 E	3.36		1.166	29°00'
42	point (SN)	C2	.95 E	.12		1.205	
43	uniface	C2	.07 E	.725		1.18	
44	point (CN)	B1	2.99 W	.70		121.8	
45	point (CN)	C2	4.08 E	.83		1.208	
46	uniface	D1	6.81 W	1.04		1.242	
47	biface tip	D1	7.06 W	1.96		1.22	
48	biface base	C2	4.18 E	.72		1.228	
49	biface	E2	NE Quad			1.22	
50	point (ES)	E2	8.18 E	.62		1.20	
51	biface frag.	S	8.86 E	1.67		1.22	

Number	Specimen	Excavation Unit	Coordinates N E/W	Distance	Elevation (m)	Angle
52	retouched flake	E6	8.48 E10.5		1.225	
53	trade bead (IIa40)	E6	SW corner			
54	uniface	E6	8.24 E .91		1.31	
55	uniface	E6	9.86 E11.17		1.255	
56	trade bead (IIa40)	S		20.00	1.385	96°00'
57	point (triangular)	S		2.66	1.395	133°20'
58	stemmed biface	S		2.92	1.375	133°45'
59	slate point	S		4.92	1.69	236°20'
61	slate point	S		8.00	1.64	270°20'
62	ceramic (cream)	S		19.00	2.75	279°59'
63	ceramic (transfer)	S		20.00	1.88	286°20'
64	biface	S		21.00	1.445	289°40
65	biface	S		21.80	2.115	285°20'
66	pipe stem	S		54.00	2.20	317°20'
67	trade bead (IIbb)	S		52.00	1.74	318°40'
68	pipe bowl	EE6	1.77 E .23		1.115	
69	uniface	EE6	1.50 E .50		1.125	
70	biface tip	EE6	1.31 E .19		1.105	
71	calcined bone	EE6	.50 E .35		1.132	
72	ceramic	EE6	.86 W .33		1.145	
73	pottery	EE6	.85 E .47		1.155	
74	uniface	S		9.00	1.203	317°00'
75	biface frag.	S			1.22	
76	pottery	S			1.26	
77	pottery	E6	8.23 E10.98		1.223	
78	biface	S			1.265	

Number	Specimen	Excavation Unit	Coordinates N	E/W	Distance	Elevation (m)	Angle
79	core	S				1.217	
80	biface frag.	E6	9.48	E11.52		1.25	
81	biface	C2	4.2	E 1.7		1.285	
82	uniface	C2	4.42	E .71		1.265	
83	tooth (cervid)	C2	4.5	E .335		1.249	
84	tooth (cervid)	C2	4.4	E .16		1.27	
85	uniface	E2	.5	W 1.1		1.18	
86	point (serrated)	S			6.00	1.202	330°40'
87	biface	S				1.167	
88	pottery (CWS)	S			13.00	1.135	315°50'
89	conjoined pottery	S			13.00	1.135	315°50'
90	biface base	S			12.80	1.135	316°40'
91	pottery (CWS)	S			13.80	1.145	332°59'
92	point (SN)	S			2.00	1.42	141°40'
93	point (CN)	S			5.00	1.215	81°40'
94	celt	S			7.4	1.353	110°20'
95	uniface	S			10.00	1.19	80°59'
96	biface base	S			10.00	1.19	80°59'
97	point (SN)	S			9.6	1.192	73°40'
98	ground slate	S			29.0	1.775	108°5'
99	uniface	S			29.0	1.775	108°5'
100	pottery	S			19.6	1.82	297°59'
101	ceramic (cream)	S			18.5	1.59	298°59'
102	ceramic	S			20.0	1.90	296°00'
103	biface base	S			19.8	1.60	198°50'
104	point (CN)	S			19.0	1.40	299°59'

Number	Specimen	Excavation Unit	Coordinates N	E/W	Distance	Elevation (m)	Angle
105	point (CN)	F1	10.88 W	1.52		1.60	
106	uniface	F1	11.12 E	1.43		1.45	
107	biface	S			18.2	1.85	297°40'
108	uniface	S			19.2	1.50	301°30'
109	jackknife	S			19.0	1.85	299°55'
110	ceramic (cream)	S			20.4	1.97	301°00'
111	bottle neck	S			54.0	1.12	324°39'
112	biface	S	no provenience (near E6)				
113	point (CN)	S	no provenience (near benchmark)				
114	gouge	S			7.2	1.196	325°
115	biface frag.	D1	6.92 W	.29			
116	biface tip	EE6	E quad				
117	red pigment	EE6	W quad				
118	uniface	D1	6.31 W	1.90			
119	biface base	D1	6.14 W	.60			
120	stemmed point	D1	6.62 W	1.28			
121	gouge	D1	6.40 W	.61		1.23	
122	biface tip	D1	7.04 W	.51		1.225	
123	lead bullet	C2			Level bag, Level 1		
124	hammerstone	D1			Level bag, Level 1		
125	biface frag.	D1			Level bag, Level 1		
126	biface frag.	D1			Level bag, Level 1		
127	biface frag.	D1			Level bag, Level 1		
128	uniface	D1			Level bag, Level 1		
129	biface tip	D1			Level bag, Level 1		
130	utilized flake	D1			Level bag, Level 1		

Number	Specimen	Excavation Unit	Coordinates N	E/W	Distance	Elevation (m)	Angle
131	uniface	E6			Level bag, Level 1		
132	biface frag.	C2			Level bag, Level 1		
133	biface frag.	C2			Level bag, Level 1		
134	biface frag.	C2			Level bag, Level 1		
135	biface frag.	C2			Level bag, Level 1		
136	biface frag.	B1			Level bag, Level 1		
137	biface frag.	E6			Level bag, Level 1		
138	uniface	E6			Level bag, Level 1		
139	biface frag.	E6			Level bag, Level 1		
140	biface frag.	E6			Level bag, Level 1		
141	bipolar core	E6			Level bag, Level 1		
142	bipolar core	E2			Level bag, Level 1		
143	biface frag.	E2			Level bag, Level 1		
144	uniface	F1			Level bag, Level 1		
145	biface frag.	E2			Level bag, Level 1		
146	biface frag.	F1			Level bag, Level 1		
147	charred seed	C2			Level 2 soil sample		
148	charred seed	C2			Level 2 soil sample		
149	charred seed	C2			Level 2 soil sample		
150	charred seed	B2			Level 1 soil sample		
151	charred seed	Test Profile L3			Level 3 soil sample		
152	charred seed	A2			Level 1 soil sample		
153	charred nutlets	C2			Level 2 soil sample		
154	fungal fruiting bodies	S.West of Datum			Level 2 soil sample		
155	axe blade	N.E. of coffer dam			no provenience		

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ARCHAEOLOGICAL FIELD WORK SUMMARY REPORTS

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Permit 1986NS1

Halifax-Dartmouth

Red Bridge Pond

On March 20, 1986, Mr. George Chambers of Dartmouth, reported a stone artifact found in his back yard by his son Adam. It was obtained for study and proved to be a Palaeo-Indian fluted point preform made of the same variegated chalcedony used at the Debert Palaeo-Indian site.

The site was first visited on May 8. The back yard of the Chambers house is located just south of the south end of Red Bridge Pond (on the east side of Lake Micmac) and overlooking it. This entire area has obviously been subject to extensive landscaping, and Mr. Chambers indicated that the area of his back yard had been built up with fill when this subdivision was developed about 25 to 30 years ago. The preform was found protruding from the ground among tree roots along the eastern fence line, at the northeastern corner of the lot. Consequently, it must have been deposited with the fill when the lot was developed. However, Mr. Chambers indicated that the fill came from an area just across the street.

The site was visited again on May 26 in the company of David Christianson, Stephen Davis and Michael Deal. The surrounding area was reconnoitred briefly and traces of high terraces noted. However, considering the extent of landscape modification over a wide area, it seemed very unlikely that any prehistoric cultural deposits could have survived, and it would be virtually impossible to forecast the location of any possible traces.

A one metre square was laid out at the find spot in the Chambers back yard and the top two or three centimetres of soil were trowelled. No indications of prehistoric occupation were observed. An examination of adjacent soil exposures, including neighbouring back yards, was similarly unsuccessful. However, because of the age and potential significance of the find, it has been designated the Chambers Site (BeCv-14) and David Christianson has undertaken further research (Heritage Research Permit 1986NS7).

Cheapside

The development of the new Art Gallery of Nova Scotia facility on George Street involved the excavation of Cheapside Park to the south. Test drilling of this area undertaken prior to excavation was monitored, April 28-30, 1986. The seven cores drilled were examined on site with Greg McNeil, project geologist. The actual excavation was monitored between October 15 and November 15, and the evidence provided by the coring was confirmed: a relatively clean modern fill overlay sterile soil.

Sullivans Pond

At the request of the Shubenacadie Canal Commission, maintenance work at Sullivans Pond was monitored in October 1986. The water level was lowered to facilitate the rebuilding of the retaining wall around the pond. However, nothing of archaeological significance was revealed.

Brunswick Street

In November 1986 development of the vacant lot between Brunswick Street and Barrington Street, immediately north of the Trade Mart, commenced. Civic historian, Lou Collins, requested that this be monitored since the original Cunard family residence had been located in this area.

On first inspection it was discovered that the eastern section of this area, fronting on Brunswick Street, had been excavated to the level of the

base of the foundations of nineteenth century buildings which formerly stood on this section of Brunswick Street. The area excavated was already being refilled and levelled for construction, using fill from the western section of the lot fronting on Barrington Street.

Reported finds from the excavated area dated no earlier than the second half of the nineteenth century, and the deep deposit of fill in the western area was obviously of quite recent origin. This area was subjected to considerable modifications when Scotia Square was developed, presumably including the deposition of fill, and any traces of pre-nineteenth century settlement most likely have been destroyed.

Whites Lake

On June 1, 1986 while exploring Bayview Park (a new residential subdivision being developed at Whites Lake, Halifax County) Mr. Jan Skora, a Halifax architect, discovered seven stone artifacts exposed near the summit of a knoll which had been partially bulldozed in the preparation of a new street line. His find comprised three chipped and ground celts, three large stemmed bifaces and the base of a fourth stemmed biface. He removed these and covered the spot with rocks.

On June 2, Mr. Skora brought a celt and a biface to his office and notified the Nova Scotia Museum of the find. B. Preston visited his office that afternoon, examined the two specimens, and arranged to meet Mr. Skora at Whites Lake the following day so that he could indicate the exact find spot. It was evident from the nature of the artifacts and the circumstances of the find that a potentially important early human burial site was probably involved. Consequently, archaeologists at St. Mary's University were alerted.

On June 3, B. Preston, accompanied by S. Davis and M. Deal of St. Mary's, met Mr. Skora at Whites Lake, where he handed over all of the artifacts

collected by him and pointed out the find spot. Evidence of cultural activity was observed and a salvage excavation of the exposed remains was commenced. This was completed by B. Preston, S. Davis and C. Cottreau on June 4.

The artifacts found by Mr. Skora came from a shallow, basin-shaped pit, approximately one metre across, which had been dug into the sterile soil of the knoll. This pit had been lined with birchbark. Calcined bones, stone artifacts and large quantities of charcoal had been deposited on top of the bark, and then the entire deposit had been covered with sterile soil. Only fragments of stone artifacts were recovered during the salvage of the remnant of this pit, but these fitted together to complete the fourth stemmed biface of the original find and form another two complete stemmed bifaces.

During the excavation of the pit a deposit of charcoal was noted at the same level and extending into the undisturbed portion of the knoll. This, combined with the presence of a seventh stemmed biface found well above the pit, along with scattered fragments of charcoal in the fill above the pit, strongly suggests that additional cultural material survives in the undisturbed portion of the knoll summit.

The bone fragments recovered from the pit were identified as human by Dr. Jerome Cybulski of the Archaeological Survey of Canada. These represented the remains of a cremation burial. A charcoal sample from the pit was submitted to Beta Analytic and yielded a radiocarbon date of 2260 $\pm$ 100 B.P. All the artifacts recovered from the pit appear to be made of exotic materials, and the source of at least one was probably the Ohio Valley area.

The date, the burial ceremonialism involved, and the associated grave goods indicate an affiliation with the Adena-related Middlesex Phase of the Northeast. The only site representative of this tradition known in the Maritimes, and indeed in Canada, is the Augustine Mound at Red Bank, New Brunswick, which produced a closely comparable radiocarbon date, well within

the generally accepted range of 2000 - 2500 B.P. for the tradition.

A few Adena-related artifacts have been found at several locations in Nova Scotia. However, this is the first discovery of a site of this nature which potentially remains largely intact, and the general rarity of such sites renders it especially significant.

Immediately following the salvage operation negotiations were begun with the developer and the County of Halifax to ensure the protection of the site from further disturbance. Fortunately, a single lot encompasses the critical area, and it is anticipated that this lot will be designated a "green" area which will not be subject to development.

On June 10 the site was inspected by Dr. David Sanger of the University of Maine and Dr. Christopher Turnbull, New Brunswick Provincial Archaeologist, who made valuable contributions to the discussion of potential future work. A primary requirement is a definition of the nature and extent of surviving cultural deposits. It seems highly likely that several burial loci remain intact, but because of their complexity a testing strategy designed to minimize the likelihood of exposing additional burials is deemed most desirable. Consequently, a testing program has been proposed for the summer of 1987 which will involve excavating a vertical cut across the slope that has been partially disturbed by bulldozing. This unit, one metre wide, would run in an east-west direction across the knoll for approximately 30 metres. A second unit would consist of a perpendicular trench, 50 centimetres wide, running north to the foot of the knoll. These should be sufficient to define the limits of the cultural deposit and the nature of the soil stratigraphy on the knoll. They should also determine whether or not there is an artificial mounding of soil over the burials.

The site was monitored on a regular basis throughout the summer and fall. Unfortunately, early in July, the face of the bulldozed cut adjacent to the

original find was dug by persons unknown. The resulting disturbance exposed an additional deposit of calcined bone, indicating that at least one other burial locus has been destroyed and an unknown quantity of artifacts removed. Despite the regrettable loss, however, this event did provide evidence of a more extensive cultural deposit.

To counteract such vandalism it was arranged for a Department of Lands and Forests crew to fell the trees on the centre section of the knoll across the bulldozed cut. This effectively covered the area of the find with a virtually impenetrable tangle. This action and an RCMP investigation seem to have proved to be effective deterrents since no further vandalism has occurred.

During September the completion of the street line was monitored. This involved the removal of much of the remainder of the southern portion of the knoll to accommodate a turning circle. This produced a near vertical east-west section through the knoll. However, the cut extended only to the southern edge of the original find and no cultural material was observed in the deposits removed.

The Union of Nova Scotia Indians was kept informed of developments, and a meeting was held with representatives of the Union in October. This was followed by discussions with the executive of the Micmac Association of Cultural Studies in November, during which it was generally agreed that the limited testing program described above should be undertaken in 1987.

This site has been designated BdCw-1, and tentatively named the Skora Site.

Lunenburg County

On May 31, 1986, Dr. Michael Deal and six St. Mary's University archaeology field school students were taken to the Robertson property at

Stonehurst East to investigate a small stone mound. The university team excavated and recorded two quadrants of the mound, but could not identify a cultural affiliation. A separate report by Michael Deal is available (Heritage Research Permit 1986NS8).

While this test was in progress two other areas in the vicinity were reconnoitred. Substantial numbers of prehistoric artifacts were recovered from Bachman Beach during the nineteenth century. Erskine indicated in 1969 that erosion had destroyed this site (BcDb-4). A brief inspection of the beach and surrounding area suggested that this assessment was correct. No traces of prehistoric occupation were observed, and there is very active coastal erosion. Moreover, most of the area has been considerably modified by recent cultural activity.

In July 1983, Tom Curnew reported finding a small corner-notched biface on a tidal mud flat at the mouth of Parks Creek, East La Have, and in September of the same year James Hirtle reported finding a contracting-stemmed biface in a ditch behind a house just to the west of the Parks Creek outlet. The area of these finds was investigated. The mud flats and erosional faces on both sides of the Parks Creek outlet were examined, but no evidence of prehistoric occupation was observed. The area of the Hirtle find appeared to be an unlikely location for a site, and there were no soil exposures which could be inspected. Consequently, the existence of a site could not be confirmed, and these finds may just have been isolated occurrences. They have been designated BbDc-4.

Shubenacadie System

On July 17, 1986, while travelling to Debert, the opportunity was taken to view several of the sites recorded in the Elmsdale area during the Shubenacadie Survey of 1970. The area of BfCv-28 (the oxbow to the southwest

of Elmsdale) seemed to have been ploughed but not planted. In the area of BfCu-3 (the north bank of the Shubenacadie between the road bridge and the Nine Mile River confluence) the McLean residence had disappeared and there was new housing along the road, while the area along the river bank was obviously not under cultivation. It was also observed that an extensive area immediately east of the confluence was being bulldozed.

On August 14, this area was revisited with Stephen Davis, who was seeking a suitable site for a field exercise involving one of his classes. An attempt was made to examine the large scale bulldozing on the east bank of Nine Mile River by the confluence. Access appeared to be by a private road off Highway 2 just north of the bridge over Nine Mile River. However, the road encountered a fence, a gate and several "no trespassing" signs just across the railway track. The area being bulldozed was some distance away and the attempt was abandoned.

At BfCu-3 the river bank between the bridge and the confluence was walked. This area has obviously not been farmed recently. The derelict farmhouse has now gone from the knoll to the east of the north end of the bridge, but historic detritus was evident. Two lithic flakes (quartzite and quartz variety) were collected from the knoll. One of the new houses along the road occupies the location of the former McLean residence. Testing of this site would probably now be feasible, but current land ownership would first have to be determined.

It was noted that the area of BfCu-1 was also being bulldozed, and an attempt was made to gain access. However, the dirt road to the west from the south end of the bridge was blocked by a backhoe and truck.

The general area of BfCv-29 is another which does not seem to have been cultivated in recent years, and is growing up in scrub. This is a promising location, but again current land ownership would have to be determined before

any testing could be planned.

A visit was then paid to site BfCv-17 at Wellington. The former King property is now owned by Hal Grey of Enfield, an acquaintance of Stephen Davis. A residential subdivision is planned, but Mr. Grey indicated to Stephen Davis that testing could be done before development. However, it was discovered that some development had already taken place. The field between the access road and the railway had a strip bulldozed across the centre, and several holes had been dug (soil/percolation tests?). A new house was under construction at the east side of this field, and there was a sign advertising lots for sale. All recent disturbance was examined. There was no indication of prehistoric occupation. However, the area to the north of the road was mostly undisturbed and overgrown, and this is the area which was said to have produced all of the former finds.

Finally, the area of BfCv-2 at the end of Frenchman's Road to the south of Enfield, was revisited for the first time since 1970. This area has changed very little, if at all, since then. There was no extensive gardening, but some cultivation is still undertaken occasionally. Leo King still occupies the end house and he was interviewed. He was interested and, indeed, quite enthusiastic about the prospect of testing. The upper field is still rented by Scotian Bowmen, but tests would be possible outside their firing range. Margaret King died in 1985, but her son still lives in her house. Michael King still occupies the third house. Leo King was the only person interviewed. Not much, if anything, seems to have been found since 1970.

Additional assessments of some of these sites were made by Stephen Davis alone, and separate reports are available.

Avon River

On July 10, 1986, with the assistance of David Christianson, the

MacDonald property on College Road, Windsor was inspected in the company of Fred Matthews and John McLeod of the Heritage Trust of Nova Scotia. The property is owned by Heritage Trust, which had requested an investigation of reported "Acadian" cellars by the river bank on the property. An examination of the area revealed nothing that could be attributed to pre-Expulsion Acadian settlement. Observed cultural features comprise the remains of a modern farm, and a number of surface irregularities are most probably natural sinkholes since this is gypsum terrain.

While in the vicinity it was decided to visit the Upper Falmouth area and attempt to locate the site of Castle Frederick, the eighteenth century DesBarres estate. The remnant of this estate is owned and farmed by Mr. James Bremner, a direct descendant of DesBarres. Mr. Bremner was not present, but his wife was interviewed briefly. The family maintains a strong interest in the early estate, and, apparently, early structural features survive and can be located, including the foundation of the original DesBarres residence near the farmhouse on the opposite hillside. This locality also has a high potential for pre- and post-Expulsion Acadian features, and a survey of the former estate should be given a high priority. It has been designated BfDb-4.

Queens County Reconnaissance, September 9-11, 1986

A preliminary check was made on Lake Rossignol by driving to No. 1 Dam and walking the east side of Indian Gardens (BaDg-1). As expected, the lake appeared to have almost regained its normal level. No significant cultural material was observed along the shoreline.

The principal object of this trip was to visit the Parks Canada survey project on the Woods property (now Kejimkujik National Park Seaside Adjunct) between Port Joli and Port Mouton. The survey team was contacted on September 9, and on September 10 their test excavation at a late historic site near Joli

Point was visited. This was followed by a review of their finds at their base in Port Mouton.

The opportunity was also taken to review coastal areas in the vicinity with reported prehistoric sites, principally Summerville, Port Mouton, Port Joli and Port Hebert.

From his description, it is not possible to locate precisely the site at Summerville recorded by Erskine (AlDe-1), and it was probably destroyed by Charles Theriau's collecting activities. However, the lower reaches and outlet of Broad River might be worth a closer look (whatever its exact location, the known site is located at the outlet, of which Summerville Beach is a feature).

Again, Erskine's descriptions of the location of the site at Port Mouton, now designated AlDf-18, are extremely vague, and a drive out the Bell Point road did not provide any further clues. Erskine implies that erosion and excavation have effectively destroyed this site.

The area of AlDe-2 and 3 was visited again (Wobamkek Beach and what is now called Carter's Beach at Southwest Port Mouton). This is also probably not worth pursuing since the reported finds date from several decades ago and earlier, and Erskine was unable to find anything here. Shifting sand dunes are a factor here, but there is probably little, if anything, left.

No attempt was made to locate the sites on the east side of Port Joli reported by Eric Millard. In any case, he claimed to have excavated all AlDf-1 and AlDf-11. AlDf-13 was based on a rather tentative report, and the Parks Canada Crew looked over this area without finding anything. AlDf-12 remains a possibility if Millard did not dig it all, and the area has not been developed. This is his "Vogler" site, and if any further work is done in the area its status should be determined. It would be reasonably accessible, and it is quite near the cluster of three sites by the outlet from Robertson Lake

recorded by Erskine. This latter locality seems to have changed very little, and AlDf-2 (Erskine's PJ11) should still be available, assuming that erosion has not been severe, and it is very accessible from the road, only about 200 metres south of Highway 103. If this site is as extensive as Erskine claimed, it could be a significant resource.

On the west side of Port Joli, AlDf-5 appears (from the highway) to be overgrown now. AlDf-6 is still partially cultivated as a garden, although much of it seems to be grown up in grass. These sites are probably no longer useful resources.

AlDf-7 and 8 probably still represent significant resources, if they have not been looted by collectors since Erskine's investigations. This is less likely than in others cases because of their inaccessibility, located as they are well inland in an area of dense brush. On the other hand, that very inaccessibility would affect any future investigation. AlDf-7 could be found by following London Brook down from the Path Lake outlet, but its course is densely overgrown, and there is no trace of the other brook along the road. Perhaps the best approach would be to follow the shoreline from the head of the harbour and then follow the brooks up from the outlets. This would still be quite difficult and time consuming.

The "Jack's Brook" sites dug by Thomas Raddall should only be about another kilometre along the shore beyond AlDf-8, assuming that they are indeed at the outlet of the unnamed brook which runs north from the marsh to the west of Scotch Point. AlDf-9 (Scotch Point) is very inaccessible. However, a provincial park is being developed around Sandy Cove to the south. The Parks Division of the Department of Lands and Forests should be consulted to determine park boundaries. AlDf-9 is the largest known shell midden in Nova Scotia and, at least in Erskine's time, was well back from the shoreline.

Park development may make it much more accessible, even if it is not in the park. If it is in the park further investigation should accompany development. In any case, the Sandy Cove area should be surveyed before development. AlDf-10 was completely excavated by Erskine.

East Side Port Hebert was visited briefly. This is quite a thriving area, with a seafood processing plant and a lumber business. The site investigatd by Erskine (AkDf-3) had been all but destroyed at that time, and it seems unlikely that anything can have survived. The areas of Sable River, East Sable River and Port Hebert (that is, the settlement on the lower west side of Port Hebert almost opposite East Side Port Hebert) were then reconnoitred. The only known site location seen in the area is also the only reasonably accessible one, by the outlet of Granite Brook at the head of the harbour. Erskine excavated a small site here (AlDf-17), but seems to suggest that this is not the only one at this locality. The area is relatively undeveloped, is very accessible from Highway 103, and would be easy to reassess.

The other site locations on Port Hebert harbour mentioned by Erskine are relatively inaccessible, and the area at the outlet of Timber Island Brook (AlDf-14 and 15) is the only one which can be precisely located on the basis of Erskine's descriptions. The sites he excavated are presumably destroyed, but he also reports a large unexcavated site on Timber Island. There are also a couple of brook outlets on the eastern side of the upper part of the harbour which might be worth checking (one of Erskine's references is to a reported site between East Side Port Hebert and the head of the harbour).

The lower section of the Medway River was also examined briefly by driving the road along the east bank between Charleston and Greenfield. Particularly between Riversdale and Bangs Falls there is relatively little development. There are a few permanent residences and a few small gardens,

but most of the buildings along the road are cottages in a "natural" setting. These are all on the east side, and the west side of the river between Riversdale and Bangs Falls is undeveloped. The road follows the east bank of the river very closely, and the west bank could probably be reached by canoe at appropriate locations. Erskine briefly noted finds of Archaic to late Ceramic material from this section of the river (BbDe-1 and 2), and a local resident, Ricky Croft, knows sites and has collected material.

The eastern coastal section of Queens County was inspected by driving the shore road between Brooklyn and West Berlin. Much of this shoreline is rocky and seems rather unpromising. However, Eric Millard reported a post-Contact site at Eagle Head Bay and the possibility of a prehistoric site in the vicinity. Erskine collected prehistoric material on Coffin Island, just to the south of there (BaDd-1).

A similar brief reconnaissance was conducted along the East Port Medway to Vogler's Cove shoreline straddling the county line. There is an "Indian Bay" between those two communities, and Erskine reported late Ceramic material and historic burials on Great Island to the south (BaDd-3)

Lake Rossignol Helicopter Survey

The east side of Indian Gardens (BaDg-1), visited on September 9, is the only readily accessible portion of Lake Rossignol. Consequently, because of the size of the area involved in the 1985 survey, and the difficulty and potential danger of surface access to many site locations, it was decided that the most efficient means of monitoring current site conditions would be by a one day helicopter survey.

This was accomplished on September 18 with the cooperation of the Department of Lands and Forests Air Service. The areas examined were the west side of Indian Gardens, First Lake, East Brook, The Hopper, The Screecher, the

lower reaches of the Mersey River entering the lake from the north, and the lower reaches of the Shelburne River entering the lake from the west. The course of the lower Mersey River between No. 1 Dam and Liverpool was also flown.

At Rossignol the water level appeared to be about a metre below normal high water. However, in general, all major sites have been inundated again.

An inspection was made on the ground at Indian Gardens, west side (BaDg-2, 3 and 4). Only the upper terrace was still exposed there. Lithic detritus was observed along the shoreline, and a small stemmed biface was found by the pilot.

The First Lake shore was only seen at a distance from the air, but the recorded sites (BaDg-5 to 9) must now be well under water. Sites East Brook 1, 2 and 3 (BbDg-9, 10 and 12) were also all under water. However, at East Brook 3 the top of the knoll was still visible about half a metre under the surface. The exposed features at the Hopper were rather confusing, but it was evident that the archaeological sites (BbDg-11, 16 and 17) had been flooded again.

Another inspection was made on the ground at The Screecher (BaDh-1 and 2). The south side of the former narrows was completely under water (indeed, the entire peninsula exposed in 1985 had disappeared), while only the extreme northern edge of the site on the north side was still exposed, marked by a scattering of lithic detritus. Considering the extent of the inundation already encountered, it was not considered worth while checking Fourth Lake (BbDh-27) or Lacey Lake (BbDg-14 and 15).

The sites along the lower stretch of the Mersey between the Bowater Mersey gate and the north shore of the lake were inundated (BbDg-1 to 8, and BbDh-15 to 22). The peninsulas forming Wildcat Point and Indian Point had disappeared and only the islands remained (nothing was observed on these).

Similarly, the sites on the west bank of the river north to the Peskowesk confluence were completely under water. At the Peskowesk confluence the site on the south side was flooded, but the northern edge of the site on the north side remained exposed, and a brief ground inspection was made. A fair amount of prehistoric cultural material was exposed, and there was evidence of recent digging. This is one of the most vulnerable sites since there is relatively easy access from the Bowater Mersey gate.

The situation at the mouth of the Shelburne River (BbDh-23, 25, 26 and 28 to 33) was similar to that at the Mersey outlet. The former river mouth was submerged again, and only islands remained. Nothing of significance was observed from the air. The area of the rapids and narrows near the existing outlet was also observed from the air. Some traces of prehistoric cultural material were still exposed, and the site by the derelict houseboat on the north bank appeared to be still accessible.

North Shore Reconnaissance

July 22-23 and October 7, 1986

With the assistance of David Christianson a preliminary investigation of reported archaeological sites in the Colchester and Cumberland sections of the North Shore was undertaken. Of particular interest were reported pre-Expulsion Acadian sites in the Tatamagouche area investigated by Roy Kennedy, a prominent local amateur archaeologist and historian. On July 22 and 23 Mr. Kennedy was visited, his archaeological collection was examined, and he conducted a tour of sites in the area.

He indicated that the main pre-Expulsion Acadian settlement had been along the ridge lying between Highway 6 and the railway line, and extending southeastward from an overgrown area behind a house opposite Smith's Farm Machinery to the junction of highways 6 and 246 approximately. The area is

largely cleared fields, and some indications of cellars are supposed to be still visible. The area was inspected briefly. Nothing was observed, but vegetation was very high. This area has been designated BkCt-3.

We were shown two house foundations, about 100 metres apart, just to the north of French River. Roy Kennedy reported another three foundations immediately to the east, but these were not located. He considers all of these to be of pre-Expulsion Acadian origin. However, the features seen do not closely resemble known pre-Expulsion Acadian forms, and ceramics in his collection recovered from these features indicate a late eighteenth to early nineteenth century occupation. He also reported structural features near the edge of the terrace and on a knoll to the east of the bridge. Finds (ceramics, etc.) were also reported from a field to the west of a farmhouse on the opposite bank of French River, but without associated structural features. These features on French River have been designated BkCt-4.

Finds of prehistoric material were reported from the area between the French River confluence with Waugh River and William Point, between a secondary road off Highway 6 and the shoreline. The southern portion of this area is occupied by the Atlantic Christian Training Centre. To the north is a municipal campground (Nelson Memorial Park). During landscaping work in 1985 a gunspall was found in the park. This is now in Roy Kennedy's collection. It should also be noted that he has some flint ballast from this area, which may be the basis for his report of prehistoric finds. The shoreline of the park was examined briefly, but nothing of significance was observed. This find has been designated BkCt-5.

The shoreline of Steeles Island was also examined. This is an "upland island" in the marsh on the east bank of the mouth of Waugh River, directly opposite the Balmoral Motel. It is said to have yielded considerable

quantities of prehistoric and (apparently) Contact material. A copper kettle in Roy Kennedy's possession may have been associated with a Contact burial rather than any Acadian occupation since human skeletal material has also been reported. Nothing of archaeological significance was observed on this occasion. Steeles Island has been designated BkCt-7. To the north of Steeles Island Roy Kennedy indicated that prehistoric artifacts had been found at Weatherbies Bank, and at several other locations along the Tatamagouche Bay shoreline of Sand Point (BkCt-8).

A section of the Barrachois Harbour shore of Sand Point to the south of Hingley Point was walked. The apparent remnant of a shell midden was observed in the erosional face just to the east of a derelict house (BkCt-9). According to Roy Kennedy the western side of the narrows at Barrachois formerly bore extensive traces of an oyster (?) midden in the fields by the shoreline, and several prehistoric artifacts had been picked up. Most of this evidence came from the small bay to the north of the bridge, but also extended to the south of the bridge.

A new house has been built in the field to the north of the bridge overlooking the narrows. The owner has only been a local resident for two years, and had not heard of any such finds on this side of the narrows. However, he had heard that prehistoric artifacts had been ploughed up on a knoll by the east side of the narrows, to the north of the road. He also indicated the site of a nineteenth to twentieth century midden just north of the west end of the bridge. The area of the narrows has been designated BkCt-10. It appears, then, that coastal erosion and cultivation have had a serious impact on prehistoric sites in this area. However, a limited testing program should be considered so that the nature and condition of any surviving deposits can be determined.

Roy Kennedy also reported the sites of several Acadian and early post-

Acadian dwellings along the line of the road to the east and west of the narrows at Barrachois Harbour. None of these consisted of structural features and, again, the finds collected by him are of post-Acadian origin. In fact, nothing was seen in his collection which could be definitely associated with pre-Expulsion Acadian occupation. Similarly, "Acadian dykes", pointed out by him in the McConnell Creek area at the head of Barrachois Harbour, are natural features obviously formed by ice action.

To the west of Tatamagouche, the site of Fort Franklin at Blockhouse Point was visited. Professor Cameron of Acadia and Roy Kennedy investigated this site in 1957. Some excavation was undertaken (a photograph survives), and Kennedy also produced a plan to scale. Coastal erosion is very active, and much of what he recorded has been taken by the sea. However, the portion which survives is very well defined and appears to be relatively undisturbed. The property on which it is located has been acquired by the Tim Horton Children's Foundation. The overgrown area containing the fort has not been seriously disturbed and the new proprietors are aware of its existence. It should be noted that the extensive clearing undertaken is likely to exacerbate the erosion problem. The fort has been designated BkCt-6.

On July 23, Wallace Bay was reconnoitred in an attempt to identify some of the cellars indicated on the map in H.R. Brown's Valley of the Remsheg. The area of the reported Acadian foundation (no. 13) was viewed from the bridge on the road connecting South Wallace Bay and North Wallace Bay. It was not even possible to determine from Brown's map whether the feature was on the north or south side of Wallace Bay. In any case, both sides are quite heavily wooded, and any further investigation would be futile without more precise information. The area of Brown's sites 1, 2 and 3 was located, and sites 2 and 3 were identified on the ground. No. 3 is quite large, and did appear likely to be a late nineteenth century foundation. No. 2 is smaller, but was

difficult to assess because it was heavily overgrown. However, Brown's work does seem to have some value in field identification. These features have been designated BkCv-2.

At Pugwash the area of the "old french house" indicated on the 1802 Baker map of Pugwash Harbour was examined. This is on the western shore of Pugwash Basin almost directly across the road from the prominent microwave tower on the west side of the Pugwash to Pugwash River and Conns Mills road. The area between the road and the shore at this point has been extensively quarried, obviously to a much greater extent than is indicated on the National Topographic Series map, and it is very likely that any feature has been long since obliterated. However, areas of heavy scrub and alder growth made assessment difficult, and there may be some areas of relatively undisturbed ground. In addition, on reconsideration, the Baker map suggests a location almost on the present shoreline, just about at the boundary between the clearing and the woods to the south (as indicated on the National Topographic map). If the structure was very close to the shoreline in 1802 then it may have been subject to erosion. The location should be checked again, preferably when vegetation is dormant.

Tatamagouche was revisited in October 7, principally to consult with Roy Kennedy again. He indicated that the reported traces of the original Acadian settlement in the fields between highway 6 and the railway track in the centre of Tatamagouche are represented by very slight depressions, discernible only with difficulty. Artifacts were found when the fields were ploughed. This area was intensively cultivated in the past, and remains of the pre-Expulsion Acadian occupation have probably been almost completely destroyed. Indeed, Roy Kennedy is of the opinion that much of the area of Acadian settlement was disturbed by railway construction. In summary, then, this very brief

preliminary investigation failed to identify any definite surviving evidence pertaining to pre-Expulsion Acadian settlement of the North Shore area.

One area not examined was Mattatall Lake, to the west of Tatamagouche. Roy Kennedy reported that a white (quartz?) corner-notched biface was found on the shore of this lake a few years ago. A trade axe was found earlier in this vicinity, and there have been reports of several structural features (Roy Kennedy wonders if the area was an Acadian refuge at the time of the Expulsion).

Cumberland Basin Reconnaissance

July 24-25 and October 8-9, 1986

With the assistance of David Christianson the general area of Minudie, River Hebert, Maccan, Nappan, Amherst Point and Fort Lawrence was reconnoitred, July 24-25, 1986. The principal objective was a preliminary assessment of potential for pre-Expulsion Acadian research, and attention was focused on Minudie as a little known locality with high potential.

At Minudie, the southern edge of the great marsh (the "Elysian Fields") was examined briefly. However, the peninsula is about three kilometres across in this area, and the edge of the terrace forming the southern boundary of the marsh is quite heavily wooded for most of its extent. Consequently, features would probably be difficult to locate. On the other hand, tradition seems to indicate that settlement has always been in the vicinity of the present community, well to the south of the great marsh. This would certainly have been a more accessible location via Amherst Point, and there are two smaller areas of dykeland immediately north and south of the present settlement nucleus. Indeed, the one to the south is quite extensive.

An elderly genteleman, Mr. Clifford Symes, was interviewed briefly. He indicated that he knew of many cellars, but they were more easily found when

vegetation was dormant. In particular, he referred to several cellars on his property, to the south of the house. This area is immediately west of the section of dykeland to the south of Minudie, and is a likely location for pre- and post-Expulsion Acadian dwellings.

Mr. Symes indicated that the derelict farmhouse on the ridge to the northeast of the Seaman monument is the former Dr. Mitchell residence. This land, which is said to have Acadian cellars, is now owned and farmed by Harry DesBarres, whose wife, Vera, is involved in running the museum. At the museum they were both cited by the attendant as people who should be contacted because of their interest in, and knowledge of, local history. However, during the visit they were away on vacation and therefore could not be contacted. A portion of the erosional face of the shoreline of the ridge running northeast from the Seaman monument was examined. One small cellar depression was observed. A clay pipe stem fragment, an ivory (?) button, and a sherd of shell-edged Pearlware were collected from the erosional face. These finds have been designated BkDc-1.

To the north of this ridge is the other, smaller section of dykeland (immediately north of the derelict house). Because the land was being worked, and the owner (Harry DesBarres) was not available, further investigation was postponed. It is noteworthy that the southern boundary of the larger section of dykeland to the south is in the northern portion of Barronsfield rather than in Minudie proper, and there is a photograph of an "Acadian" house, no longer standing, at Barronsfield displayed in the Minudie museum.

The Amherst Point area was briefly examined by car, paying particular attention to terraced edges bordering dykeland. Most of this area is cleared and cultivated, and the few likely areas which are wooded are quite densely

overgrown. The Fort Lawrence ridge was subjected to a similar cursory examination from its western end to the intersection with the road to Mount Whatley, New Brunswick, a distance of some four kilometres. Again, most of the area is cleared and cultivated, and it seems unlikely that relatively undisturbed Acadian features can have survived.

A brief inspection was also made of the area of the Nova Scotia Power Corporation plant at the eastern end of Harrison Lake at Maccan. This is the general location of finds of prehistoric artifacts described by Erskine and designated BkDb-1. The extent of disturbance in the immediate vicinity of the plant would obviously have obliterated any site, but the north side of the lake just to the west appeared to be relatively undisturbed and might be worth investigating.

Between mid September and mid October 1986 a survey of both sides of the Nova Scotia/New Brunswick border was undertaken by Marc Lavoie for the Maritime Committee on Archaeological Cooperation (Council of Maritime Premiers) in an attempt to identify pre-Expulsion Acadian features.

On October 8 and 9, B. Preston carried out further investigations in the area in association with this survey project. A walking survey of the dykeland edge at Amherst Point did not reveal any potential Acadian features. However, an examination of a pasture on the Trenholm farm at Fort Lawrence, immediately south of the railway, revealed several shallow depressions which yielded eighteenth century ceramics when shovel tested. Subsequent testing by the survey team confirmed that these are most probably remnants of the pre Expulsion Beaubassin settlement.

In addition, a possible prehistoric site was reported on an "island" in the marsh at Amherst Point on the Logan Brothers' farm. A large stemmed biface was picked up in the spring of 1986 after ploughing, and there are said to have been earlier finds. This report merits further investigation.

Albany Cross

In November 1986 the Nova Scotia Museum was requested to investigate the reported site of an unmarked nineteenth century cemetery at the former community of Stoddards, on Highway 10 between Albany Cross and Springfield, Annapolis County. The site is located on a section of a Department of Lands and Forests resource area to the east of Highway 10 which has been designated as a dump site for refuse from a new incinerator at Trout Lake. It was visited on November 27 in the company of several concerned area residents, and six stone features, occurring in two separate groups of three each, were examined.

The first group comprises three small, low mounds on the crest of a ridge overlooking the site of a former residence. These three features are of a similar size (3 metres by 1.5 metres approximately), have a similar orientation, and are quite closely spaced (2 metres to 5 metres apart). The best defined feature appears to have been originally rectangular in outline. All three lie within 2 metres to 5 metres from the edge of a nearby vertical bank which marks the limit of a gravel removal operation conducted about three decades ago in connection with work on Highway 10.

Two of those present at the investigation had worked on this project, and stated that the gravel removal was terminated when human remains and coffin fragments were unearthed on the line of the present bank, about 5 metres from the nearest stone feature. They had been personallly involved in this discovery. Another of those present indicated that this particular area had been avoided during logging operations in the 1930s because it was traditionally recognized as a burial ground. Taking into account this evidence and the location and nature of the features, it seems most likely that they do represent the remains of a family burial plot dating to the first half of the nineteenth century.

The three other features are located on the downward slope to the northeast of the first three. These are very conspicuous stone piles which are very much larger than the features in the first group. They are asymmetric to oval in outline and widely spaced, with no obvious common orientation. It is very unlikely that they represent human burials.

Digby

On August 15, 1986 Mr. Peter Janson of 14 Montague Row, Digby informed Stephen Davis of St. Mary's University that he had found prehistoric artifacts in his garden. These were four gouges and three celts discovered in 1985 when an area by the side of his house was excavated for a garage foundation. The find was investigated by B. Preston and S. Davis on September 17, 1986.

The Janson property is located at the southern end of Montague Row, on the east side of the street, immediately south of the railway line and fronting on the shoreline of "The Joggins" section of Annapolis Basin to the south. The area around the new garage, an extensive vegetable garden, and the erosional face of the shoreline in the vicinity were examined, but no indications of prehistoric occupation were observed.

However, it was learned during the visit that this had been the residence of a Gilpin family, and that the Jansons had acquired the property after the demise of the last survivor, a Miss Charlotte Gilpin whose father had been a prominent hunter and collector in the late nineteenth century. Indeed, the house and the collection are said to have attained the status of a private museum (much of the material apparently went to the Admiral Digby Museum). This must be the Miss C. Gilpin from whom Dennis acquired the Gilpin Collection of prehistoric artifacts n 1961 (see Dennis Collection documents on file at the Nova Scotia Museum). In that case, this recent find most probably represents a discarded, lost or mislaid portion of the collection, and not the

location of a site.

Miscellaneous Visits

When travelling to Digby on September 17, the opportunity was taken to visit Parks Canada excavations at Fort Edward and the Melanson Acadian site near Port Royal (BeDj-4). Earlier in the 1986 season the St. Francis Xavier University/University of New Brunswick field school at Melanson, Kings County (BgDb-7) was visited, and the testing of the Sellon site (BdCv-7) in Halifax by a group from St. Mary's University was monitored.

Permit 1986NS3

Debert

On May 6 and 7, 1986, the Debert Palaeo-Indian Site (BiCu-1) was visited in the company of Robson Bonnichsen and Harold Borns Jr. of the University of Maine, Ralph Stea of the Nova Scotia Department of Mines and Energy, and representatives from Parks Canada and St. Mary's University. The Pleistocene geology of the area was reviewed, and two recently discovered geological sites were visited. The archaeological site was then examined using guidelines established by recent Palaeo-Indian research in Maine. The general Debert/Masstown area was also reconnoitred to view other likely Palaeo-Indian site locations.

No new evidence of Palaeo-Indian occupation was observed during this expedition. However, it promoted a valuable exchange of information and views, and provided guidelines for potential future investigation. In particular, it was agreed that Palaeo-Indian deposits very likely survive in undisturbed sections of the designated area.

During the visit motorcycle racers were observed practising in the central site area. This type of semi-organized activity is obviously

responsible for much of the serious disturbance which has become increasingly evident over the past few years.

The area immediately east of the designated area is part of a Department of Lands and Forests tree breeding centre. During July and August 1986 a rectangular strip, approximately 45 acres in area and abutting the eastern boundary of the designated area, was stumped and cleared in preparation for planting. This area includes an eastern extension of the ridge on which the known archaeological site is located. The operation was monitored on July 15 and 17 while in progress, and again on August 14 after completion. No indications of Palaeo-Indian occupation were observed. During these visits areas immediately west and south of the designated area and at similar elevation were examined. Again, no indications of Palaeo-Indian occupation were observed in soil exposure.

Serious additional vehicular disturbance of the central site area was observed in August, indicating intensive summer use. By October nearly all denuded sections of the site were exhibiting signs of extreme abuse. Obviously, this type of exploitation of the site has reached crisis proportions.

Permit 1986NS6

New Minas

On May 22, 1986 the investigation of potential pre-Expulsion Acadian structural features at New Minas (BgDc-2) was continued with the assistance of David Christianson. The area of "Old French Orchard", surveyed in 1985, was examined again. The general circumstances were found to be unchanged, with no expansion of industrial activity. Structure 7, discovered and recorded in 1985, remained undisturbed.

The remainder of the area of the peninsula between the dykeland and the

railway track in this vicinity was re-examined. This resulted in the discovery of an additional feature, apparently a building foundation, located in a raspberry thicket in the field, about 50 metres south of Structure 7. A small stand of pin cherry is close by (immediately to the east). The feature appeared to be rectangular, with its long axis aligned east to west, and to consist of two slight depressions separated by a central ridge, a form quite dissimilar to that of Structure 7.

One other feature of possible archaeological significance was observed. This was a small, circular depression located close to the eroded west bank of the peninsula, in the woods just to the north of Structure 7. This could be the remains of a well.

Structures 2, 3, 4 and 5 on Lockhart Drive were inspected again. The area of Structures 2 and 3 was unchanged. Additional debris had been deposited in the interiors of Structures 4 and 5. There seemed to have been some random grubbing in the immediate vicinity of these two latter features, but the situation was essentially unchanged.

Testing was carried out at Structure 7 on July 9, 10 and 11, 1986, again with the assistance of David Christianson. An east-west base line (magnetic north) was established to the south of Structure 7. A survey pin and rock pile at the east end of this line mark the datum. The four apparent corners of Structure 7 were recorded by triangulation from this base line, and a test pit (T.P. I) measuring 2 metres by 1 metre was laid out, oriented along the base line and with the base line forming its south wall. A second test pit (T.P. II), a metre square, was laid out 10 metres to the north and 2 metres to the east of T.P. I (that is, on the other side of Structure 7).

Excavation of T.P. I revealed the following soil levels:

1) a relatively thick (c. 5 to 7 centimetres) sod and sod development layer;

2) a gravelly humus containing small quantities of unburnt clay and widely

scattered, light deposits of small charcoal fragments;

3) a sterile, reddish, water-deposited sand subsoil below approximately the 20 centimetre level (this showed some evidence of leaching in the form of pockets of white sand).

A clay pipe bowl fragment dating to c.1680-1720 was recovered from level 1. Level 2 yielded another five clay pipe fragments, a small leaded glass fragment, possibly from a stemware vessel, and three small bone fragments.

Excavation of T.P. II revealed a stratification and soil composition generally similar to that encountered in T.P. I, with the exception that there was no sod. Level 2 in this unit yielded a small sherd of Anglo-American redware, two burnt fragments from the base of a dark green glass bottle, two clay pipe fragments, and a small bone fragment.

With the exception of the clay pipe bowl fragment from level 1 of T.P. I, none of the artifacts recovered from these two test pits was closely datable. However, they all could be of eighteenth century origin. Conversely, no artifact of a definitely post-eighteenth century date was found. It should also be noted that the two test pits excavated at Structure 2 in 1985 produced similar results: finds comprised a few artifacts which could be of eighteenth century date and a clay pipe bowl fragment which most probably dates to the first half of the eighteenth century.

Consequently, although the evidence produced by the limited testing of these two structures is very meagre, it does strongly suggest that they are associated with the pre-Expulsion Acadian occupation of the area.

EVALUATION OF A DIVER-OPERATED COMPUTER AS A TOOL FOR UNDERWATER ARCHAEOLOGY

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A diver - operated computer has been designed for use in underwater archaeology. The computer records x, y, and z coordinates of features on a wreck site. The data can then be processed by microcomputer in the field to produce plan views and 3D images. The system was evaluated on a mid - eighteenth century schooner wreck. Diver operation of the computer was relatively straight-forward, with rapid data entry and a low error rate. The ability to manipulate the data in the field is a significant improvement over conventional underwater archaeology recording methods.

INTRODUCTION

Underwater archaeologists, like other scientific divers, routinely record quantitative information underwater, using a combination of photography and pencil notations on paper. Although archaeologists are comfortable with this methodology, it is limited in that it is not possible to produce legible and organized notes under all conditions and the data are not amenable to three dimensional interpretation in the field. Recording the data in a computer format in the first place would be a significant improvement. This has been recognized by land archaeologists (Stephen and Craig, 1984), but until now the approach has not been suggested for underwater archaeology.

In an effort to improve underwater data recording, we have developed a diver-operated computer (SUB-C-DAS) which is programmed to cue the diver for

specific entries and to store the data for subsequent transfer to a larger computer on the surface. Initial development of SUB-C-DAS has been described elsewhere (Carter and Covill, 1986). Once the concept of underwater computer operation had been proved feasible, we developed mapping and viewing programs for underwater archaeology.

This paper describes the basic components of the diver-operated computer, the software designed for underwater archaeology, and a field evaluation of the system at an eighteenth century schooner wreck near Halifax, Nova Scotia.

MATERIALS AND METHODS

Hardware

The submersible part of SUB-C-DAS is shown in component form in Figure 1. It comprises a Hewlett Packard 41CX programmable calculator with extra memory modules (up to 6.4 kilobytes), an optical wand connected to a fiber optic cable outside the housing, a circuit board and light-emitting diode indicating correct entries, and a bar code "keyboard" simulating the alpha-numeric characters and functions of a conventional computer keyboard. All components, except the fiber optic link and the keyboard, are packed in a pressure and waterproof housing. A diver responds to cues on the display by making a measurement and entering the data by scanning the appropriate bar codes. The data are shown on the display and the program is advanced. The computer is battery-powered, slightly positively buoyant, and can be held comfortably in the diver's hand. It has dimensions of 14 cm x 26 cm x 7 cm, not including the fiber optic cable.

The HP 41CX can be programmed with magnetic cards inserted into a card reader. The data from the diver-operated computer can be printed on a thermal printer as soon as the diver surfaces, and then can be streamed to a larger computer and screen via an RS232C interface. The larger computer can then be

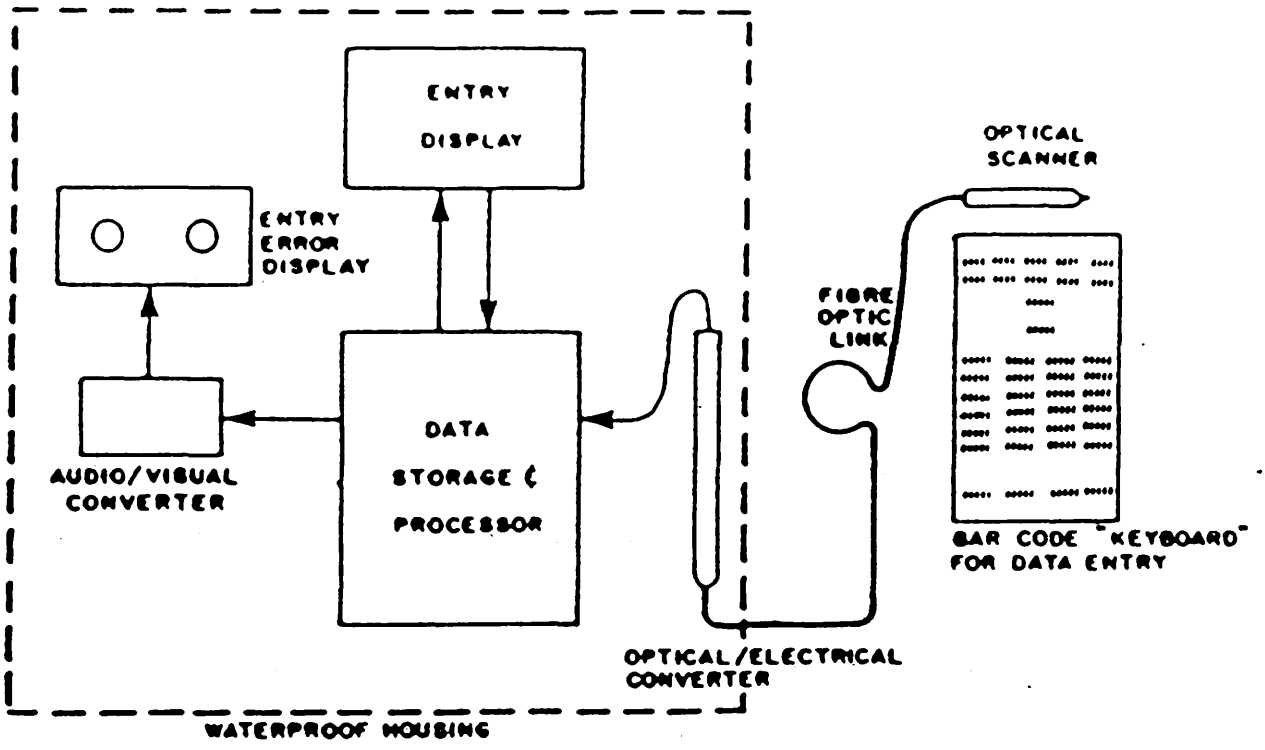


Figure 1. Component diagram of the diver-operated computer.

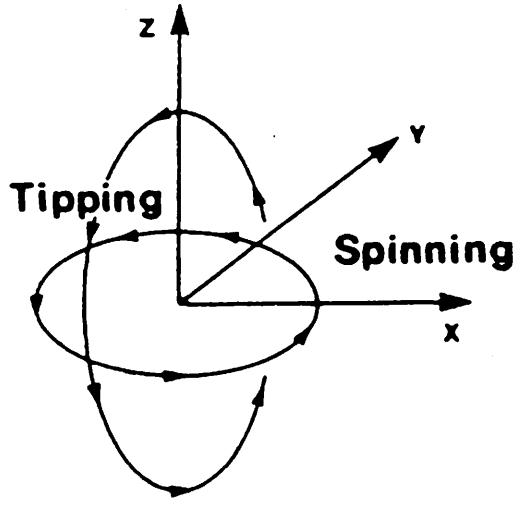


Figure 2. Righthanded 3D infinite coordinate system.

linked to a plotter. The latter can be powered by a small generator.

Software

The 41CX

The HP 41CX is programmable via a built-in low level programming language similar to an assembly code. Programs should generally be written to be as efficient and compact as possible to yield rapid execution while leaving as much memory for data as possible.

Two programs were written for the field evaluation. The first was a seventy line program to prompt and read for the artifact type and its x, y, and z coordinates, and to write this information to an internal memory file. Up to 200 records (each consisting of x, y, z location and type) could be stored before memory limits were exceeded. Diver's comments could be entered into memory via a special comment at the artifact prompt message. A short ten line program was developed to print the data on a thermal printer or to transfer the data via the interface to an IBM PC compatible computer.

The IBM PC

A program to manage and plot the data was written in BASICA for the IBM PC. It can be argued that the BASIC programming language does not enforce a structured programming style, but it is nonetheless a standard, universally available language which is both powerful and allows easy modification of code.

The program, called GRAF3D, is fully menu driven to facilitate its use by a novice computer user. The two main branches are a database path and a graphics path. A third branch exists to allow the user to exit the program.

The data base path allows the user to select a file for plotting, combine two or more files creating an additional file, list the data files, and read data files from the HP 41CX via the serial port (RS232C protocol is assumed).

The graphics or plotting branch allows a user to generate two or two and a half dimensional plots (3D data projected onto a plane), select or remove artifacts to be plotted and adjust the plotting factor to vary the size of the artifacts or elements being plotted.

Two-dimensional plots consist of the plotting of x and y paired coordinates on either the screen or a printer/plotter with scaling adjustment available. This permits a simple check of the data such that the viewpoint is directly over the data being examined, with scaling as the only option.

The three-dimensional algorithms make up the bulk of the program. All the views are computed using transformations from the three-dimensional or world coordinates to the 2D coordinates of the screen or plotter/printer unit.

Only two of the three principal rotations (the xy plane, the xz plane and the yz plane) are implemented. These correspond to the colloquial terms "spin" (the principal rotation in the xy-plane) and "tip" (the principal rotation in the yz-plane: azimuth) (Figure 2).

A viewing distance factor has been incorporated and affects the degree of perspective effect. The viewpoint is centered at the middle of the volume of interest yielding a plot to resemble what the diver sees.

Field Trial

SUB-C-DAS was evaluated at a wreck site near Halifax, Nova Scotia, known as the Terence Bay wreck, between September 22 and 25, 1986. The wreck is that of a mid-eighteenth century New England fishing schooner. The wreck was surveyed between 1980 and 1983 (see Carter and Kenchington, 1986 for more details). The detailed map from this earlier work provided a comparison for the SUB-C-DAS mapping exercise

An aluminum 1-meter by 2-meter grid was placed near the bow of the wreck in an area with good structural definition and vertical relief. Measurements were made using the conventional crossbar and plumb bob method (Carter and

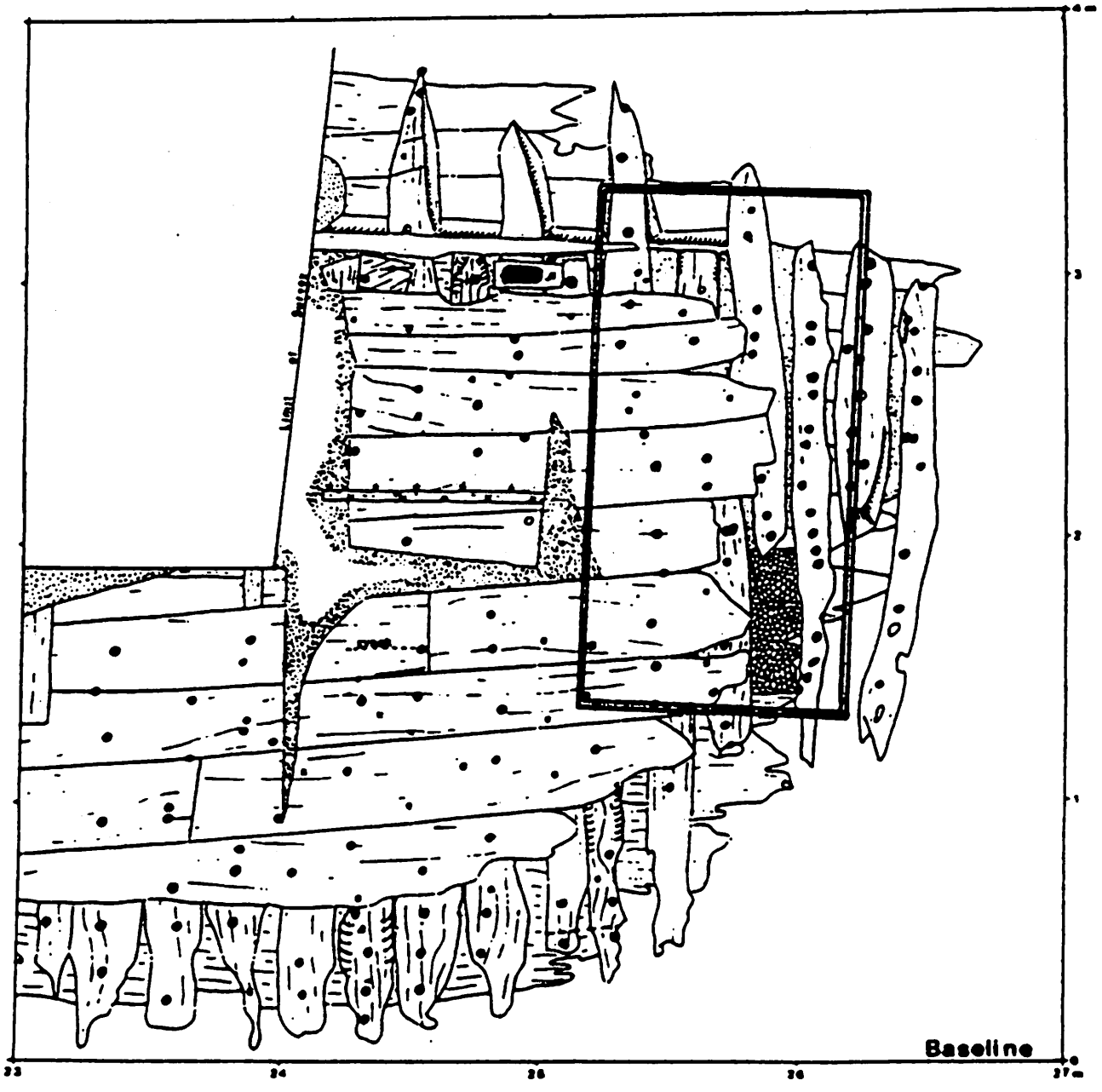


Figure 3. Location of mapping exercise near the bow of the Terence Bay wreck (grid size 1 x 2 meters). Map hand-recorded in 1980-1983.

Kenchington, 1986), except that all the x, y, and z data and comments were entered into the computer. Divers worked individually, mapping only the uppermost facet of each structural element in the grid. The diver considered each facet as a separate entity and mapped x, y, and z at critical points in a clockwise fashion around the periphery of the facet.

Two boats moored over the wreck served as a base for the field trial. The microcomputer was operated below decks, powered by a 650 watt generator mounted above decks. The divers wore full wetsuits with mitts while using SUB-C-DAS. They worked at a water depth of about 4 meters. Water temperature was 13 degrees Celcius. Water conditions ranged from clear to slightly turbid. Light conditions ranged from full sun to overcast. Diver 1 was experienced in underwater archaeology, whereas Diver 2 was a novice.

The parameters that were examined during the field trial included the ergonomics of SUB-C-DAS operation, data entry per unit time, the error rate, and effectiveness of the software.

RESULTS AND DISCUSSION

SUB-C-DAS Operation

The divers had no particular difficulty in holding SUB-C-DAS in one hand and using the fiber optic scanner with the other hand, since this operation was similar to pencil notation on a slateboard. Although the keyboard was designed for a righthanded person, the lefthanded diver had no particular problems using the computer. Diver mitts were not an impediment, although the grip on the end of the cable should be optimized for mitt operation. The display was clearly visible to the diver. The light-emitting diode indicating correct entry was also visible, but both divers tended to check the display for correct data entry, rather than relying solely on the LED.

Battery power was critical to the correct operation of the optical wand.

A set of good alkaline 1.5 volt batteries could operate for 4-5 hours before the integrity of the wand was affected. At about 1.2 volts, the scanner would not read the bar codes correctly. This appeared to be the most significant factor affecting the optics of the computer. It is easily controlled by routine battery changes. Turbidity and incident light underwater did not affect operation of the optical scanner. Bright light did make data entry in air difficult.

Operation of SUB-C-DAS presented few problems for the divers. Once the technique of operation had been mastered (usually requiring about 30 minutes), data entry was straightforward, requiring the same amount or less time than writing underwater for the equivalent character entry. Use of SUB-C-DAS did change the way in which divers usually organize themselves and make measurements underwater. Without a map in front of him, the diver had to remember which elements he had mapped, as well as the start point for the last element. This was not as difficult as we anticipated. There were only two cases of incomplete element mapping, and these were easily corrected. A simple tagging system indicating mapped elements, and the start point and current measurement point of the last element would help the mapping routine.

Since the definition of elements depended on the diver's judgement in picking critical points on the periphery of each element, we expected some variation in the final plot of those elements with some irregularity in lines. In fact, there was less variation than expected. Figure 4 shows plots by two divers of the same frame within the 1 x 2 meter grid. The end points of the frame were repeated well. There was more variatin (+/- 2-4 cm) in the sides of the frame, probably because of the difficulty in placing the plumb bob on the curved and slightly eroded edge of the uppermost facet of the frame.

The SUB-C-DAS data input from six dives in the grid is summarized in Table 1. There was clearly a difference between divers in the ability to make

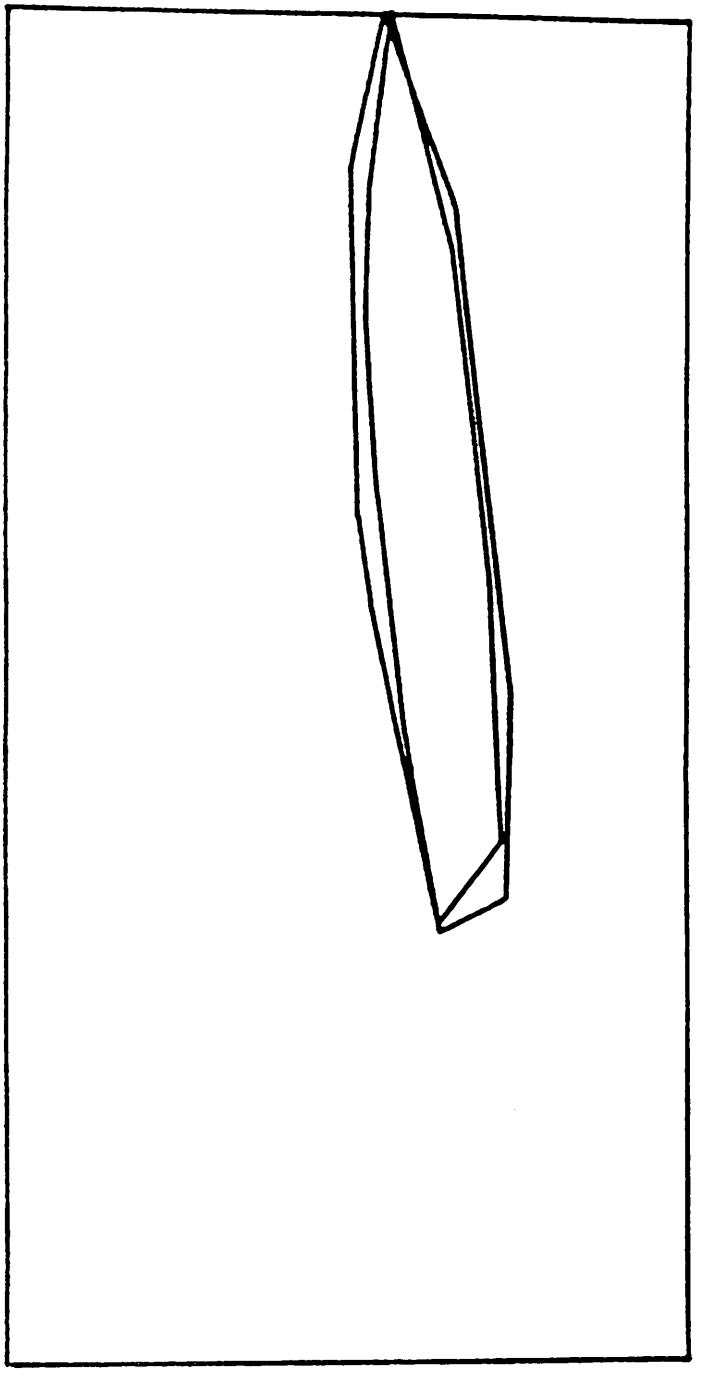


Figure 4. Repeat measurement (different divers) of a frame (grid size 1 x 2 meters).

the x, y, and z measurements with the grid, crossbar, and plumb bob system. The inexperience of Diver 2 limited his measurements to about half that of Diver 1. Use of SUB-C-DAS was not a factor in this variability. In fact, there was equally effective use of SUB-C-DAS by both divers, with a similar number of error corrections underwater and a net error rate of 0 to 2% (those errors which were only detected when reviewing the data on the surface). The number of correct entries ranged from 0.6 to 1.9 per minute, with no trend due to increasing experience with SUB-C-DAS being apparent. The only feature which did appear to be related to experience was the ability to detect and correct entry errors underwater.

Table 1. SUB-C-DAS data input - Terence Bay trials.

Dive Number	1	2	3	3	5	6
Diver Identification	1	2	1	2	2	1
Duration (minutes)	55	52	67	65	65	60
Number of Elements Mapped	5	2	6	3	2	7
Average Number of Measurement Points per Element	6.4	8.0	5.2	4.0	9.0	5.4
Total Number of Entries (three per measurement point)	96	48	93	36	54	114
Number of Errors (not corrected underwater)	2	1	0	0	0	0
Error Rate (percentage of all entries)	2%	2%	0%	0%	0%	0%
Number and Errors Corrected Under-water	3	4	5	9	4	3
Correct Entries/ Minute	1.7	0.9	1.4	0.6	0.8	1.9

```
A,0.0,0.0,45.8
A,0.0,21.0,52.1
A,32.8,21.5,45.5
A,36.2,18.7,43.5
A,32.9,16.3,41.0
A,43.5,14.8,37.3
A,52.3,17.4,33.4
A,54.6,14.4,34.0
A,37.5,10.4,39.1
A,35.8,6.3,38.9
A,0.0,0.0,44.7
B,0.0,19.4,51.8
B,0.0,49.5,59.3
B,43.8,55.3,49.2
B,53.4,44.9,45.7
B,46.2,29.6,41.6
B,33.3,21.4,45.8
B,0.0,19.5,51.5
C,0.0,48.3,59.3
C,0.0,77.2,62.1
C,47.5,81.5,53.5
C,49.6,62.4,48.5
C,40.6,53.0,48.8
C,0.0,47.4,59.0
D,23.5,68.8,55.0
D,20.8,69.5,55.6
D,24.0,70.4,55.3
D,25.8,69.9,54.8
E,28.5,50.3,50.7
E,27.5,51.5,51.9
E,29.5,52.9,51.6
E,31.8,52.1,50.9
```

Figure 5. Example of x, y, and z data printout.

Software

The diver had no difficulty using the xyz program once they became familiar with the cues and were able to make error corrections. They were also able to make comments to the file, but only at certain points in the routine. The program will be modified to accept comments at any point. The program will also be changed to eliminate the repetitive labelling of data. Mapping of circular objects was time consuming because the diver had to measure many points approximating a curve (e.g. a treenail). In future, the diver will record a center and a radius only, these data being picked up in the graphics program as a circle and plotted as such. There was more than enough memory in SUB-C-DAS, even wih only one extra memory module, to accommodate mapping data from at least several dives.

The data from the submersible computer could be printed or streamed to the microcomputer for manipulation within five minutes of the diver returning to the surface. The almost immediate data printout allowed the diver to make comments or edit effectively while the dive was still foremost in his mind.

Figure 5 is an example of the mapping data printout. Each line contains the x, y, and z data in centimeters (to one decimal place) for each measurement point. The different letter codes distinguish different elements within the grid. The graphics program connects the measurement points in the sequence in which they are entered and always plots the line between the last point and the first. The graphics could be displayed within 10 minutes of the end of the dive. Figures 6 to 9 show examples of the plots developed for three dives (about three hours downtime) in the grid, roughly the same effort expended in collecting mapping data in that part of the wreck during the original survey (Carter and Kenchington, 1986). Note that production of the original map, in addition to the diving time, required many more hours of interpretation, and the vertical axis was never displayed, whereas the

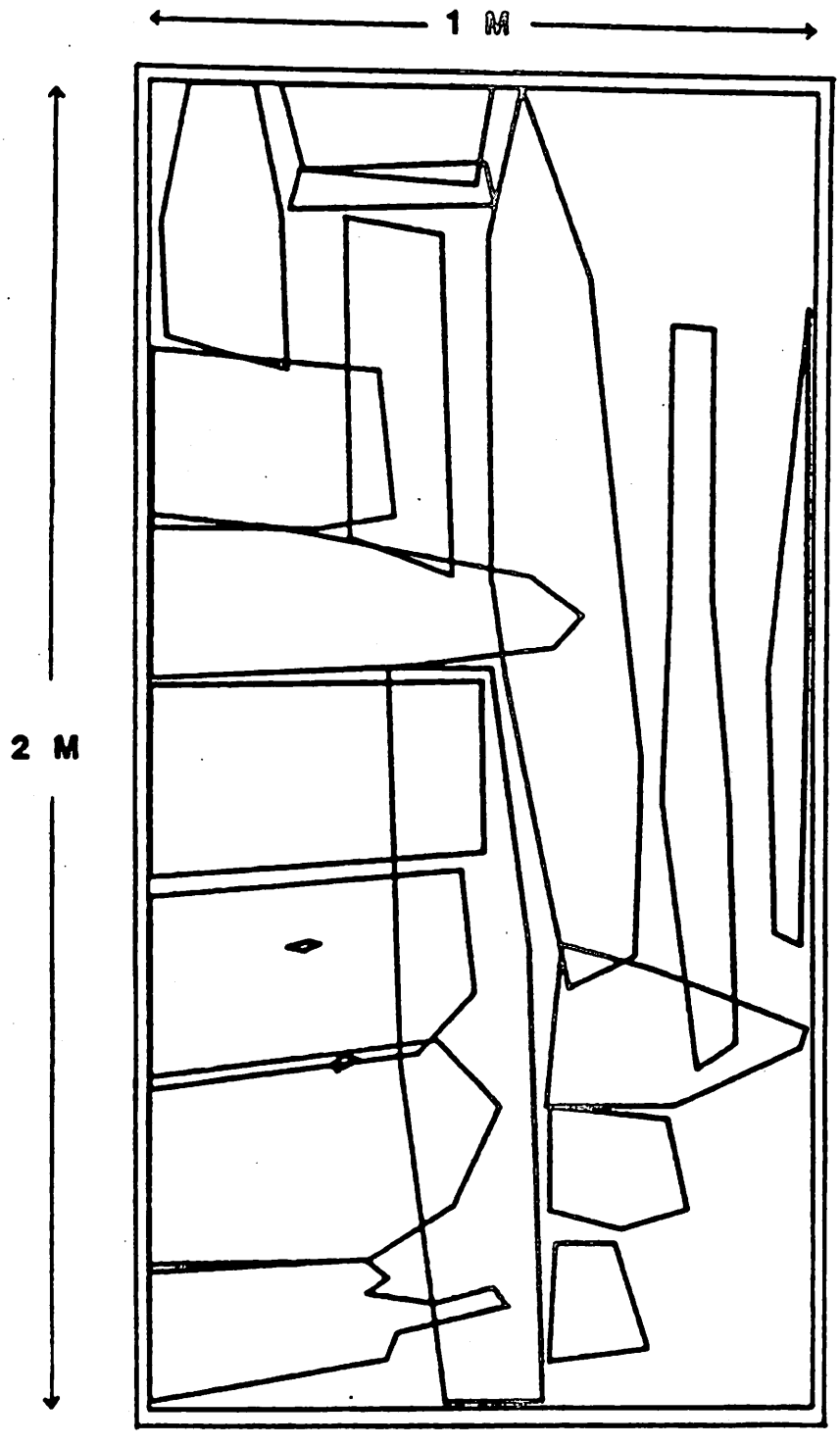
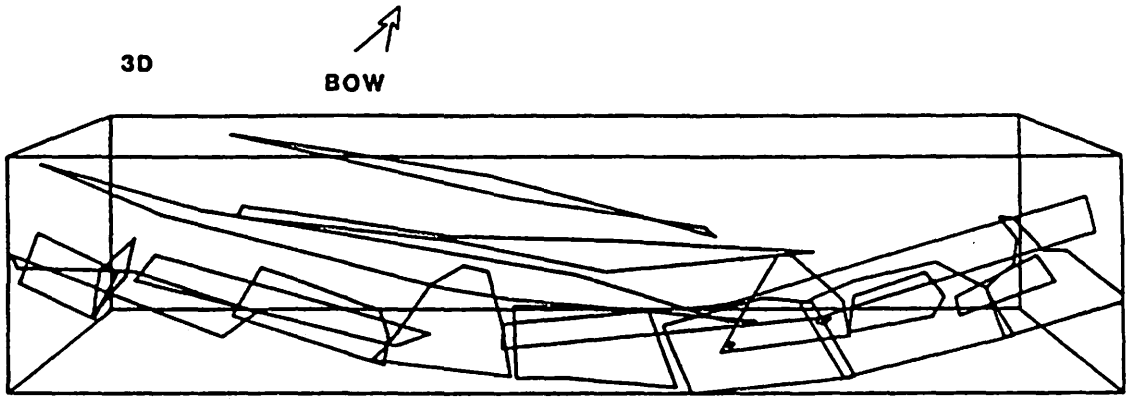


Figure 6. Plan view (2D) of the grid (data from 3 dives).

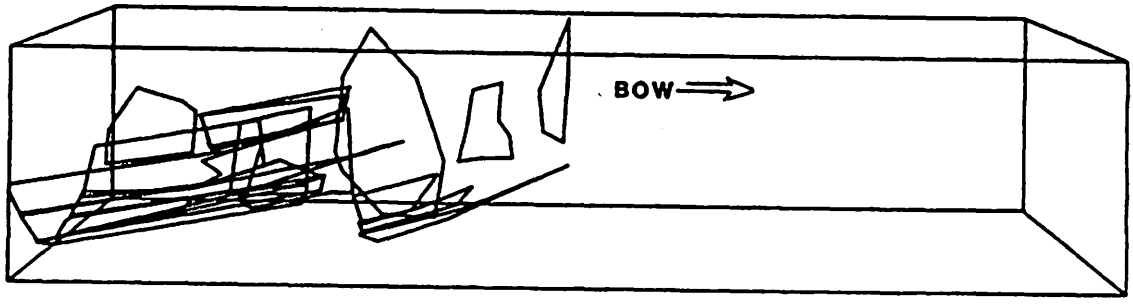


ROTATION - 180°

AZIMUTH - 0°

VIEWING DISTANCE - 5

Figure 7. 3D side view (looking towards bow) of the grid.



ROTATION - 270°

AZIMUTH - 0°

VIEWING DISTANCE - 5

Figure 8. 3D end view (looking towards decks) of the grid.

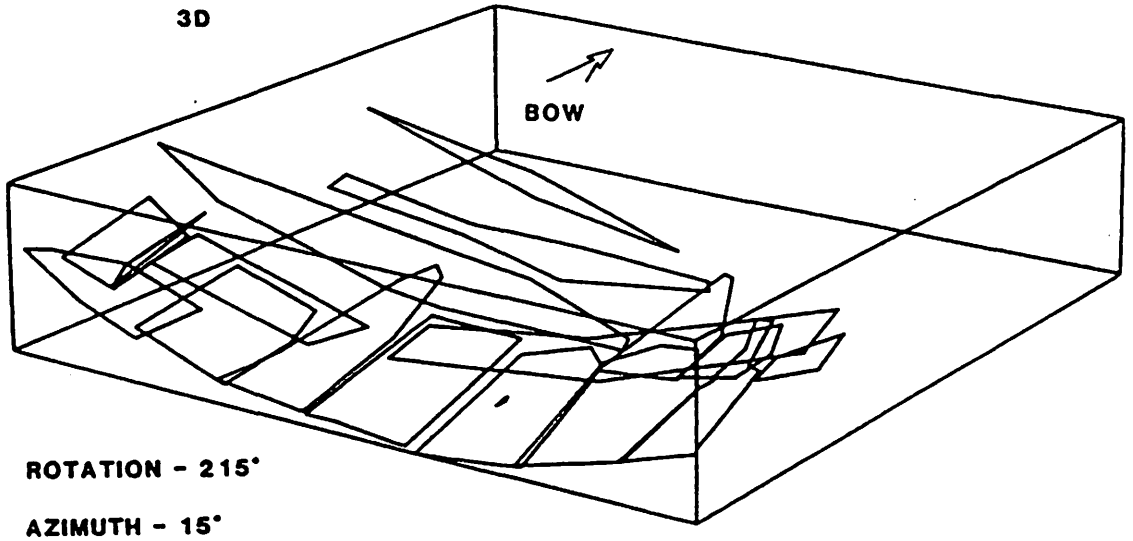


Figure 9. 3D oblique view (looking towards bow) of the grid.

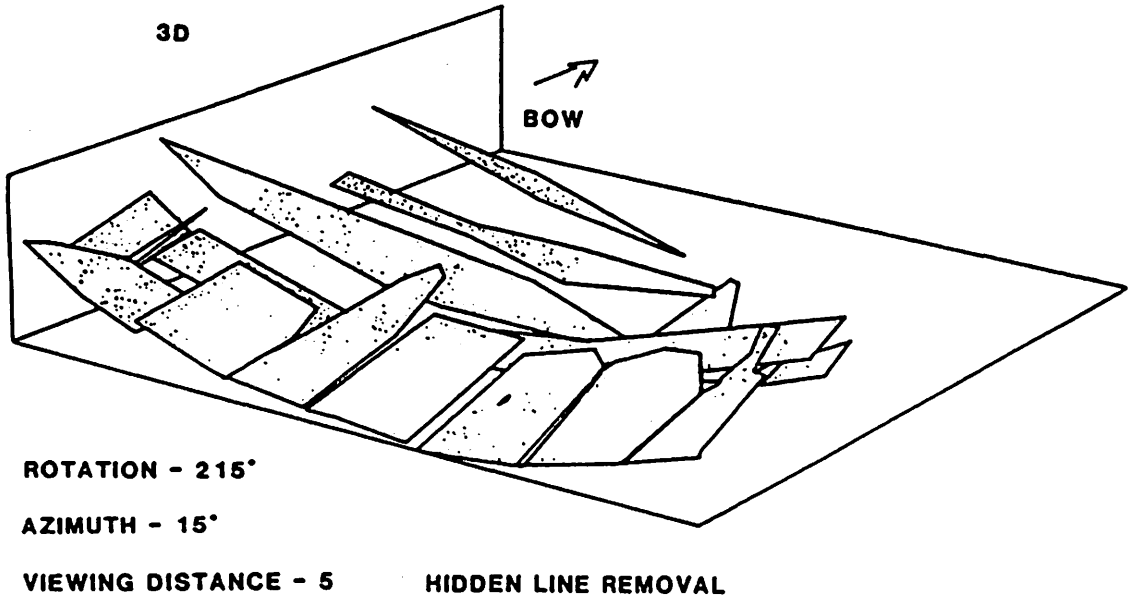


Figure 10. Same oblique view with hidden line removal.

computer plots were generated in seconds and could show three dimensions. Figures 6 to 9 do not have hidden lines removed. The software will be modified to include hidden line removal, an example of which is shown in Figure 10.

The plan view compares reasonably well with the original map, taking into account variation introduced by the measurement method and erosion and loss of some of the ship's structure in the intervening three year period (many small elements, such as treenails were not mapped in the SUB-C-DAS trials). The computer plot, of course, lacks the realism provided by photographic detail, which has been added to the original map. The 3D views are very useful in interpreting the ship's lines, which could not be shown with the original survey data. This is especially evident in the strong curvature of the hull near the bow. The interpretation is greatly improved by removing the hidden lines (Figure 10).

These plotting functions are available in the field. It should be possible to prepare composite maps on waterproof paper which the diver can then take down on subsequent dives. A color plotter can be used to enhance the interpretation of the data. Other developments which should improve site interpretation and make full use of the digital data include windowing (showing 2D and 3D plots simultaneously), animatd rotation (although this is dependent on more sophisticated hardware), and displaying of cutting planes (plotting z on x and z on y).

CONCLUSIONS

SUB-C-DAS has proved to be very useful in recording digital data. The computer is relatively easy to use and most divers can become proficient with it after a few dives. The recording of underwater archaeology data in computer format opens up a very wide range of graphic programs which can be

used in the field for maximum site interpretation. This is a significant improvement over conventional site recording, although standard methods such as photography will still be required in many cases. The "slow track" in underwater archaeology is still the requirement for the diver to make judgements about where to measure and to make those measurements. The measurement method itself warrants further attention.

ACKNOWLEDGEMENTS

SUB-C-DAS has been conceived and developed by Martec Limited. Financial assistance was provided by the Ocean Industry Development Office of the Department of Regional Industrial Expansion. The SUB-C-DAS housing and audio-LED board was constructed by Lobsiger Associates, Halifax and the fiber optic link was made by Focal Marine Limited, Bedford. We thank Dr. Alan McLean, President of Martec, for technical advice and Greg Nigh, Greg Cochkanoff, and Pat Young for assistance with diving and photography. Tanya Reynolds typed the manuscript.

The concept and technical aspects of SUB-C-DAS have been filed for patent in Canada and the United States.

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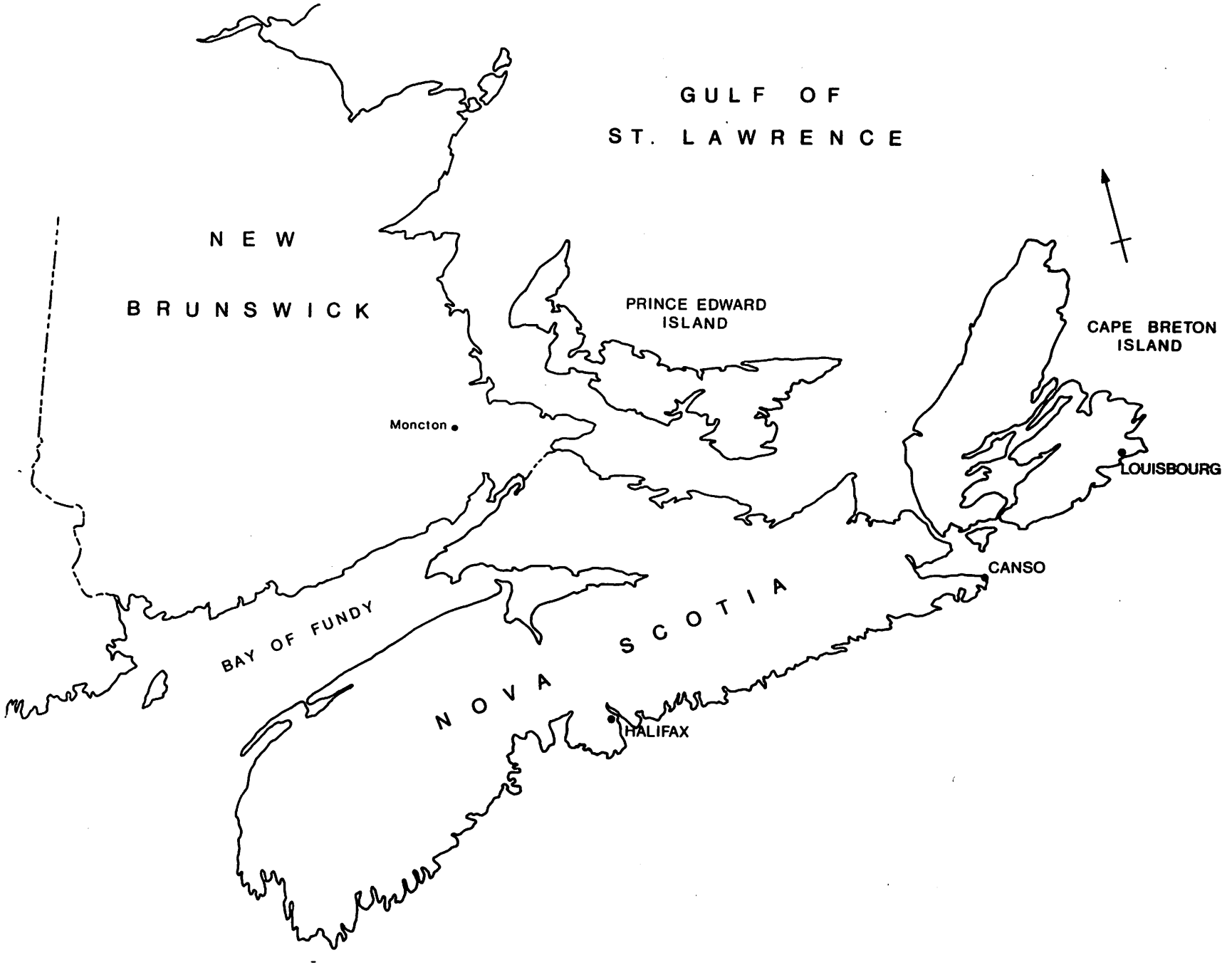

Figure 1. Locational Map of Canso. (Drawn by C. Piper)

CANSO ISLANDS MARINE ARCHAEOLOGICAL SURVEY (1985): A PRELIMINARY REPORT

R. James Ringer
Environment Canada - Parks
Marine Excavation Unit, Ottawa

During October 1985 the Marine Excavation Unit of Environment Canada - Parks, conducted a four week salvage excavation and underwater survey of the Canso Islands area of Nova Scotia. The impetus for this research was a request from Parks' Atlantic Regional Office to ascertain and assess the archaeological potential of the submerged cultural resources around the Canso Islands. Undertaking the project was a crew of five diving archaeologists, one diving conservator and two field laboratory personnel. The survey was carried out under a Heritage Research Permit (No. 1985 NS 11) issued by the Province of Nova Scotia.

From very early on Canso was a focus of European activity, principally fishing. A French presence has been noted as early as 1518 (Fournier 1973: 244) and the French and French Basques continued to exploit the region through the sixteenth and seventeenth centuries (Flemming 1977: 4-6). By the end of the seventeenth century, New England merchants and fishermen had begun to expand into the area (Flemming 1977: 6). This expansion resulted in the establishment of an English fishing community on Grassy Island in 1713 following the surrender of mainland Nova Scotia. The importance of the Canso Islands area lay in its closeness to the productive fishing banks and the subsequent export of dried cod to the lucrative markets of Spain, Portugual and the West Indies. It also offered protected anchorages and an abundant supply of wood for stages and flakes (Flemming 1977: 2)

The Canso Islands lie at the easternmost tip of mainland Nova Scotia at

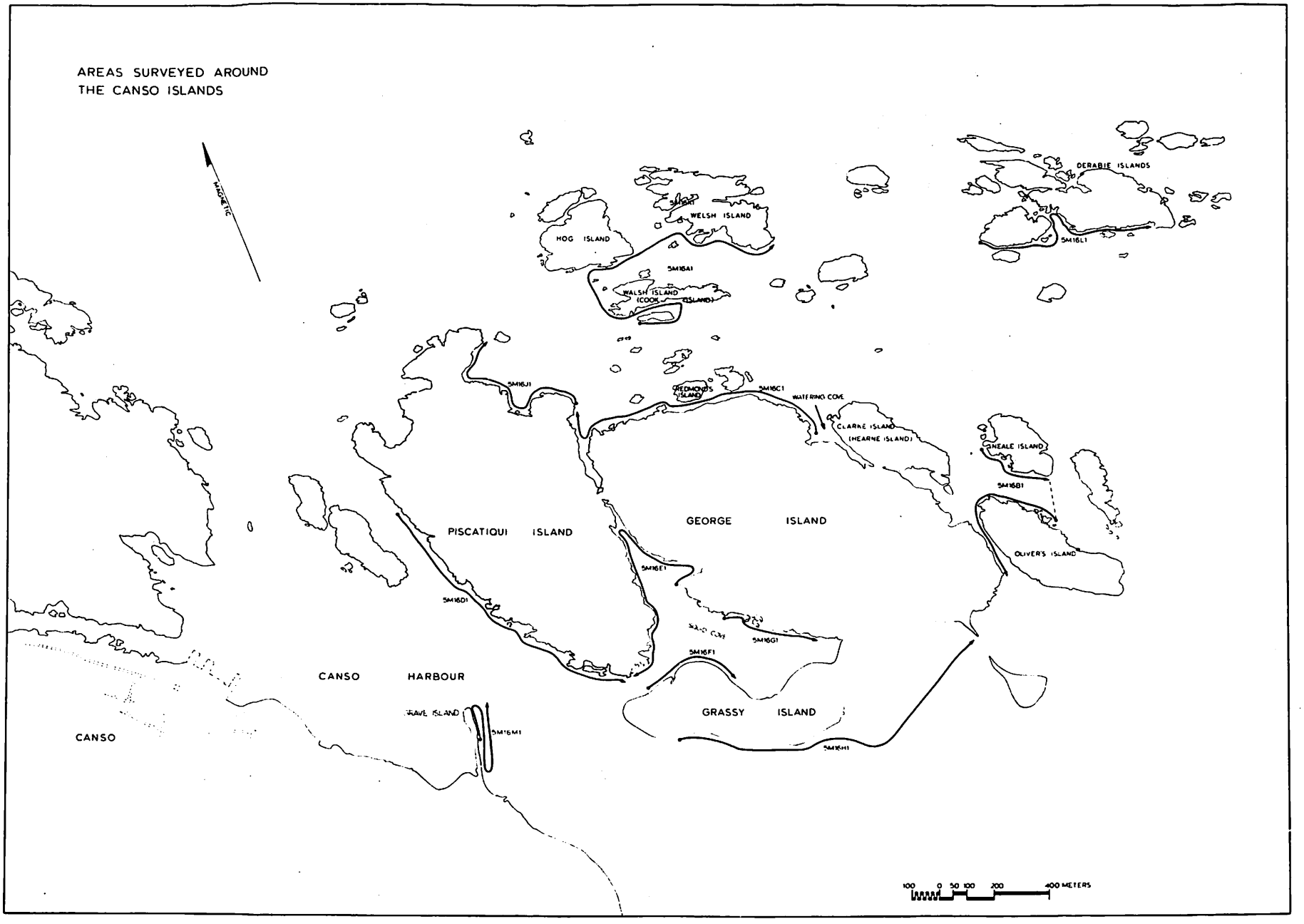

Figure 2. Map of the Canso Islands showing the areas covered during the free-swimming surveys. (Drawn by C. Piper)

the entrance to Chedabucto Bay (Fig. 1). The islands are composed of two large islands, George and Piscatiqui, plus numerous other smaller islands (Fig. 2). Some of the islands are as close as one kilometre to the mainland. The numerous islands provide a great many coves and protected areas for the mooring of ships. The waters around the islands, however, are extremely treacherous, being very shallow and abounding in reefs and shoals.

The historical importance of the Canso area has resulted in a number of field seasons of archaeological survey and excavation, both on the land and underwater. Land archaeology at Canso has been confined exclusively to Grassy Island. Surveys were conducted in 1975 (Snow 1975: 5-6) and 1978 (Ferguson 1980) that led to the full scale excavation of the eighteenth-century English settlement on Grassy Island in 1979 and 1981 (Ferguson et. al. 1981). No field research was undertaken on the other islands. In 1973 Parks Canada engaged in a short underwater survey of Canso harbour and, in 1984, a one day reconnaissance was conducted in preparation for the present survey.

The general objective of the 1985 survey was to survey and test excavate selected areas in the Canso Islands. Sites were selected on a priority basis. The highest priorities were assigned to Watering Cove and Squid Cove. Watering Cove, a small cove on the north side of George Island, is thought to have been the Admiral's cove, or the anchorage of the first ship to arrive (Ferguson, pers. comm.). During the brief reconnaissance in 1984, Watering Cove was found to be littered with broken ceramics, glass and pipe fragments. Squid Cove, on the south side of George Island, is partially bounded by Grassy Island. It was thought that the near-shore areas off Grassy Island would contain an abundance of refuse from the eighteenth-century English establishment. Besides the normal refuse found on land sites, it was hoped that different sorts of material, such as small boats and wharf structures, might be found underwater. In addition, a 1742 map of Canso (Public Records

Office, London: MR 1983 (2), 1127) accurately shows the locations of warehouses, buildings and wharves on Grassy Island and other parts of Squid Cove. This information provided reasonably precise locations for test excavation. Survey work in Squid Cove would also provide the opportunity to support and augment the data from the Grassy Island excavations.

Lower priorities were given to other areas in the Canso Islands group. These included sections of shoreline both inside Canso Harbour and around the outer islands. These places were selected primarily on the basis of information from historical maps that indicate the locations of buildings and stages.

To carry out the survey, a number of techniques were employed. The extensive lengths of shoreline were generally surveyed by free-swimming searches using two to three divers. These searches were conducted very close to the shore and did not normally extend below the 10 metre contour. Coupled with the free-swimming searches was the surface collection of artifacts. Surface collection of a more controlled manner was practiced in Watering Cove. In selected areas of Squid Cove and Watering Cove controlled test excavation was also undertaken.

Watering Cove

Watering Cove, a small narrow cove approximately 200 metres long and 25 metres wide, lies between George and Clarke Islands (Fig. 2). The cove is only about three metres deep. The rocky sides of the cove slope steeply down to a relatively flat bottom. The bottom topography is variable. Some areas show only small angular rocks while in some places the rocks were covered with a fine silt and, in still other areas, the silt supported a thick growth of eel grass. As mentioned above, the bottom of the cove was littered with

Figure 3. Divers surface collecting artifacts in Watering Cove. (Photo by D. Page)

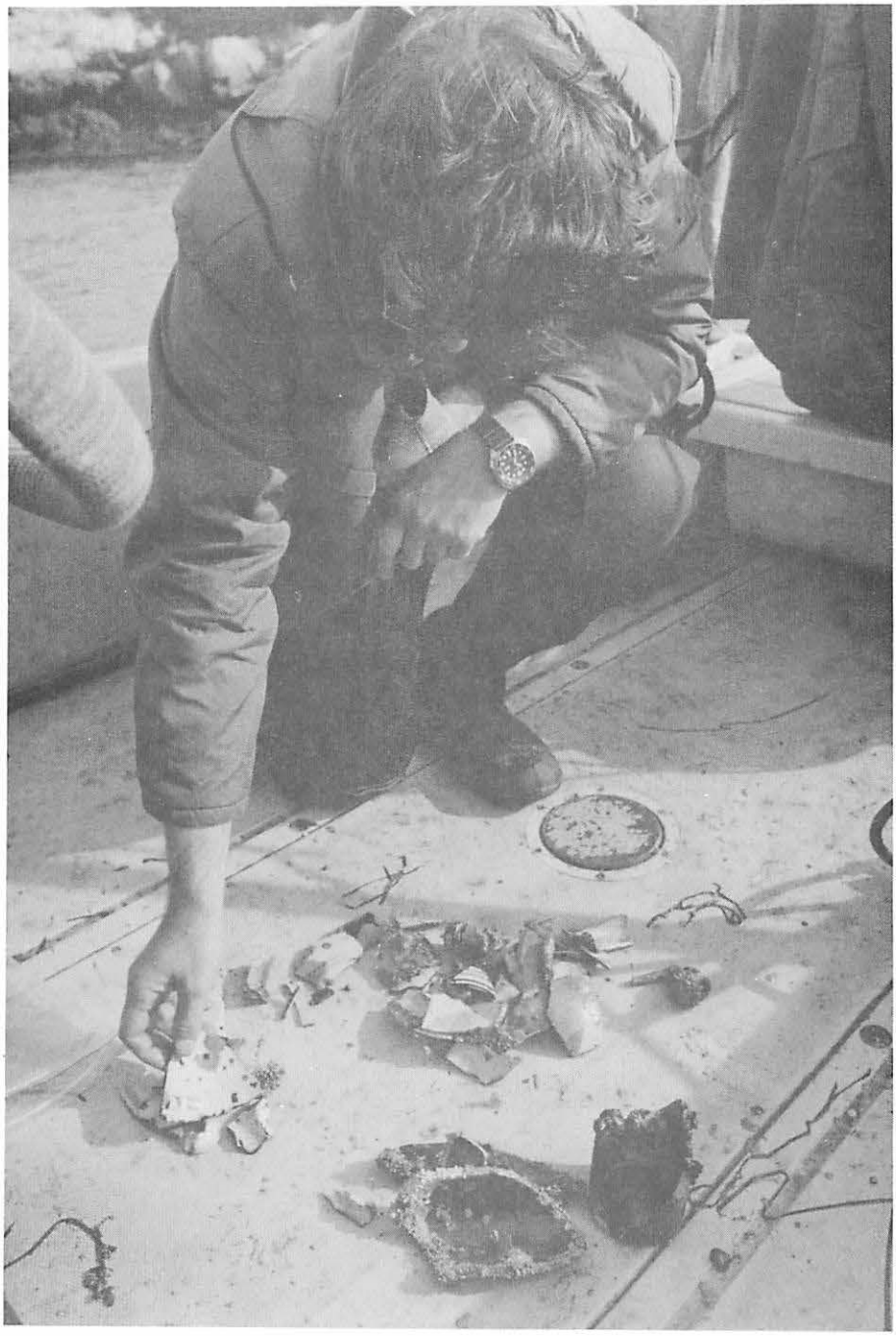

Figure 4. Preliminary sorting of artifacts prior to cataloguing. (Photo by D. Page)

artifacts. Because of the exposed nature of this material it was decided to retrieve as much as possible.

To facilitate the collection of artifacts, a one hundred metre base line was run approximately down the centre of the cove. The material was then collected within five-meter-by-five meter grid units set off from the base line (Fig. 3). The test excavations were also conducted inside the grid units. Due to time constraints, the surface collecting within the cove was not entirely completed. It has been estimated, though, that 90 per cent of the surface material was recovered.

Over 3700 artifacts were retrieved from both the surface collecting and test excavations in Watering Cove (Fig. 4). Most of these came from the surface collection. Ceramic sherds predominated, comprising 80 per cent of the total. Lesser percentages of glass (12 per cent) and clay pipe fragments (6 per cent) were also recovered, with the rest of the collection made up of miscellaneous objects. The bulk of the ceramic material seemed to be nineteenth-century earthenwares. These included white earthenwares, creamware and pearlware with a variety of decoration (e.g. banded, sponged, undecorated, painted, transfer print and shell edge). Other earthenware sherds included red, buff and yellow fabrics treated with a number of different glazes. Some red coarse earthenware was also recovered. Nineteenth-century stonewares were fairly common. Found were brown, red and white stonewares along with a few examples of coarse red stoneware and salt-glazed stoneware. Porcelains were only found in minute quantities. Positively identified eighteenth-century ceramic sherds were rare. Recovered examples consisted of two coarse earthenware pieces, two Rhenish stoneware fragments, two English mottled brown stoneware sherds and a piece of French Normandy stoneware. It should be emphasized here that the artifacts have not undergone formal analysis and that the artifact descriptions are based on observations made during the

cataloguing process in the field.

The next most numerous class of artifacts from Watering Cove was glass. Again, most of the pieces appeared to date to the nineteenth century with some twentieth-century material as well. Dark green wine and case bottle fragments were common. The other glass ran a spectrum through colourless, pale green, blue-green, and amber to blue, and encompassed a variety of forms including medicine bottles, liquor bottles, soft drink bottles and jars. The glass collection was made up mostly of fragments although a few complete and near complete bottles were recovered. Most of the fragments seem to be from containers although some pieces of clear glass may be window glass. Two of the examples from the collection have been tentatively dated to the eighteenth century. One appears to be a fragment of blue-green French glass, while the other is a stemware fragment.

White clay pipe fragments represent the next most frequent artifact class. Although only given a preliminary analysis, the identifiable specimens appear to date almost totally to the nineteenth century. As well, all seem to be of English manufacture. Only one example has been positively dated to the eighteenth century.

The rest of the Watering Cove collection consisted of a few miscellaneous artifacts. Recovered items included a number of red brick fragments, a few pieces of coal, leather pieces, five wooden pulley sheaves, two gunflints, two wood or bone cutlery handles, plus a few pieces of metal and unidentified objects.

Faunal remains consisted of a few cod fish vertebrae, five unidentified mammalian teeth, two other bones and a shell sample.

Besides the surface collecting, three one-metre-by-one-metre test excavations were conducted to sample the sub-surface deposits in Watering Cove. Two of these were located near the centre line of the cove while the

Figure 5. Brick and stone feature in Watering Cove. (Photo by D. Page)

other was positioned near the eastern edge of the cove. A further one-metre-by-two-metre trench was excavated into a mound feature near the end of the cove. In the two one-metre-by-one-metre units near the centre of the cove, excavation was carried down to a depth of approximately one metre. This was beyond the cultural deposits in both cases. One of the units was totally devoid of artifacts while the other produced a small quantity of artifacts, most of these coming from just below the sea bed. None of the recovered artifacts could be dated to earlier than the nineteenth century. At approximately 30 centimetres below the surface in both units a concentration of cod fish bone appeared. These were not as densely packed as those found in other maritime sites (Cumbaa 1979; Cumbaa 1981) but the deposit seems extensive and likely result from a commercial cod-splitting operation. As no artifacts were found directly associated with the fish bones, it is impossible to date the deposit with any certainty.

The test excavation near the edge of the cove was decided upon because of a concentration of bricks noticed on the surface. Because the unit was near the edge, excavation could only be taken down to a maximum of 30 centimetres before tightly packed rock was reached. Resting on top of these rocks were numerous bricks and brick fragments (Fig. 5). No pattern to the bricks was obvious and they seem to represent the remains of a collapsed structure near the edge of the cove. Again, artifacts were not plentiful and were mostly concentrated just below the sea bed. Nothing could be dated to the eighteenth century or earlier. Also, traces of the fish bone deposit were noted in this unit.

A large silt-covered mound situated near the end of the cove was thought to be possibly concealing the remains of a wharf structure. A trench excavated into the mound revealed a matrix of sand and gravel with no structural components. The mound is apparently a natural formation.

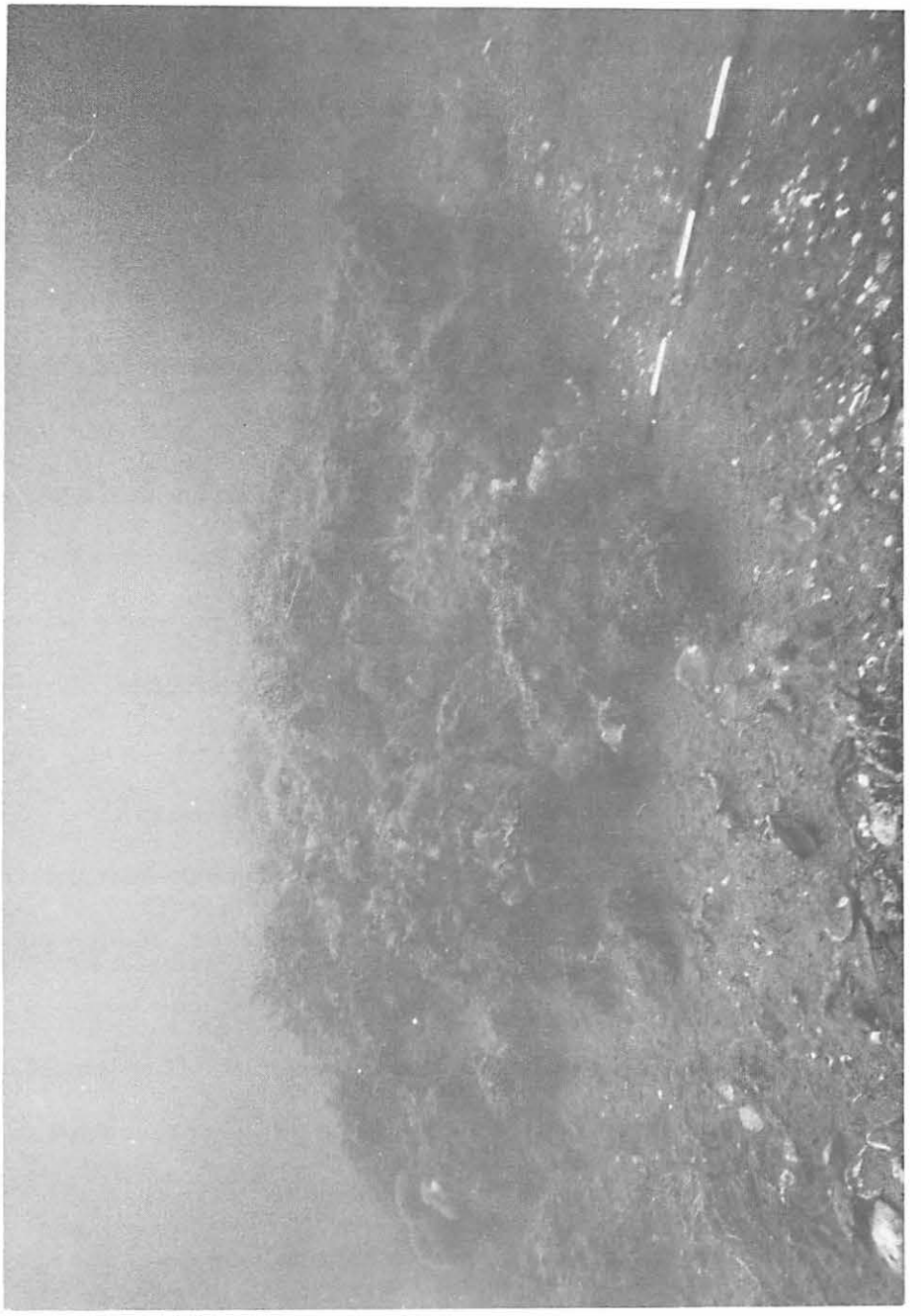

Figure 6. Possible stone ballast from a wharf structure in Watering Cove (scale divisions=10 cm.). (Photo by D. Page)

Interestingly though, a partially complete leather shoe was found at the base of the excavation. This represented the only artifact recovery from the excavation.

Three stone structures, likely the remains of wharves, were located in the cove. The features, piles of large stones, were situated near the edges of the cove. Two were found side by side at the end of the cove while the other was near the entrance. The stone piles seem to be the remains of stone ballast placed inside wooden crib works to support the decking of the wharves (Fig. 6). Similar wharf construction is still used today in the maritimes. The one at the farthest end of the cove had a small amount of badly deteriorated wood still associated with it. It is difficult to determine the age of these features as no artifacts were found in association with them. Local informants recall that there were wharves in the cove within living memory and these may well be the remnants of those structures.

Looking at the artifact distribution, the overwhelming majority of artifacts recovered were nineteenth-century English ceramics distributed evenly over the bottom of the cove. Only a few eighteenth-century English and French artifacts were found. Although the sample of eighteenth-century material was small, most of the items were located near the mouth of the cove. The sub-surface sampling shows that the bulk of the artifacts were predominantly on or near the surface. Complete or nearly complete objects were rare. Local information has revealed that Watering Cove has been frequented by divers and that the cove has often been visited by scallop draggers. These activities have no doubt significantly altered the original composition and distribution of the artifacts.

The artifact material almost certainly represents the intentional discard of broken or useless items rather than loss. Moreover, the discard seems to have come primariy from land rather than ships. Some of the material may have

indeed been discarded from ships anchored in the cove, but this is difficult to establish. Even the artifacts which are generally considered to be nautical, for example, pulley sheaves and a copper spike, could just as easily have been used on land. The sheer volume of nineteenth-century material suggests that Watering Cove was a locus of nineteenth-century permanent or, at least, semi-permanent habitation. This is borne out by historical studies that indicate Watering Cove became the site of fishing establishments during the nineteenth century (Flemming: 71).

Outer Islands Area

Besides the intensive survey in Watering Cove, other areas in the vicinity of the outer islands were also investigated. Survey here took the form of free-swimming surveys along the shoreline, coupled with the surface collection of artifacts (Fig. 2).

One of these areas surveyed was the north shores of George and Piscatiqui Islands. The shoreline surveyed extended from the mouth of Watering Cove to Lewis Point on the north tip of Piscatiqui Island (Fig. 2). The bottom topography was varied, consisting of bare bedrock, sand and gravel, fine silt, and silt with eel grass. The area was selected because historical maps from 1718 (PAC, National Map Collection, H2/240) 1735 (PAC, National Map Collection, V1/240) and ca. 1800 (PANS, RG20, Ser. "C", Sec. 8, Vol . 87, No. 224) indicate buildings, wharves and fishing lots along this shore.

A total of 21 artifacts was collected during the survey of this area. Half of these were ceramic sherds while the rest were glass and pipe fragments. All of the artifacts seem to date to the nineteenth century except for one possible eighteenth century ceramic fragment. Most of the artifacts came from a large artifact concentration similar in size and composition to

that in Watering Cove. This concentration was located between Redmond's Island and George Island. The entire concentration was not collected due to a lack of sufficient time and because of its similarity to the Watering Cove collection. Rather, the site was selectively sampled for artifacts that appeared different from those already collected. Like Watering Cove, this area seems to be another focal point of nineteenth-century habitation. No wharf structures or other features were seen along this shoreline.

Another area surveyed was the southern shorelines of Welsh Island, Walsh Island and Hog Island (Fig. 2). This small group of islands is situated just to the north of George Island. The sea bottom topography encompassed all the variability noted for the north shores of George and Piscatiqui Islands. Selection of this area was based on the locations of buildings and stages marked on the 1718 and 1735 historical maps.

Artifact returns were meager along the shore, consisting only of a few glass and ceramic fragments. None of these could be dated earlier than nineteenth century. Wharf structures or other remains could not be located. The survey of a narrow cove on Welsh Island, however, revealed another artifact concentration. Although smaller in size than the Watering Cove concentration, the composition appeared similar. Again, only selective collection of a few glass and ceramic fragments was undertaken. The artifacts suggest another area of nineteenth-century occupation.

The southeast part of George Island along with Neale and Oliver's Islands appear, on the eighteenth-century maps, to have been a popular area for stages and fishermen's huts. Free-swimming surveys were conducted along the western side of Neale Island, around the northern end of Oliver's Island through the passage between Oliver's and George Islands (Fig. 2). Artifacts were rare with nothing definitively from the eighteenth century. Furthermore, the survey produced no evidence of wharf or stage structure.

The last area in the outer islands to be surveyed were the Derabies Islands (Fig. 2). On the historical maps consulted, they are either not shown or poorly drawn so that it is difficult to determine if they were used by fishermen. They were chosen for surveys as they are the farthest out (and presumably closer to the fishing grounds) and they do offer some protected areas for vessels. The survey team looked at the southern side of the islands. The bottom topography consisted of steeply sloping rocky shoreline levelling off to a rocky bottom with some areas of sand and gravel. Artifacts were practically nonexistent, with only one ceramic fragment recovered.

Inner Harbour Area

In addition to the outer islands area, selected locations within Canso Harbour were also surveyed. The methodology was the same as for the outer islands, consisting of free-swimming searches and surface collection.

The west side of Piscatiqui Island was of particular interest (Fig. 2). Historical maps from 1742 (PRO, London, MR 1783 (2), 1127) and 1781 (PAC, National Map Collection, 240) shows this shoreline as a favoured place for fishing lots, buildings and stages during the eighteenth century. The survey covered the shoreline down to the entrance to Squid Cove. No features and few artifacts characterized this area. Recovered artifacts consisted almost entirely of ceramic and glass fragments predominantly from the nineteenth century. A single sherd of Rhenish stoneware represented the only eighteenth-century artifact.

Searches were also undertaken along the southern edge of Grassy Island and across the bay in front of the beach joining Grassy and George Islands (Fig. 2). Because of the considerable erosion along the southern shoreline of Grassy Island (Ferguson 1980: 3) it was thought that artifacts could have been

deposited in the sea along this area. The bay was surveyed because historical maps indicate it was an anchorage. In both areas, archaeological evidence proved to be entirely absent.

The last inner harbour location searched was the area around Grave Island (Fig. 2). Believed to have been used since the eighteenth century, Grave Island was a small island near the centre of Canso Harbour. Recently it has become the terminal end of a breakwater running out from the mainland. A brief underwater search along the east side of the breakwater failed to locate any historical features or artifacts, other than some very recent material. The construction of the breakwater has probably obscured any historically significant evidence.

Squid Cove

A significant amount of the total survey time was spent in Squid Cove, a shallow cove bounded by Piscatiqui, George and Grassy Islands (Fig. 2). This cove received emphasis principally because of the eighteenth-century English settlement on Grassy Island and the recent Parks Canada excavation of this settlement. Accordingly, much of the survey work centred on parts of the cove adjacent to Grassy Island. Besides the settlement on Grassy Island, historical maps indicate that the rest of the cove seems to have been popular for fishermen and other inhabitants. These areas were surveyed as well.

Extensive silt deposits, supporting eel grass, characterize the general bottom topography of the cove. Near shore, though, especially along Grassy Island, open areas of sand and gravel exist. It was in these areas that work was concentrated.

The survey methodology included free-swimming shoreline searches coupled with surface collection, and a series of one-metre-by-two-metre test

excavation trenches in selected areas. The free-swimming searches focussed on the north end of the cove, the southern shore of George Island, and along the north shore of Grassy Island. Test excavations were conducted on two suspected wharf locations off Grassy Island.

The surface surveys along George Island and around the north end of the cove produced only five ceramic, glass and pipe fragments, none datable to the eighteenth century. The search along Grassy Island was comparatively more productive, with 38 artifacts being found. These included ceramic, glass and pipe fragments plus one gunflint. Two pieces, a Rhenish stoneware sherd and a glass fragment, appear to date from the eighteenth century.

One series of test excavations focussed on the area in front of the property of Edward How, a prominent eighteenth-century merchant during the English occupation. On the 1742 map his buildings are clearly shown along with a substantial wharf structure. The location of this wharf corresponds well to an underwater sandbar jutting out from Grassy Island. This underwater feature is clearly visible in aerial photography and was detected underwater during the brief survey in 1984. The mound, it was thought, concealed the remains of the eighteenth-century wharf. A series of three one-metre-by-two-metre trenches transecting this mound hoped to encounter evidence of the wharf and other eighteenth-century material.

The test excavations proved disappointing. Although the excavations were carried down to a depth of over a metre no evidence of wharf structure was uncovered. Excavations also produced few artifacts. Two of the trenches were devoid of artifacts while the third yielded a glass fragment, a leather shoe sole and a wooden cask stave. It seems now that the sandbar, rather than being a culturally derived formation, may be only a natural depositional feature.

The other area tested was the shoreline in front of Trevet's property,

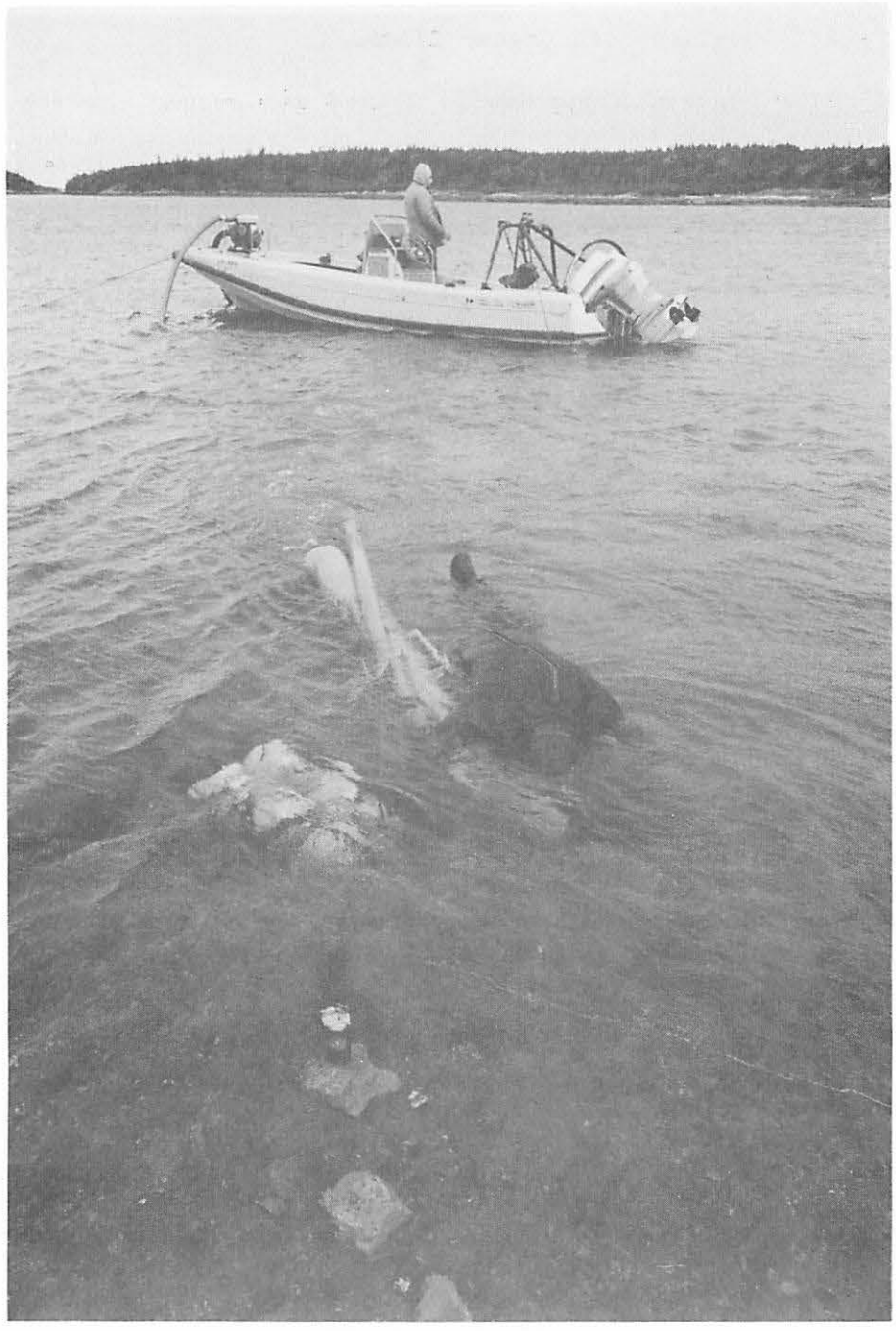

Figure 7. Diver excavating a test trench off Grassy Island. (Photo by D. Page)

Figure 8. Notched log found off Grassy Island (scale division=10 cm). (Photo by D. Page).

owned by another eighteenth-century Grassy Island inhabitant (Fig. 7). His buildings and wharf structures are clearly indicated on the 1742 map. The test location was positioned in front of a line of large stones on the beach in the area of Trevet's property. It seemed possible that the stones formed part of the original wharf. Excavation consisted of three contiguous one-metre-by-two-metre trenches running parallel to the shoreline in less than a meter of water.

In the first trench, excavation revealed a long notched log just below the surface and positioned perpendicular to the shoreline (Fig. 8). The log, cut with an axe at both ends, had an overall length of 2.33 metres and varied between 15 and 20 centimetres in diameter. Two shallow saddle notches, one near the middle and one at one end, had been cut into the log. No evidence of fastenings, either in the notches or elsewhere on the log, could be detected. Further excavation to either side and beyond the ends failed to uncover any associated structure. In the absence of further structure it is difficult to determine if this is indeed the remnant of a wharf. Placing it in a temporal frame has not been possible either.

Of the artifacts found nearby only two stoneware sherds could be dated to the eighteenth century. The rest of the artifacts from this area included two other ceramic pieces, three glass fragments, three pipe fragments, two pieces of leather, and a piece of rope. Three mammal teeth and a possible claw comprised the faunal collection. It is hoped that more intensive artifact analysis may clarify the dating of the log feature.

Discussion

In reviewing the results of the Canso Islands survey, a number of provisional statements can be made concerning the evidence provided by the

artifact collection, features and faunal remains. The artifact collection demonstrates an overwhelming majority of ceramic material with glass and pipe fragments being second and third respectively. Within the ceramics, nineteenth-century material of English manufacture predominates. The same can probably be said for the glass and pipes. Definitive eighteenth-century artifacts were few with identifiable eighteenth-century French artifacts being rare. Material earlier than the eighteenth century has not been identified.

The large concentration of artifacts in Watering Cove, around Redmond's Island and in the cove on Welsh Island seem to document a population move to the outer island areas in the nineteenth century. Grassy Island appears to have been abandoned sometime during the latter part of the eighteenth century (Ferguson 1980: 2) and this would seem to be reflected in the lack of substantial concentrations of nineteenth-century material. However, even less eighteenth-century material was found. This may, in fact, be a result of eighteenth-century disposal practices on Grassy Island.

The 1742 plan of Canso and the results of the land survey (Fig. 4 in Ferguson 1980: 11) show that most of the habitations on Grassy Island were located back from the shoreline. This, in itself, would have been a significant barrier to the discard of material into the water. Possibly working as well was the British colonial practice of refuse disposal near the doorways of habitations. This has been described by Stanley South as the Brunswick Pattern of refuse disposal (South 1977: 48). This distance of habitations from the water and customary disposal practice may have combined to cause a lack of refuse in the underwater areas off Grassy Island.

This lack of eighteenth-century material is also evident in other areas of the Canso Islands. Contrary to Grassy Island which had a strong military and commercial orientation, these other areas were used almost exclusively by fishermen. These fishing establishments seem to have been constructed closer

to the shore so it could be that the fishermen had a more impoverished material culture and hence, less material to discard. Some support for this contention can be found in the test excavation of a seventeenth-century fishing station in Maine. Here, other than an abundance of tobacco pipes, little in the way of material remains was recovered (Faulkner 1986: 76).

The nineteenth-century artifact concentrations may reflect different disposal practices. The shoreline of the outer islands area is generally rocky and, unlike Grassy Island, without beaches. Inhabitants could build structures very near the edge of the shore. The evidence of bricks along the underwater edge of Watering Cove tends to support this idea. In such a situation it would be far more convenient to deposit refuse into the water rather than in a midden on land.

No evidence of definite eighteenth-century wharves or stages was found. In the case of fisherman's stages this was not surprising. They seem to have been crude and temporary structures (Denys 1908: 278-288) that did not employ ballast (Faulkner 1985: 64). In addition, the stages were not owned and were generally rebuilt and reused each season on a first-come basis (Faulkner 1985: 62). On the other hand, it was thought the wharves associated with the settlement on Grassy Island would have been constructed in a more permanent and durable manner. Perhaps, though, the seasonal occupation by many of the inhabitants (Ferguson 1982: 5) and the constant threat of French raids discouraged the construction of substantial and permanent wharves. The wharf ballast piles found in Watering Cove likely belong to the nineteenth or twentieth century.

The fish bone layer found in Watering Cove likely represents the refuse from a dry cod fishery. Given the natural protection and strategic location of the cove, it has probably been utilized throughout all the periods of the

dry cod fishery at Canso. Surprisingly, a similar deposit was not found in Squid Cove. Evidence of extensive flakes for drying the cod exists on Grassy Island (Ferguson 1980: 5). The possibility that the primary processing was done outside the cove, perhaps on the trip back from the fishing banks, must be considered. Alternatively, the evidence may not have survived archaeologically or was beyond the areas of test excavation.

As most of the planned salvage work and survey was completed, future underwater archaeological activity at Canso is uncertain at this point. Although nineteenth-century material is well represented, eighteenth-century artifacts are not abundant and earlier material is, to date, non-existent. Other material such as small boats and wharf structures proved elusive. This may be a reflection of poor organic preservation in the relatively warm waters around Canso. It can be hoped that more detailed artifact analysis and distributional studies may provide new directions for future research at Canso.

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