ARCHAEOLOGICAL INVESTIGATIONS AT BATOCHO NATIONAL HISTORIC PARK: 1976 SEASON
by Paul Donahue
1977

A PRELIMINARY ANALYSIS OF HISTORIC SETTLEMENT PATTERNS AT BATOCHO NATIONAL HISTORIC PARK, SASKATCHEWAN
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Abstract

Archaeological operations at Batoche National Historic Park, Saskatchewan, focal point of the 1885 North-West Insurrection, began in July 1976. Initial goals consisted of researching settlement patterns throughout the prehistoric and historic period, assessing the presumed archaeological distinctiveness of a Métis community, and discovering socioeconomic differences within the village. A preliminary inventory of the archaeological resources was accomplished through surface surveys and limited testing of prehistoric and historic sites. Emphasis was on determining the location and size of historic structures and obtaining representative artifact samples. During the winter a computerized system for recording, processing and analyzing site data was developed, and information pertinent to understanding the historic settlement pattern at Batoche was gathered.
The Batoche Archaeological Project would not have been realized in its present fashion if not for John Combes, Chief of Archaeological Research, Prairie Region, who through his constant support and encouragement provided the proper milieu. He, in turn, was consistently supported by G.M. Davison, Assistant Director of Programming and Development. Fritz Pannekoek, Chief of Historic Research, often acted the role of devil's advocate. Although his prodding sometimes hurt, it was always helpful. Diane Payment, Project Historian, frequently made unpublished information available. During the field season, Mabel Simpson (Area Superintendent for Saskatchewan North), Ed Bruce and Emile Parenteau of Batoche, gave greatly of their time. Jason Henderson, George Millar, Jim Rodgers, Steve Deering and Isabel Bender all contributed more toward the development of a workable computer operation than may yet be realized. Their joint efforts were well appreciated. Finally, I wish to extend my appreciation to Sydney Smailes, assistant project director during the 1976 field season, Kate Connolly, field assistant; the crew people of the Batoche area who so enthusiastically took to archaeology, and to Neal Putt and Valerie Hall, who taught me more than a few things.
Introduction

Batoche National Historic Park lies within the forest/grassland transition zone of central Saskatchewan (Fig. 1). Vegetation was once dominated by timber stands of trembling aspen, balsam poplar and white birch interspersed with patches of prairie and meadow (Redman and Ripley 1976). Mule deer, red deer, white-tailed deer, pronghorn antelope and bison were among the larger mammals once common to the area. Bison were virtually extinct by the late 1880s (Roe 1970: map).

Circa 1765, the Batoche area was intermittently occupied by Assiniboine and Cree who traded their furs to York Factory (Ray 1974: Fig. 9, 17; Jenness 1932; Meyer 1977). As the fur trade expanded inland numerous fur trading posts were established along the Saskatchewan rivers. In 1751, the first Fort à la Corne was built downstream from the forks of the North and South Saskatchewan rivers (Ray 1974: Fig. 18). Hudson House, built in 1779 on the North Saskatchewan, was the first Hudson's Bay Company post in the parkland. The North West Company constructed South Branch Houses I and II on the South Saskatchewan in 1786 and 1804, respectively. The South Branch Houses were no longer used in 1810, when the North West Company founded the first Fort Carlton (Fig. 2) (Smythe 1968).

Métis from Red River and White Horse Plain began moving into the South Saskatchewan River area in the 1860s (Payment 1976: 6). The South Saskatchewan Métis population was further augmented following the 1869 Red River rebellion. Métis were probably attracted to the area by the presence of bison, the opportunity to haul freight along the Carlton Trail and the
presence of other Métis. The Carlton Trail, which linked Fort Garry with Fort Edmonton, existed by 1865 (Figs. 2, 3, 4). The settlement of Batoche began to develop in 1872 when Xavier Letendre (Batoche) established a general store and permanent ferry, the latter connecting the Carlton Trail across the South Saskatchewan River. The St. Antoine de Padoue mission originated in 1881 although the rectory and church were not erected until 1883 and 1884. They are situated on an upper terrace southeast of the Batoche community nucleus (Payment 1976: 15) (Figure 3).

In 1885 (Fig. 5), Batoche was home to about 250 people who were mainly involved in freighting and trapping. Land claims and numerous other social and economic problems became sources of contention against the Conservative government of John A. MacDonald. The Métis people turned to Louis Riel to act as their spokesman. However, little progress was made in this regard thus resulting in the Northwest Insurrection. In March of 1885, about 7,200 Canadian Militia and North West Mounted Police were called to quell the uprising of approximately 500 Métis. General Middleton arrived at Batoche on May 7th with some 700 Canadian Forces troops. He constructed a defensive encampment (zareba) on the upper terrace southeast of the mission and laid seige to the village. The Métis, led by Gabriel Dumont, fought from several hundred strategically located rifle pits. By May 12th, however, Batoche was taken. Three days later Riel surrendered.

The village commercial centre remained viable for a few years. Batoche's store, the last of the 1885 buildings, was razed by fire in 1921. Batoche was declared a National Historic Site in 1925 at which time a cairn and plaque were erected. It became a National Historic Park in 1962 and as of 1976 some 13 square kilometers came under the supervision of Parks Canada.
Objectives
Four preliminary objectives governed operations at Batoche. These included studying the history of human occupation, determining reasons for changes in settlement patterns, attempting to archaeologically assess the possible distinctiveness of a Métis village, and determining the degree of socioeconomic differentiation within Métis society at Batoche ca. 1885.

To understand settlement pattern and economic changes at Batoche, causal factors coupled with precise control of the distribution and function of all sites within the park must be considered. For example, it may be recognized that the viability of Batoche declined coincidental with shifts in the transportation network.

Attempts to assess the archaeological distinctiveness of Batoche Métis should prove difficult. Métis view themselves as distinct from Euro-Canadians and Indians and this may be manifest in their manner of interaction with the cultural and natural environment. The question of distinctiveness can be pursued through analysis of Métis material culture remains (its form, function and spatial relationships) which, when compared with other Métis and non-Métis sites, may indicate statistically valid correlations.

The extent to which socioeconomic differentiation occurred at Batoche during selected historic periods is a question that cannot be answered by archaeological remains alone. Consequently, historical data on the income, social standing and occupation of families must be researched. If, for example, historical records indicated that a family ranked high on the socioeconomic ladder, archaeologists could ascertain what remains reflect that data. Extrapolations to other sites could then be made and tested.
The data required to pursue these ideas are pertinent to responsible park planning, development and interpretation. For example, the exact location and nature of standing and subsurface structures, wells, trails, rifle pits, privies, garbage pits, etc., must be determined to conceptualize what Batoche was like during selected periods.

Method
The 1976 field season was seven weeks long. In that time, twelve people conducted an archaeological survey of 13 square kilometers (five square miles) by walking transects to and from the river within the park boundaries. Dense vegetation growth and litter accumulation in poplar stands on the largely uncultivated section west of the river hindered effective surveying and resulted in recording only the more obvious features such as rifle pits.

Prehistoric and historic sites which were subsequently located underwent test excavation following the survey. As many historic structures as possible were identified and isolated. Information about local construction techniques and the spatial relationships of buildings was obtained by undertaking a brief survey of standing historic buildings in the Batoche area.

During the following winter, Valerie Hall and Neil Pult worked on the Batoche Project as research assistants. Hall was given responsibility for all historic artifacts. This necessitated researching the literature, determining significant artifact attributes and assisting in developing a system for the computerized processing of artifacts. Given the time frame no analysis or completed artifact inventory was expected.
Her background work, however, was a necessary prelude to future material culture analysis. This included the definition of terms and the establishment of a reference collection. Hall's paper (Hall n.d.) outlines the basis for future analyses of historic artifacts at Batoche and, as well, provides specific data on the 1976 type collection.

Putt was responsible for a preliminary historic settlement pattern analysis of Batoche. This consisted of collecting archaeological and historical information on trails, building locations and functions, property ownership, etc. and then relating the data to natural and socioeconomic variables such as vegetation, soil and fauna distributions, and changing transportation networks (road, highway, railroad). Putt's report (this volume) also looks at the distribution and characteristics of Métis and Canadian military features within the park perimeters.

The present report assesses the prehistoric data and describes the historic structural remains. The former consist of a brief sketch of the prehistory of the South Saskatchewan parkland followed by a consideration of the prehistoric data recovered in 1976. A brief discussion of the lithics is presented. This analysis, however, was limited by the lack of a sufficiently representative sample. Preceding the description and assessment of the historic structures is a brief description of area structures. Some 30 historic archaeological sites are briefly considered; accompanying figures indicate their locations.

Data control, especially at historic sites with a high frequency of artifacts, is one of an archaeologist's more crucial tasks. Hence, a great amount of time and effort was concentrated on the development of a computerized system for
recording, processing and analyzing artifacts and proveniences. Minimum requirements were that data be rapidly and consistently input by nonarchaeologists in a field situation, and that output could be both statistically analysed and printer-plotter mapped. A preliminary paper (Donahue and Hall 1977) indicating objectives and needs was submitted to the Computer Services Division of I.A.N.D. The result was a testable system developed for the 1977 field season.
Prehistory at Batoche

The Saskatchewan Valley parkland was intermittently occupied from about 8500 B.C. (see Reeves 1970; Adams 1976; Wormington and Forbis 1965; Meyer 1977). Following Reeves (1970), as discussed in Adams (1976: 12-13), four prehistoric occupation periods probably occurred at Batoche.

The earliest, the Northern Plains Early Prehistoric period (ca. 10,000-5,000 B.C.), was characterized by fluted and non-fluted bifaces or "spear-points" such as Clovis, Folsom, Agate Basin, Cody, Eden-Scottsbluff, Lusk and Frederick (see Wormington and Forbis 1965). From the Early Middle Prehistoric (ca. 5500-1000 B.C.) to the Late Prehistoric (ca. A.D. 200-700 to A.D. 1725) Northern Plains prehistory was sequentially evidenced by Mummy Cave, Oxbow, Mckean-Duncan-Hanna, Pelican Lake, Besant and the late side-notched point complexes or phases (see Willey and Phillips 1958 for definitions). Oxbow complex points and associated unifaces, bifaces, bone tools and perforators first occurred about 3500 B.C. and became widely distributed across the grassland of Manitoba, Saskatchewan and Alberta (Wettlaufer 1960). Aspects of the Mckean complex (Mckean-Duncan-Hanna), recently dated to between 3500 B.C. and A.D. 1000 (Haug 1976), were frequently associated with Oxbow sites (Sym's 1970). Elements of the Mckean complex included ovoid choppers and knives, scrapers, spokeshaves and retouched flakes, food grinding implements, gaming pieces, cordage, netting and basketry (Ives n.d.). The best known Mckean complex sites were from the plains, but sites also occurred in the southern boreal forest of Manitoba, Saskatchewan

Characteristic of the early Late Middle Prehistoric period (ca. 1000 B.C.-A.D. 200-700) were Pelican Lake phase assemblages and the later, possibly unrelated, Besant phase sites, first dated ca. A.D. 1. Besant phase sites did not occur after ca. A.D. 750-800. Occasional instances of Besant-like points have been found near Fort McMurray (Syncrude 1974-2) and on the Birch Mountains in Alberta (Donahue 1976), however Besant sites were most common on the plains (Meyer 1977: 92).

Ceramics, usually associated with plains Algonkian speakers, first appeared on the plains during the Avonlea phase. This early side-notched point phase, dated ca. A.D. 200-800, is known for marking the presumed appearance of the bow and arrow. The Avonlea and Besant phases overlap however no direct evidence exists for ceramics being manufactured at Besant phase sites (Byrne 1973: 446-449). Ceramics were frequently recovered as far north as Southern Indian Lake in Manitoba and the Churchill drainage in Saskatchewan (Meyer and Smailes 1975); nevertheless, only small sherds were found at Black Lake, Saskatchewan (Minni 1975) and at Lac La Biche and Calling Lake in Alberta (Donahue 1976). The Old Women's phase (Forbis 1962) characterized by Prairie Side-notched (ca. A.D. 1000-1300) projectile points succeeded the Avonlea phase. Small side-notched and triangular point forms continued into the historic period.

1976 Sample
Sixty-nine prehistoric sites were isolated at Batoche (Table 1, Fig 6). Most occurred in sparsely vegetated areas, a distri-
Table 1. Prehistoric sites, artifacts and lithic material types recorded in 1976.

<table>
<thead>
<tr>
<th>SITE</th>
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<th>Qq</th>
<th>C</th>
<th>M</th>
<th>Q</th>
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<th>Q</th>
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</table>

| TOTAL  | 10 | 4  | 5  | 10 | 6 | 8  | 3  | 4  | 5  | 2  | 626 | 142 |

| Percent | 1.23 | .52 | 7.09 | 1.09 | 74.09 | 14.18 | .55 | .64 | .27 |
bution pattern that reflected the lack of testing in heavily vegetated areas. An Eden-Scottsbluff point dated ca. 5500 B.C. was the earliest known artifact from Batoche. Artifacts recovered by survey included an Oxbow point base (22N1), a Hanna point (65N1) and a late Plains Side-notched point (41N1), three Late Plains triangular specimens (25N1, 37N1, 52N1), an unidentifiable biface fragment (79N1A)(See Fig. 7) and two unifacially retouched fragments (29N1, 79N1H). Large, predominantly unifacially retouched tools were recovered at sites 51N1, 56N1, and 74N1. Bipolar fragments came from sites 30N2, 59N1 and 79N1A. An obvious quartzite hammerstone (67N1B) was also recorded.

A total of 1100 lithic artifacts were recovered by survey and excavation (Table 1). Only 4.1 percent were worked or finished items. The majority were core remnants or non-retouched flakes. Lithic materials were assigned to four categories: chert, quartzite, quartz and miscellaneous. Quartzite was the predominant material type and chert was a distant second (Table 2). The only "exotic" material was a flake of Knife River flint.

Table 2. Artifact Lithic Material Type by Frequency and Percent.

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
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<tr>
<td>Miscellaneous</td>
<td>12</td>
<td>1.09</td>
</tr>
<tr>
<td>Quartz</td>
<td>61</td>
<td>5.55</td>
</tr>
<tr>
<td>Quartzite</td>
<td>833</td>
<td>75.72</td>
</tr>
<tr>
<td>Chert</td>
<td>194</td>
<td>17.64</td>
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<td></td>
<td>1100</td>
<td>100.00</td>
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</table>
To test the association between artifact types and lithic material used, the null hypothesis, material type is independent of artifact type, was formulated and Chi-square tests applied to the data. Observed frequencies appear in Table 3. Expected frequencies (Table 4) were derived by multiplying material type percentages and observed artifact type frequencies. Given the range of artifact type frequencies (3 to 815) a high number of low expected frequencies was obtained (Table 4). This indicated that subsequent results needed to be interpreted with caution since they did not fit the Chi-square distribution. Bearing this in mind, the Chi-square figures at three degrees of freedom were presented in Table 4.

Table 3. Observed Frequencies by Artifact Type and Lithic Material.

<table>
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<tr>
<th></th>
<th>Metamorphic</th>
<th>Quartz</th>
<th>Quartzite</th>
<th>Chert</th>
<th>Total</th>
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<tr>
<td>Bifaces</td>
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<td>0</td>
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<td>4</td>
<td>14</td>
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<td>0</td>
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<td>5</td>
<td>9</td>
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<tr>
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<td>8</td>
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<tr>
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<td>61</td>
<td>833</td>
<td>194</td>
<td>1100</td>
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Table 4. Expected frequencies by artifact type and lithic material with associated chi-square values.

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<th>Observed Frequency ( )</th>
<th>M</th>
<th>Q</th>
<th>Qz</th>
<th>C</th>
<th>Total</th>
<th>(X^2) Value</th>
<th>Level of Significance at 3 d.f.</th>
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<td>.77</td>
<td>10.60</td>
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<td>13.99</td>
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<td>not sig.</td>
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<td>.50</td>
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<td>1.59</td>
<td>9.01</td>
<td>8.77</td>
<td>sig. at 5% level</td>
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<tr>
<td>Core Remnants (78)</td>
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<td>59.06</td>
<td>13.76</td>
<td>78.00</td>
<td>10.77</td>
<td>sig. at 1% level</td>
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<td>Retouched flakes (12)</td>
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<td>.67</td>
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<td>2.12</td>
<td>12.01</td>
<td>67.54</td>
<td>sig. at .1% level</td>
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<tr>
<td>Thinning flakes (815)</td>
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<td>45.23</td>
<td>617.12</td>
<td>143.77</td>
<td>815.00</td>
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<td>Shatter flakes (156)</td>
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<td>118.12</td>
<td>27.52</td>
<td>156.00</td>
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<td>Bipolar Cores (6)</td>
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<td>.33</td>
<td>4.54</td>
<td>1.06</td>
<td>6.00</td>
<td>17.81</td>
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<tr>
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<td>1.24</td>
<td>7.01</td>
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<td>832.92</td>
<td>194.06</td>
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M = Metamorphic        Q = Quartz        Qz = Quartzite       C = Chert
From an inspection of Table 4 it appears that selectivity in artifact manufacture and sampling bias may have been present. The Chi-square value for bipolar cores was significant because of the higher than expected observed frequency of chert and low observed frequency of quartzite. The bipolar core distribution may be accounted for by the observation that local cherts were smaller than quartzites and the bipolar technique was best for working small lithic nodules. The high observed frequency of quartz core remnants was skewed because of the low percentage of quartz and the fact that some 'cores' may have been naturally fractured. Hammerstones and miscellaneous artifacts (two questionable chi-thos and an unidentifiable piece of slate) appeared skewed because of the high observed frequency of miscellaneous lithic material.

Summary
A long but sparsely represented prehistoric occupation was evidenced at Batoche. The absence of certain period sites (for example, Pelican Lake and Besant) was likely due to sampling since they occur elsewhere in the parkland ecozone (see Meyer 1977). No ground stone was recorded although its absence is not disturbing since it is a frequent constituent of other plains or boreal forest prehistoric assemblages (Kehoe 1973; Meyer and Smailes 1975). The lack of ceramics was striking since Batoche falls within the known distribution area. Once again, an inadequate area sample was the most likely explanation. The Knife River flint artifact (30N1) was probably the result of trade.

Systematic sampling in future field seasons should produce a more valid data set and provide the basis for extrapolating probabilistic and testable statements regarding land use patterns at Batoche.
Historic Sites at Batoche

Batoche Métis concentrated their commercial structures along the Carlton Trail on both sides of the South Saskatchewan river (Fig. 3). An economically viable freighting and trading community existed on the west side of the river in the early 1870s. East side buildings were built on the lower terrace beginning in 1873.

Historic structures and features were tested and mapped such that a long range research strategy could be developed. Excavation was minimal and normally consisted of short shovel-shaved trenches perpendicular to each wall of a structure. Corners were interpolated and small squares excavated to verify their locations. Longer test trenches were excavated in areas where surface remains were not evident. Some 30 major structures were recorded in this manner. Historical sources, however, indicate that this is an incomplete representation.

The following are descriptive sketches of structures and features that were test excavated in 1976. Test excavation was intentionally limited and the recovered data are not considered definitive. More complete excavation on selected structures is planned for the future.

Historic Sites Survey and Excavation East of the South Saskatchewan River
Batoche's Store (21N1)
Batoche's store, built in 1873, was the easternmost known
structure in the commercial area on the lower terrace (Fig. 3, 8). The Branconnier family owned the building until 1921 when it was destroyed by fire. Based on historic photographs, the main structure (Fig. 9, 10) was approximately 6.8 to 7.2 m wide and 9.8 m long. Remaining surface features consist of a cut fieldstone and mortar foundation surrounding a cellar depression. West of this foundation is a raised earthen rectangle; to the east of this is a second sizeable depression (Fig. 9). Testing was directed at determining the maximum extent of the main building and ancillary structures.

The main structure foundation (Fig. 9) was of limestone blocks and fieldstones cemented by mortar. Walls, four to five courses high, were from 30 to 50 cm thick and 40 to 50 cm high. Larger blocks of stone were 10 to 20 cm x 40 cm x 40 cm. The north, west and south walls were approximately 30 cm wide and the east wall was 50 cm wide. The outside foundation measurements were 9.8 x 4.3 m.

Test excavation of the west edge of the rectangular raised earthen dirt/clay area revealed tentative evidence for foundation remains. This structure would have measured approximately 3.5 x 8.5 (Fig. 9).

Along the south perimeter an irregular line of fieldstones occurred at the same height as the lower course of the main foundation. The southwest corner was marked by a change in direction of the fieldstones. Testing in the area of the northwest corner uncovered two timbers 15 to 20 cm wide and 10 to 15 cm thick. These logs abutted rather than overlapped in a half joint. Wood remains seemed to be imbedded in clay and further secured by a small number of stones (circa 18 cm in diameter). The clay layer was overlain by rubble/fill.
The irregular depression east of the main foundation measured approximately 9.5 x 5 m. A possible entryway extension was noted in the east central depression edge. A rubble/black soil interface marked the outline of the depression. Structural corners, however, were not found. A masonry remnant (approximately 50 x 130 x 15 cm) was present toward the northeast edge of the depression. Along the south lip occurred a line of smaller but carefully arranged stones which extended eastward to a point approximately 85 cm from the southeast main foundation corner. Slightly to the east, red brick fragments were recovered.

Branconnier's Ice House (21N2)
Immediately west of Batoche's store (Fig. 8) was a rectangular limestone/fieldstone and mortar foundation. Primarily below surface, it measured roughly 7.9 x 3.53 m and was 2 m deep. A 90 cm wide by 2 m high entryway occurred in the south wall (Fig. 11). Leading down to this entryway was an incline along the sides of which were slightly raised earthen areas. Extensive testing of this feature failed to reveal the remains of an associated structure. As shown in Figure 5, in 1885 a log structure did exist in approximately the same location. Possible evidence for this building was an east-west oriented sill (?) log found below a clay deposit near the north wall of the stone foundation.

The mortar foundation was later identified as an ice house associated with Branconnier's business. The ice house had a pitched roof but lacked wooden walls. It may be the structure depicted to the left of the store in Figure 10. Comparisons of the just mentioned photographs indicate that the log structure was located further south than the later ice house.
Boyer's Store (21N3)
Evidence for two separate but contiguous structures with internal cellars was found west of the ice house (Fig. 8). The easternmost building measured approximately 7 x 9.5 m while the other was 8 x 7 m. Long axes were north/south. The west unit appeared to lie about 2 m further south. Foundation remains consisted of unpeeled logs resting on the A horizon and organic soil outlines. Plaster, mud, straw and rubble were found on either side of the log wall and allowed for easy delineation of the structures in certain areas. No evidence for a stone and mortar foundation was located although large flat fieldstone corner supports were present. The presence of red brick in the east structure was considered indicative of a possible chimney.

These structural remains are best related to the third structure from the right in Figure 5. A difficulty with this interpretation, however, is the seemingly apparent offset of the west unit 2 m further south than the east unit. In Figure 5, the south walls are on the same axis. In 1885 these buildings belonged to Jean Boyer who operated a store on the first floor and resided on the upper level (Payment n.d.: 118).

Fisher's Store (21N4)
Evidence for the westernmost structure on the Carlton trail (Figs. 5, 8) consists of a large, deep cellar and distinct corner remnants of log/bark fragments and dark soil outlined by plaster deposits. The 10 to 15 cm wide corner (?) logs did not abut and stone footings were not present. The west wall and corners were somewhat indistinct and arbitrarily
delineated. The building was oriented on a north/south axis and was estimated to measure 9 x 6.3 m. Densely packed clay was recorded beneath an approximately 20 cm thick sand/plaster matrix.

The structural remains seem indicative of the furthest west weatherboarded building in Figure 5. Absence of a stone and mortar foundation or footing stones suggest that sill logs were laid directly on the A horizon. The presence of a few red bricks probably reflects a chimney. This structure has since been identified as G. Fisher Jr's store built in 1883 (Payment n.d.: 119).

Clay Pads (21N5)
The presence of a structure between the icehouse and Boyer's store is questionable although four clay pads ranging in size from 25 x 20 cm to about 1.5 m in diameter and 5 cm thick were found within the A horizon. Postholes were associated with the southeast, southwest and northwest clay deposits. The southeast deposit had red brick fragments mixed with brick and wood remains from a nearby location. In the southwest "corner" a 10 cm deep posthole, wood, charcoal and red brick fragments were associated with the 0.5 m diameter x 12 cm thick clay deposit. The northwest "corner" was evidenced by a 20 m by 25 cm clay square with a central 7 to 10 cm diameter soft depression. The largest (1.5 m diameter x 5 cm thick) clay deposit occurred in the northeast "corner", however, no posthole was associated. A sketch map of the "corner" locations would indicate a badly skewed structure should such an interpretation prove to be the case.
Residence (21N7)
Situated approximately 70 m west-northwest of Fisher's store were four 1 to 2 m diameter depressions, and a 2.3 x 2.7 m concrete pad (Figs. 8, 12). The latter was made of fairly uniform fine gravel with 3 to 4 cm diameter pebble inclusions. Toward the southern edge of this pad were embedded 20 cm diameter rocks. Oriented roughly east to west and continuous to the north edge of the concrete pad was a single course fieldstone foundation remnant measuring approximately 4.5 m long. The southeast corner was fairly distinct and extended 2.25 m beyond the east edge of the concrete pad. Sporadic indications of a single course stone foundation oriented north to south were excavated and further delineated by probing. However, a clearcut northeast corner was not located. Similarly the southwest and northwest corners were not discernible. Depending on the perimeters of the west wall, the structure would measure 4.85 m north/south and 5 to 8.4 m east/west not including the concrete pad. One depression falls within the structure and probably represents a cellar. Depending on the west wall location, a second depression may occur within the building limits. According to various local residents, this building was fairly substantial in size and was occupied as recently as 46 years ago by a brother of the Branconnier who later owned Batoche's store.

Depressions (21N8)
Situated south of the above mentioned residence (21N7) were two depressions, the larger of which was approximately 4 m in diameter and 60 cm deep (Fig. 8). Approximately 15 m north-northwest, a smaller depression was located. It measured 1.5
m in diameter and 1 m deep. Tests of the larger depression yielded cultural material to a depth of 50 cm below the surface. No artifacts were associated with the smaller feature. The function these depression served has not been identified.

Batoche's House (21N9)
Surface remains of this structure consist of two contiguous cut limestone and mortar foundations four to five courses high and oriented north-northwest (Figs. 13, 14, 15). Both enclosed deep cellar depressions. The larger foundation was 9 m long and 7.5 m wide while the smaller one was 3.6 x 4.5 m. A double wall connected the two foundations. Immediately below the surface, approximately 1.15 m east of the east wall of the larger foundation, six fieldstones spaced 1 to 1.8 m apart were found. Midway along this wall and extending roughly 3 m out from it was a 1.5 m wide concentration of plaster and rubble. Wood fragments recovered from this feature were painted turquoise while a number of plaster fragments had been painted red. Tests along the west wall of the north foundation isolated several wooden logs lying under rubble and on the buried A horizon. Northwest of the structure, a deep culturally sterile depression (21N9J) was recorded.

This foundation represents the remains of Batoche's house, a structure built in 1878 (Figs. 14, 16, 17). According to Batoche, it

....was 42 x 30 feet, 2 storeys, well finished, all painted inside and outside - The House was partly plastered and partly ceiled. [sic] ... It was built of logs and well set on stone foundation 4 feet deep and 22 inches wide and outside weather boarded.... In my house I had 6 rooms upstairs... (as cited in Payment n.d.: 13-14).
Batoche sold his house to the North West Mounted Police in 1895 (Payment n.d.: 93). The building was dismantled in 1917 (Payment n.d.: 108).

Unidentified Structure (21N10)
Approximately 72 m southeast of Batoche's house occurred a rectangular raised earthen outline (Fig. 13). The northwest and northeast corners of this 5.8 x 10 m structure were identified by the raised earth outline, the presence of large wood sections, probable corner stones and cultural materials. The southeast corner was not well identified and the southwest corner determination was questionable. Two cellars occurred within the outline. Little is known regarding this structure although it is evident in a 1949 air photograph.

Carriere Structure (21N11)
The below surface remains of a structure were 10 m northwest of Batoche's house (Fig. 13). Evidence for the building consists of a single course stone foundation associated with a disturbed matrix of plaster/mortar rubble in ashy soil. The 7.1 x 4.6 m walls were less than clear in the preliminary excavation. A cellar depression occurs within the building outline. These remains represent the near backbuildings in Figure 16. In 1885, it had been occupied by the Carriere brothers (Payment n.d.: Fig. 20). In form, it consisted of two buildings adjoined by a shed.
Trash Deposit (21N12)
Fifteen metres southeast of the Carrière building occurred a pronounced depression (Fig. 16). Structural features were absent. The presence of numerous and varied artifacts indicate a trash deposit.

Unidentified Depressions (21N13)
Two 1 m depressions 5 m apart and 37.5 southeast of the above mentioned trash deposit were tested (Fig. 13). One depression was sterile while the other yielded a small number of artifacts and wood remains.

Unidentified Structure (21N14)
In a scrub bush and grassy area on the lower terrace edge in lot 48 occurred two deep depressions spaced approximately 13 m apart (Fig. 3). The larger depression is 3 m in diameter with the other being 2.3 m in diameter. Tests in this area uncovered two non-parallel linear arrangements of isolated field stones. A 5 m fieldstone alignment is east of the smaller depression while a 2.1 m long feature is east of the larger depression. North of the smaller depression were wood remains 2.5 m in length. No structural remnants were recorded where a south wall was expected to occur.

Figure 18 shows two structures south of Batoche's house in the approximate location of this site. Present evidence suggests that one 5 m x 11 m structure enclosed a depression although the skewed foundation (?) stones and lack of a south wall cast doubt upon this "best guess". The Charles Thomas' homestead was in this approximate location in 1885 (Payment n.d.: 34).
Champagne House (21N15)
On a rounded ridge above the alluvial terrace on the west end of lot 43 occurred three depressions (Fig. 3). Two fell within the remains of a 4.75 m x 6.25 m structure. The third was 15 m to the north. The former structure was evidenced by two cellars (?), fieldstone corner supports, scattered wall fieldstones and a large wood fragment or log with a spike through it. The deeper and wider depression inside the structure occurred south of the smaller one. A test in the deep, isolated depression provided minimal cultural data. According to a local resident, Emile Parenteau, a two-storey high T-shaped house belonging to the Champagne family once existed there.

Unidentified Structure (21N16)
At the west end of lot 44, above the alluvial terrace and 120 m south of 21N15, were found a number of depressions and culturally disturbed deposits (Fig. 3). One depression was considered by E. Parenteau to have represented the second two-storey Champagne house. Test excavations uncovered evidence for a 7.4 x 8.25 m structure with an internal cellar. Foundation remains consisted of fieldstone corner supports, fieldstone and red brick wall alignments associated with internal wood sill (?) logs, and plaster remnants.

Church/Rectory Area
Eighteen test trenches of 35 cm x 6 to 40 m were excavated in the church/rectory area (Fig. 3). Some were randomly placed to locate unrecorded structures while others were oriented
to intersect an historic stable northwest of the rectory (Payment 1976). Only one post hole was recorded in the stable area. Evidence for a rectory annex consists of a few foundation stones. North of the rectory, a well was partially exposed. It is known to postdate 1885. A trench between the southwest corner of the church and the southeast rectory corner uncovered a small square posthole 10 cm below the surface. Root, stem and bulb remains from a series of annual plants were also found 15 to 30 cm below the surface. Planted 15 cm apart, they ran from a point 2.5 m from the church corner and extended 20.8 m toward the rectory.

A concentration of artifacts and construction debris was found in a ploughed field west of the church/rectory complex. These, most probably, are evidence for the No. 1 school at Batoche, a structure dated to circa 1900 (Payment 1976: 61-63). No timbers or foundation remnants were isolated in the test excavation.

Albert Caron Complex (21N17, 21N18)
Southeast of the church/rectory area and in the immediate vicinity of Middleton's earthworks was evidence for numerous structures and features (Fig. 3). Foremost of these was the still standing Albert Caron house (21N18A)(Fig. 19), purportedly erected after 1885. The original house (21N17A) was razed by Middleton's forces. Evidence for the latter consists of an interior cellar (?) depression and a structural outline of logs, red brick coated with lath-marked clay, and flat fieldstone corners. This structure would have measured approximately 7.5 x 6.6 m. Nearby were the scant remains of a woodshed (21N18B) as identified by Emile Parenteau. Soft organic
rich depressions indicate that this approximately 6 x 4 m structure may have had wooden upright corners. This building was dismantled after 1967.

Roughly 30 m north of the woodshed Emile Parenteau reported the presence of a barn (21N18C) which had been dismantled in 1970. At that time, the stone foundation was removed and the wood reused. The building had been approximately 10 m in length. Although direct structural evidence for the barn was absent, a concrete slab (21N18F) was recorded; this feature probably relates to the barn entranceway. As well, thick manure deposits immediately below the sod in an adjacent area suggest an associated cattle pound (21N18F).

Parallel fieldstone and cement features approximately 7.3 m long and 7.1 m apart indicate that the barn had been constructed on top of the remains of an earlier structure (21N17B). This building lacked a discernible cellar.

Between the house and barn were three depressions (21N18D, H, J). There is little doubt that two of these are privies; such an identification is also probable for the third.

Approximately 140 m northwest of the Albert Caron house were the remains of the Phillippe Boyer (?) home (21N20A) (Fig. 19) as revealed by two surface depressions. Test excavation within the larger depression provided evidence for a 3.3 x 3.6 m structure with a sill log foundation. Burned wood and plaster were also noted. The larger depression was probably an internal house cellar and the untested smaller pit likely represented a privy.

Near the current visitor satellite, 76 m south of the extant Albert Caron house, were the remains of his mother's residence (21N19). This building is thought to have been constructed after 1888 and dismantled ca. 1925 (E. Parenteau
1976: pers. comm.). Measuring 4.4 x 3 m, the structure had a large internal cellar (?) depression and an unpeeled sill log foundation. Sill logs rested directly on the clay C horizon rather than the A horizon. It appears that at some time a fire occurred in the northeast corner of the building. An ash (?) filled privy (21N19C) was situated west of the northwest corner of the house.

Some 144 m southeast of the Albert Caron house stood the 10 x 5 x 9.4 m cement foundation of the Robert and Alice Caron structure (21N21). Two 2.5 m diameter cellar depressions occurred within the foundation. Within one depression were fragments of notched logs possibly indicative of a log superstructure. This structure was dismantled circa 1967. A possible privy occurred 26 m south.

Zareba

Two trenches (21N22A, 21N22D) were excavated to determine the furthest southern extent of Middleton's 1885 defensive earthworks (Figs. 3, 19). The larger trench was oriented north/south from the Caron garden area into the zareba. No evidence for Middleton's trench was found south of its defined perimeter. The shorter trench was angled east/west across the trajectory of Middleton's embankment and about 5 m from it. As in the larger test excavation, evidence for the earthworks was lacking. It seems clear that Middleton's zareba probably did not encompass a larger area than present surface remains indicate.
Jean Caron Complex (21N23)
The Jean Caron farm complex situated about 270 m southeast of Middleton's zareba consists of a log and clapboard two-storey residence with interior cellar, a log milkshed and a frame granary. Excavations were focused on the location of an earlier residence and the testing of two depression in the yard area. East of the standing residence a fieldstone corner support and plaster/rubble delimited a 6.4 x 6.8 m structure. A cellar (?) depression was enclosed within the structure outline. Along the north edge of the yard area between the house and the granary was a trash filled depression. Immediately south of the granary occurred a collapsed well filled with cultural debris.

Historic Sites Survey and Excavation West of the South Saskatchewan River.
Features 21N29 to 21N32
In a 10,000 m² clearing on an upper terrace of the South Saskatchewan River 11 cultural features were recorded. These consist of six structural remnants, three depressions, a recent well and an isolated hearth (Fig. 20). Numerous rifle pits surrounded the area. Figure 21 depicts this same location in 1885.

Within the above group, two major structural features (21N29A) were a 9.5 x 4.5 m raised rectangular mound with two deep cellar depressions and a 4 x 4 m structural outline (21N29C). Because structures were easily mapped test excavation was unnecessary. North of these features was site 21N27, a 4.5 x 4.5 m depressed area outlined by a 30 cm high raised earthen wall bank. Testing within this outline uncovered wood
remnants measuring up to 1.3 m in length by 15 cm in width as well as a wall bank of mixed sand, clay and sandy black soil. To the south occurred structures 21N30 and 21N31. The former was evidenced by a wall bank outline. Test excavation revealed the remains of a 5.5 x 5 m structure with possibly two separate depressions on either side of a central ridge. Clay/straw plaster and wood were found on the buried A horizon. Evidence for structural feature 21N31 consisted of a cellar (?) depression surrounded by a 7.5 x 6 m wall bank. Two corners with single 30 to 40 cm diameter fieldstone footings associated with wood and plaster remnants were isolated during excavation. One hundred metres west was structure 21N34. Test excavation of its wall bank and central cellar provided evidence for a 7 x 5.8 m building.

In summary, sill logs and the occasional cornerstone were common foundation supports. No instances of masonry foundations were revealed. Central depressions are thought to represent cellars and, by extension, possibly residences. Isolated depressions, exclusive of the recent well, had little cultural material. Depression 21N32 may have had sawn cribbing although this is but a preliminary interpretation based on test excavation.

On the south edge of the clearing, a number of long low lying linear ridges were tested. A fire-cracked rock feature postdates 1850 based on the dated ceramic sherd.

Feature 21N36
Approximately 960 m south-southeast of the preceding feature complex were four 20 to 50 cm deep depressions at 5.2 to 5.5 m intervals oriented on roughly a north/south axis (Putt, this
The largest depression was to the north and had associated cultural material. A possible 5.8 x 4 m raised rectangular earthen outline surrounded this depression. The third depression to the south was also encompassed by a possible raised earth outline (4.6 x 3 m). Cultural material found in these depressions suggests they are better interpreted as structures as opposed to rifle pits.

Feature 21N37
Situated on a low terrace 30 m from the left bank of the river and some 750 m east-southeast of feature 21N36 was feature 21N37 (Putt, this volume: Fig. 3). Surface indications consist of a large central depression surrounded by four smaller ones located northeast, southeast, northwest, and southwest of it. Testing of the large depression recovered no artifacts and only a few pieces of wood. A foundation was indicated by clay over black soil. Corners were apparent in plan view.

Tests of the other depressions met with varied results. Excavation of the southwest depression recovered one artifact and a 10 cm ash lens. In the northeast pit there were many more artifacts, all associated with a 40 cm thick ash lens. At the southeast corner area were a possible post hole and a horizontal log. A structure measuring approximately 6 x 6 m is inferred.

Features 21N74, 21N73
On a raised terrace at the northwest edge of the alluvial flat were one standing and two collapsed log structures
That appeared recent (Putt, this volume: Fig. 3). In a ploughed area on the same flat and 540 m southeast of this site occurred feature 21N73. This feature was initially detected by a square outline of lush grass. Test excavation uncovered ash, plaster, clay/straw chinking, wood and late historic artifacts. At 30 cm below the surface, an ashy wall outline (3 x 3 m) associated with a thin black lens and reddish soil was recorded. This likely indicates a burning of the former building. Within the outline, a filled-in pit containing a 20 cm thick plaster layer was also isolated. A possible storage pit occurred 1.5 m south of the outlines southwest corner. This 1 m diameter depression had a greater than 33 cm thick hard grey plaster/ash layer within it.

Feature 21N75

Near the southwest corner of Batoche National Historic Park was site 21N75 (Putt, this volume: Fig. 3). The remains of this recent log structure were first noted as light surface scatter. A structural outline was later detected by a raised grass area and a possible cellar. The latter was inferred on the basis of a loose sand fill area within the outline. Clay and wood remnants indicate a possible 6 x 5 m building. One of two nearby depressions was probably a blowout and the other a possible refuse and/or storage pit. These interpretations are based on the respective absence and presence of associated artifacts.
A preliminary survey of Batoche area historic buildings outside the park was undertaken to gain a familiarity with local construction techniques. Buildings were photographed and notes regarding their construction were made. The observations presented here are general and introductory. (See Powter 1977 for more detail.)

Of the historic Métis structures located in 1976, the majority were of a dovetail notch construction style (see Sloan 1964: 24) with half-jointed sill logs either placed directly on the ground surface or raised on fieldstone corner supports. Buildings of a less permanent nature, however, tended to have saddle notch construction (see Sloan 1964: 25).

Whitewashed adobe or plaster was a frequent application on both the interior and exterior walls of Métis structures. Where present, this plaster was almost always underlain by a mesh of diagonally laid willow lathing attached directly to semi-squared or semi-peeled logs. In addition to the plaster, most residences were weather boarded on the exterior walls. A partial exception to this statement is the immediate area within the roof apex which sometimes was shingled. Almost all of the gabled roofs were also wood shingled.

In ground plan, Métis structures were rectangular, T-shaped or L-shaped with porches often added to the front. The majority were two storeys high with the ground floor having one to two rooms and the upper level varying from one to three rooms. Interestingly, the staircase was almost
always located in the right front corner of a residence and most frequently had a narrow landing above the first to third stair. Interior cellars were present in permanent structures such as residential buildings or stores while floor construction employed narrow tongue and groove boards over a subfloor of wider timber. The common presence of a metal stove pipe protruding through the roof ridge and the lack of a fire place suggests that metal stoves were the primary source of heat.

Although differences in buildings did exist, it was obvious that uniformity was present. It seems likely that the Métis, the major occupants in the Batoche area, may have located and built their residences and associated outbuildings differently than did non-Métis. Quantifiable and statistically valid data may be realized by recording construction data, the orientation of residences, and the angles and distances of other structures from the residence. The builder's cultural heritage may be determined using historic sources. Correlations between structural, spatial and cultural variables will possibly result in probabilistic distinctions between Métis and non-Métis structures. Correlations could then be tested from the archaeological record for historical continuity.
Conclusions

The 1976 archaeological field season at Batoche National Historic Park began in mid-July and ended on the first of September. An overview of the archaeological resources was gained by a surface survey of the park and by limited testing of most historic features and some prehistoric sites. Sixty-nine prehistoric sites were isolated. The oldest identifiable artifact recovered was an Oxbow projectile point base dated no earlier than 3500 B.C. However, a biface dated ca. 5500 B.C. has been reported from the immediate vicinity. Trading posts were established along the North and South Saskatchewan Rivers by the mid to late 1700s. A gradual transition from rivers to overland trails as primary transportation routes occurred as the west was occupied. Indicative of this shift was the Carlton Trail, established no later than 1865. The potentially oldest known structure (21N37) at Batoche may date to as early as 1850. Major occupation of a permanent nature, however, did not occur prior to 1870. In 1873 a number of substantial structures were constructed at Batoche near the trail and ferry crossing and in 1883 and 1884 the rectory and church were built.

Test excavation and a surface survey resulted in 30 recorded structures, exclusive of standing buildings and privy remains. Structures ranged in size from approximately 3.3 x 3.6 m to 9.4 x 10.5 m with associated surface areas of 11.9 to 98.7 m². Batoche's house (21N9) was one of the largest structures at 83.7 m². Following the 1885 insurrection, unrelated economic shifts and changes in the transportation
system occurred. Buildings clustered around Batoche's crossing fell into disuse and were eventually razed. Batoche's store, the last standing structure from the 1885 period, was destroyed by fire in 1921.

The brief 1976 field season focused on an inventory of archaeological resources such that a long range research strategy could be designed. Because of the abundance of cultural data expected from future excavations at Batoche, a computer system was developed to assist in its processing and analysis.
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Figure 1. Canadian prairie provinces and vegetation zones (drawing by D. Milton).

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A Preliminary Analysis of Historic Settlement Patterns at Batoche National Historic Park, Saskatchewan
by Neal D. Putt
1977
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Abstract

In the summer of 1976 a preliminary field survey was carried out at Batoche National Historic Park, Saskatchewan. The findings of this survey are used to prepare a preliminary report on the various patterns in the location of human activities observed over time at Batoche. A brief analysis of the distribution of a specific type of limited activity site, the rifle pit, suggests that archaeology and locational analysis can make valuable contributions to the understanding of settlement systems. A perusal of literature suggests various factors involved in the development and change of settlement patterns at Batoche. Hypotheses and tests to evaluate the roles of these variables in the settlement systems are suggested. The current historical and archaeological data describing the locations of trails and structures are presented, and are used to prepare maps of the settlement patterns occurring in 1880 and 1890.
Acknowledgements

Proper acknowledgement cannot be made to the many people who have assisted in the preparation of this report, however a few Parks Canada employees deserve special thanks. Paul Donahue assisted with many suggestions and continuous moral support. Diane Payment is at present preparing a report on the history of structures in the Batoche area, and has assisted me with invaluable information and material. Valerie Hall provided preliminary indication of the dates of many structures, through her artifact analysis. Many thanks go to Dianne Milton, whose beautiful drafting is seen in the maps accompanying this report.
Preface

In the text which follows references to archival material are numerous. In the interest of brevity, the following abbreviations have been used: P.A.C.-Public Archives of Canada; M.P.A.-Manitoba Public Archives; E.M.R.-Department of Energy, Mines and Resources; N.T.S.-National Topographic System; S.A.-Saskatchewan Archives; G.F.A.-Glenbow Foundation Archives; N.A.P.L.-National Air Photo Library; P.C.L.C.-Parks Canada Archives, Liverpool Court, Ottawa; L.S.B.-Legal Surveys Branch, and S.L.S.-Lands and Surveys Branch, Saskatchewan.
Introduction

Recently, prehistorians have made increasing use of settlement pattern studies to delineate the relationship of societies to their environments and to analyse culture change over time. For the purpose of this paper, settlement pattern is defined as the patterned distribution of loci of cultural activities over the landscape (see Chang 1958: 229; Plog and Hill 1971: 9). The distribution of these loci can be analysed to gain an improved understanding of the changing societies and cultures which occupied a particular area of study. The settlement pattern observed in any area may vary between societies or over time within one society dependent on variations in cultural institutions.

The objectives of this paper are to describe the settlement patterns observed in the Batoche area and to make progress towards deducing the cultural sets of "rules" or "settlement systems" that generated those patterns (see Flannery 1976: 162). It must be emphasized that this study is based on field data from a preliminary survey carried out in 1976. Therefore, the reconstructions of past settlement pattern are presented in the form of hypotheses to be tested by further data collection and analyses. They are not intended to be complete or final.

The 1976 field season produced a variety of data regarding the historic period of occupation at Batoche. Evidence for the location of human activity varied from the occurrence of a single cartridge or ceramic shard to the presence of complete structures. While most studies dealing with settlement pattern have concentrated on the locations of habitation
structures, the concept of "limited activity site" has been found useful in the study of prehistoric populations (Plog and Hill 1971: 8). Although the range of activity carried on at this type of site is not great, even the smallest type of limited activity site characteristically will reveal substantial spatial patterning in its distribution. Presumably this would hold true for historic as well as prehistoric time periods. The rifle pits associated with the 1885 battle of Batoche can be regarded as a type of limited activity site. Despite the fact that the major interest of this study is to identify and explain patterns of residence location, it seems of interest to carry out a brief examination of the distribution of rifle pits to see if consistent patterns could be identified in their locations and if explanations could be formulated for the observed patterns. This topic will be dealt with in the initial section of the paper. The second section deals primarily with the locations of structures at Batoche.

The examination carried out here is relatively low level. Subjective rather than analytic impressions of the characteristics of distribution are derived from simple measurements and visual map examination. Plausible explanations for the characteristics observed are advanced.
Military Features at Batoche

Rifle Pit Distribution
The Batoche battle of 1885 involved the extensive use of defensive rifle pits and trenches by both the Canadian militia and the opposing forces of Métis and Indians (Stanley 1961: 368-372). The 1976 field survey located many of these depressions.

In most cases, the rifle pits were found at some distance from convenient bench marks, often in dense shrub or forest cover. As a result, this made recording with a surveyor's transit exceptionally difficult. Such a factor in combination with the number of features involved limited the documentation of earthworks to simple field note descriptions and the recording of feature clusters on sketch maps and aerial photographs. This information has been tabulated in Table 1 and illustrated on Figure 1. On Figure 1 each cluster represents between one and ten depressions. The clusters were assigned provenience numbers under the Parks Canada data recording system (Swannack 1973).

Survey and test excavation programs made a subjective distinction between rifle pits and depressions suspected of having other historic functions. It was assumed that rifle pits would be characterized by relatively few artifacts, perhaps a small number of shell casings or fragments of clothing left by their occupants. On the other hand, features such as wells were expected to have had much deeper shafts with cribbing, while ice houses or cellar depressions should include structural remains and a larger artifact inventory. Privies
Table 1. Record of defensive earthworks at Batoche
(Feature dimensions are length x width x depth or diameter x depth).

<table>
<thead>
<tr>
<th>Operation Number</th>
<th>Vegetation and Terrain</th>
<th>Number of Features</th>
<th>Types and Dimensions of Features</th>
<th>Arrangement of Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>21888</td>
<td>level grass &quot;bay&quot; on forest edge</td>
<td>1</td>
<td>circular depression, 1.5 m x 1 m x 0.25 m; 3 round depressions, 1.0 m x 0.5 m x 0.15 m</td>
<td>15 m north west of depression Z188A</td>
</tr>
<tr>
<td>22</td>
<td>level grass area</td>
<td>unrecorded</td>
<td>circular, oval, and trench-shaped depressions, dimensions unrecorded</td>
<td>complex arrangement of features over approximately 1 hectare area</td>
</tr>
<tr>
<td>52</td>
<td>shrub area overlooking river, surrounded by forest on 3 sides</td>
<td>4</td>
<td>1 semi-circular depression, 2 m x 1.5 m x 0.25 m; 3 round depressions, about 0.5 m in diameter</td>
<td>irregular cluster</td>
</tr>
<tr>
<td>54</td>
<td>dense shrub above slope to South Saskatchewan River</td>
<td>3</td>
<td>1 square depression, 2 m x 2 m x 0.2 m; 2 rectangular depressions, 1 m x 1 m x 0.5 m and 1.5 m x 1.0 m x 0.25 m</td>
<td>north-south line at 5 m intervals</td>
</tr>
<tr>
<td>55</td>
<td>small brush covered flat overlooking river, surrounded by forest on 3 sides</td>
<td>1</td>
<td>&quot;T&quot; shaped depression, 5 m and 2 m long axis</td>
<td>long axis oriented north-south parallel to river, with short tip pointing away from adjacent trail</td>
</tr>
<tr>
<td>56</td>
<td>small grass clearing on flat terrace midway down slope to the river</td>
<td>3</td>
<td>1 round depression, 2 m x 1 m; 1 rectangular depression, 2 m x 1 m x 0.5 m; 1 oval, 3 m x 2 m x 0.5 m; with a narrow extension 1.5 m long on the east side</td>
<td>east-west line, parallel to trail remnant</td>
</tr>
<tr>
<td>57</td>
<td>level grass area on forest edge</td>
<td>1</td>
<td>oval depression 3 m x 2 m x 0.5 m</td>
<td>10 m east of trail</td>
</tr>
<tr>
<td>58</td>
<td>level area of grass and shrub about half way down the slope to the river</td>
<td>5</td>
<td>2 oval depressions, 2 m x 1 m x 0.5 m; 1 oval depression 1.5 m x 1.0 m x 0.25 m; 3 square depressions 1 m x 1 m x 0.5 m; 1 square depression 0.5 m x 0.5 m x 0.25 m</td>
<td>4 larger depressions are at the four corners of a square, with one further to the west</td>
</tr>
<tr>
<td>59</td>
<td>level area of dense shrub on a terrace half way down slope to the river</td>
<td>5</td>
<td>2 square depressions, 1 m x 1 m x 0.75 m and 1 m x 1 m x 0.35 m; 2 oval depressions, 2 m x 1 m x 0.5 m; 1 &quot;T&quot; shaped depression, with long axes 1.5 m and 1 m; width 0.5 m, and depth 0.75 m</td>
<td>oval and round depressions in a north-south line. &quot;T&quot; shaped trench last of line with top of &quot;T&quot; facing west</td>
</tr>
<tr>
<td>60</td>
<td>grass area above edge of slope to river</td>
<td>20</td>
<td>1 square depression, 1 m x 2 m x 0.75 m; 1 round depression 1.5 m x 1.0 m x 0.25 m; 1 square depression 2.0 m x 2.0 m x 0.5 m; remainder unrecorded</td>
<td>See figure</td>
</tr>
<tr>
<td>61</td>
<td>dense shrub area on flat terrace, midway down slope to river</td>
<td>1</td>
<td>trench shape, dimensions unrecorded</td>
<td>orientation unrecorded</td>
</tr>
<tr>
<td>62</td>
<td>area of dense shrub on a rise between two river bank gullies</td>
<td>1</td>
<td>oval depression, 2 m x 1 m x 0.75 m</td>
<td>—</td>
</tr>
<tr>
<td>63</td>
<td>area of dense shrub on terrace midway down slope to river</td>
<td>14</td>
<td>3 square depressions 1 m x 1 m x 0.25 m; 2 square depressions 0.5 m x 0.5 m x 0.25 m; 1 square depression 0.3 m x 0.3 m x 0.25 m; 1 oval depression 2.5 m x 2 m x 0.5 m; 5 ovals 2 m x 1 m x 0.5 m; remainder unrecorded</td>
<td>linear arrangements of 4 or 5 depressions. See figure</td>
</tr>
<tr>
<td>64</td>
<td>2 pits are within dense shrub on a terrace midway down the slope to the river</td>
<td>2</td>
<td>1 trench shaped depression 5 m x 1.5 m x 1 m, 1 oval depression 1.5 m x 0.5 m x 0.2 m</td>
<td>—</td>
</tr>
<tr>
<td>65</td>
<td>8 are in a large forested depression above the slope to the river</td>
<td>1</td>
<td>1 round depression 1 m x 0.5 m, 7 are at least 1 m x 0.5 m</td>
<td>—</td>
</tr>
<tr>
<td>66</td>
<td>2 are in a level grass clearing</td>
<td>1</td>
<td>oval shaped 2 m x 1 m x 0.5 m</td>
<td>—</td>
</tr>
<tr>
<td>67</td>
<td>pits are within a large depression in an otherwise level grass area</td>
<td>15</td>
<td>some depressions are trench shaped, 3 m x 1 m x 0.5 m, others are squares, 1 m x 1 m x 0.5 m</td>
<td>irregular cluster near a trail</td>
</tr>
<tr>
<td>Number</td>
<td>Operation of Vegetation and Terrain</td>
<td>Number of Features</td>
<td>Types and Dimensions of Features</td>
<td>Arrangement of Features</td>
</tr>
<tr>
<td>--------</td>
<td>------------------------------------</td>
<td>-------------------</td>
<td>---------------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>21866</td>
<td>dense shrub above slope to river</td>
<td>5</td>
<td>3 oval depressions, 3 m x 2 m x 1 m; 1 square depression, 1 m x 1 m x 0.75 m</td>
<td>in an east-west line, with larger pits at the western end, nearest trail</td>
</tr>
<tr>
<td>67</td>
<td>level area of dense shrub immediately above the river</td>
<td>1</td>
<td>square depression, 1 m x 1 m x 0.5 m</td>
<td></td>
</tr>
<tr>
<td>68</td>
<td>level forested area</td>
<td>3</td>
<td>unrecorded</td>
<td>in a rough east-west line</td>
</tr>
<tr>
<td>69</td>
<td>level forested area</td>
<td>4</td>
<td>square depressions, 1 m x 1 m x 0.35 m</td>
<td>in a rough east-west line</td>
</tr>
<tr>
<td>71</td>
<td>level forest and shrub</td>
<td>3</td>
<td>1 square depression, 1.5 m x 1.5 m x 0.5 m; 2 smaller depressions</td>
<td>cluster</td>
</tr>
<tr>
<td>72</td>
<td>forest near edge of cultivated clearing, just below top of slope to river</td>
<td>2</td>
<td>2 square depressions, 1 m x 1 m x 0.3 m; 1 round depression, 1 m in diameter</td>
<td>parallel to edge of slope, in a north-south line</td>
</tr>
<tr>
<td>76</td>
<td>large forested depression</td>
<td>7</td>
<td>rectangular and round shapes of varying sizes up to 2 m x 1 m</td>
<td>5 are clustered at the bottom of the depression, 1 is at the east side and 1 on the west side of the depression</td>
</tr>
<tr>
<td>77</td>
<td>on a shrub-covered rise between 2 gullies, overlooking the river</td>
<td>1</td>
<td>square depression 1 m x 1 m x 0.25 m</td>
<td></td>
</tr>
<tr>
<td>78</td>
<td>on grass/shrub edge at the base of a rise</td>
<td>4</td>
<td>1 long trench 4 m x 1 m x 1 m; 2 oval depressions, 1.5 m x 1 m x 0.5 m, and 2 m x 1 m x 0.25 m; 1 round depression, 1 m in diameter</td>
<td>3 are in an east-west line parallel to the base of a rise, with the 4th to the north of these</td>
</tr>
<tr>
<td>79</td>
<td>grass area at the edge of shrub and forest</td>
<td>9</td>
<td>oval depressions, average size 1 m x 0.5 m x 0.25 m; 3 are in an east-west line</td>
<td>irregular cluster</td>
</tr>
<tr>
<td>80</td>
<td>relatively level area at grass/forest edge</td>
<td>4</td>
<td>1 round depression, 1 m x 0.75 m; 3 oval depressions, 2.5 m x 1 m x 0.5 m</td>
<td>unrecorded</td>
</tr>
<tr>
<td>81</td>
<td>forest near marshy area and edge of cultivated field</td>
<td>1</td>
<td>unrecorded</td>
<td></td>
</tr>
<tr>
<td>82</td>
<td>grass/forest edge, near a gully</td>
<td>7</td>
<td>unrecorded</td>
<td>unrecorded</td>
</tr>
<tr>
<td>83</td>
<td>grass area at the top of a rise, near forest edge</td>
<td>4</td>
<td>1 oval depression, 1 m x 0.5 m x 0.25 m; remainder unrecorded</td>
<td>3 pits are in a rough north-south line along the rise, with the 4th pit below and to the west of the others</td>
</tr>
<tr>
<td>89</td>
<td>level grass area above the river bank</td>
<td>1</td>
<td>1 oval depression 1.5 m x 1 m</td>
<td></td>
</tr>
<tr>
<td>91</td>
<td>level forest area above the river bank (Approximate)</td>
<td>9</td>
<td>unrecorded</td>
<td>in rough lines on each side of the trail</td>
</tr>
<tr>
<td>95</td>
<td>clear grass areas in and around a forest bluff</td>
<td>3</td>
<td>unrecorded</td>
<td>unrecorded</td>
</tr>
<tr>
<td>102</td>
<td>forest near edge of grass</td>
<td>2</td>
<td>1 circular depression, 3 m x 3 m x 1 m; 1 circular depression, 2 m x 2 m x 1 m</td>
<td>smaller depression is to the north of the other</td>
</tr>
<tr>
<td>103</td>
<td>forest near edge of grass</td>
<td>1</td>
<td>1 circular depression; 3 m x 3 m x 0.75 m</td>
<td></td>
</tr>
<tr>
<td>104</td>
<td>level forest above slope to river, from cultivated clearing</td>
<td>1</td>
<td>oval depression, 1.5 m x 1 m x 1 m</td>
<td></td>
</tr>
<tr>
<td>105</td>
<td>grass area overlooking the South Saskatchewan (Approximate) and brush area on the slope to the river</td>
<td>20</td>
<td>oval depressions, usually about 1.5 m x 0.5 m x 0.75 m</td>
<td>spaced at intervals of 2 to 3 m around the edge of the slope to the river</td>
</tr>
<tr>
<td>Operation Number</td>
<td>Vegetation and Terrain</td>
<td>Number of Features</td>
<td>Types and Dimensions of Features</td>
<td>Arrangement of Features</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------------</td>
<td>--------------------</td>
<td>---------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>21N111</td>
<td>level forest area</td>
<td>1</td>
<td>oval depression, 2 m x 1 m  x .5 m</td>
<td>3 m west of trail, with long axis parallel to trail</td>
</tr>
<tr>
<td></td>
<td>adjacent to trail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>clearing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>117</td>
<td>level grass area beside forest bluff</td>
<td>1</td>
<td>oval depression, 2 m x 1 m  x .5 m</td>
<td></td>
</tr>
<tr>
<td>113</td>
<td>in a depression within a large grass clearing</td>
<td>1</td>
<td>square depression, 3 m x 3 m  x .5 m</td>
<td></td>
</tr>
<tr>
<td>114</td>
<td>forest grass edge</td>
<td>1</td>
<td>unrecorded</td>
<td></td>
</tr>
<tr>
<td>115</td>
<td>dense shrub near edge of grass clearing</td>
<td>1</td>
<td>square depression, 2.5 m x 2.5 m x .5 m</td>
<td></td>
</tr>
<tr>
<td>116</td>
<td>forest edge adjacent to grass clearing. Area is slightly lower than the clearing</td>
<td>14</td>
<td>rectangular depressions 3 to 4 m long and at least 1 m wide. Some connecting trenches between depressions</td>
<td>depressions are in a line running along the forest edge with their long sides parallel to the clearing edge</td>
</tr>
<tr>
<td>117</td>
<td>shrub/grass edge, level area</td>
<td>2</td>
<td>unrecorded</td>
<td></td>
</tr>
<tr>
<td>118</td>
<td>level forest area</td>
<td>3</td>
<td>unrecorded</td>
<td></td>
</tr>
<tr>
<td>119</td>
<td>forest area below a slight rise on the north side</td>
<td>4</td>
<td>unrecorded</td>
<td>rough east-west line, parallel to trail</td>
</tr>
<tr>
<td>120</td>
<td>level grass clearing within forest area</td>
<td>1</td>
<td>round depression, 1.5 m x 1 m</td>
<td></td>
</tr>
<tr>
<td>121</td>
<td>level grass/forest edge</td>
<td>1</td>
<td>round depression, 1 m x .25 m</td>
<td></td>
</tr>
<tr>
<td>122</td>
<td>forested slope above level cultivated clearing</td>
<td>4</td>
<td>3 trenches shaped depression 4 m x 2 m x .75 m, 1 trench 2.5 m x 1 m x .5 m, 1 trench 3 m x 1.5 m x .5 m, 1 trench 2.5 m x 2 m x .5 m</td>
<td>3 trenches are oriented north-south, and one east-west</td>
</tr>
<tr>
<td>123</td>
<td>forested slope between level cultivated clearings</td>
<td>1</td>
<td>trench shaped depression; 10 m x 2 m x 1 m</td>
<td>oriented north-south parallel to rise</td>
</tr>
<tr>
<td>124</td>
<td>forest area</td>
<td>2</td>
<td>unrecorded</td>
<td></td>
</tr>
</tbody>
</table>
Figure 1. Distribution of rifle pits and historic trails, Batoche National Historic Park, 1976 (drawing by D. Milton).
would again contain structural remains but be characterized by extensive deposits of organic material.

Despite the fact that only a few of the presumed rifle pits were test excavated, the former function of these features was in most cases readily apparent. A majority of the pits lacked structural evidence and were situated in large clusters in areas unsuited for building. In form, the depressions tended to be square, oval or rectangular while length and width measurements ranged between 0.5 and 2.5 m. A less common feature was a more elongated shaped trench varying between 3 and 5 m in length and 1 m in width. All depressions were found to fall in the 0.25 to 1 m depth range. A full account of rifle pit depressions is found in Table 1.

Test excavation of a number of rifle pits (21N8B, 21N103, 21N120 and 21N121) suggests that the original feature had been dug to depths of between 1 and 1.5 m below surface. Excavations in and around these depressions were characterized by a relative lack of artifacts. In one pit (21N121) no artifacts were found while in two others (21N8B, 21N12) only one bone fragment apiece was recovered. One unit (21N102), however, did produce bottle glass fragments and four artifacts while still another (21N103) had ash deposits and a more abundant assemblage.

It is probable that some rifle pits dug near structures during 1885 were later used for garbage or ash disposal. Still, if the depressions at Batoche had been dug intentionally for garbage deposition, a more substantial accumulation of trash could be expected. Elliott (1971: 28-41) has noted the use of garbage pits by Cypress Hills Métis hivernants. Although the numbers of artifacts recovered from two of the Batoche depressions are similar to those from garbage pits...
at the Cypress Hills, the occupation of the Cypress Hills hivernant cabins lasted for only a few years, compared to three and four decades of occupation of homes at Batoche.

At present it is possible to enumerate a total of 214 rifle pits and trenches at Batoche with a fair degree of certainty. Further excavations of known rifle pits, wells, outhouses and the like are necessary to more clearly identify the distinguishing attributes of these various types of depressions. Additional features, now tentatively identified as rifle pits, might then be added to the list. More detailed recording of some rifle pit clusters is still required. For example, one operation (21N22) covers one hectare with a complex pattern of features requiring detailed mapping. Improved mapping of many other pit clusters may also be possible.

**Interpretation of Military Features**

General Middleton's forces camped some distance east of Batoche on the night preceding the battle (Middleton 1948: 44). Their advance on the following day followed the south branch of the Carlton trail as documented by the accounts of Middleton (1948: 45), Adam (1885: 342-44) and the maps of Cole (P.A.C. Map Collection T.84-Batoche-1885, Plan of the Attack on Batoche) and Burrows and Denny (op.cit.) and Haig (P.A.C. Map collection B/540; Sketch of Battle Field of Batoche, Plate vii from Canada Sessional Papers No. 6, 1886) illustrate the approximate location and shape of the zareba.

The remains of the zareba were located in the 1976 field season and treated as a single operation (21N22). Several rifle pit clusters (21N102, 21N103, 21N104, 21N105 and 21N121) correspond to other militia pits indicated by Cole (op.cit.).
Additional militia pits which, most likely, were in river lots 50 and 51 have since been destroyed by cultivation. Militia forces were not engaged in battle on the west side of the South Saskatchewan, however the Métis and their Indian allies had prepared entrenchments for defense on both banks. The majority of Métis earthworks on the east side of the river have been destroyed by cultivation while agricultural activities on the west bank have been much less extensive. One hundred and fifty-six of a total of 214 rifle pits listed in the 1976 season were located on the west side of the river. These depressions are mapped as 39 clusters (Fig. 1). Although some cultivation has occurred on the west side, it has been restricted to the southeastern portion of the survey area and an undisturbed distribution of pits remain. The uncultivated area contains 37 of the 39 clusters.

The observed distributions of defensive earthworks must be understood in relationship to the cultural and natural environments present in 1885. The topography and existing pattern of open and wooded areas are basically the same as they were in 1885 (Redman and Ripley 1976: 41). These variables have been mapped (Abouguendia and Coupland 1976; E.M.R., N.T.S. sheets 73B/9 and 73B/16). The distribution of structures and trails are later reconstructed for the date 1890. The data used for this reconstruction (Appendix A) also indicate that this pattern was essentially the same in 1885, and the pattern mapped in Figure 5 is viewed as accurate for 1885.

Simple measurement and visual examination of Figure 1 reveal a number of distribution characteristics. First, the greatest density of rifle pit clusters appears to be in an area around the section 18 to section 19 boundary,
near the river. In 1885 this area contained a complex of structures consisting of at least one store/dwelling combination and a stable (see Donahue, this volume, also Figure 5). A cable ferry connected the east bank of the South Saskatchewan with the west bank, also near the section 18 to section 19 line. Twenty-five rifle pit clusters are in this general area.

A second characteristic of the distribution seems to be a clustering of rifle pits in areas adjacent to trails which existed in 1885 (see Fig. 1). Of the 151 rifle pits located in the uncultivated area on the west side of the river, 121 (21N54 to 21N69, 21N76 and 21N111 to 21N117) are within 65 metres of such trails. This represents 80 percent of the total number of observed features.

Table 1 records the location of the rifle pit clusters in relation to the terrain and vegetation observed in 1976. Two further attributes of rifle pit distribution relate to these variables. The distribution of Métis rifle pits in relation to topography will be discussed first.

Eighteen pit clusters (21N52, 21N55 to 21N65, 21N66, 21N72 and 21N77) representing 74 pits are located along a slope which drops to the river bank and floodplain from a more level area approximately 30 metres above. The rifle pits are scattered along the level areas adjacent to the top of the slope, along the slope just below the top and on a narrow level terrace which breaks the slope approximately half way down. This distribution is illustrated for a small number of cases (21N60 to 21N64) in Figure 2.

Other rifle pit clusters away from this river bank slope continue to be located near or on inclines in the terrain. Six clusters (21N78, 21N79, 21N80, 21N82 and
Figure 2. Rifle pit concentration west of South Saskatchewan River (drawing by S. Smalley).

FIELD SKETCH OF RIFLE PITS
SITES 2IN60 TO 2IN64
21N116) representing 38 pits are situated at the base of a hill or on a smaller rise. Twenty-two pits (21N65 and 21N76) are located in large basin-shaped depressions within otherwise level areas. One pit (21N67) is on the river edge immediately above the flood plain. The remaining nine clusters represent only 16 rifle pits and are located on relatively level terrain. In summary 131 of 151, or 85 percent, of the rifle pits were situated on or near sloping terrain, although the overall topography of the area is strongly dominated by level areas.

Vegetation is the fourth and final variable to be considered in the identification of patterns in the distribution of defensive earthworks. Of the 151 features in the undisturbed area on the west side of the South Saskatchewan, 52 are located on grassy areas within approximately 10 m of adjacent shrub or forest areas (clusters 21N56, 21N57, 21N60, 21N78 to 21N80, 21N82, 21N112, 21N114, 21N117 and one cluster at 21N64). An additional 44 clusters (21N52, 21N54, 21N55, 21N58, 21N59, 21N61, to 21N63, 21N66, 21N67, 21N77 and 21N115) are located in areas covered by shrub, also within approximately 10 m of true forest.

Although the distribution of open and wooded areas varies little from that present in 1885 (Redman and Ripley 1976: 41) the vigour of all natural vegetation appears to have increased. A preserved portion of natural prairie dating to 1884 indicated a relatively low cover of non-vigorous plants and a large amount of bare soil in comparison to the present prairie. The ground cover showed signs of burning (Redman and Ripley 1976: 41-45). A comparison of photographs dating to 1885 and the turn of the century (S.A. photo A5634(1); G.F.A. photo #NA-363-33; G.F.A. photo #NA-363-40), and an 1885 map (Cole op. cit.)
to the vegetation observed in 1976 and in recent aerial photographs (E.M.R., N.A.P.L. flight lines A11964, A11970, A11985, 1949; E.M.R., N.A.P.L. flight line A17587, 1962) reveals the increasing vigour and density of forest areas. For example, several rifle pits (21N102, 21N103, 21N104 and 21N121) situated in grass in 1885 (Cole op. cit.), were found several metres inside the forest edge in 1976.

Shrub cover also appears to have increased in area, vigour and density. Middleton's zareba was formed in a ploughed field adjacent to two forest bluffs (Cole op. cit.; P.C.L.C., BA 315, Canada's North-West Rebellion: 252), however by the 1950s large parts of it were covered by shrub (P.C.L.C., 85550/B3, letter to Mr. C.G. Childe, 1951; P.C.L.C., BA 317, memorandum to J.R.B. Coleman; 1955; P.C.L.C., BA 317, letter to W. Beverley, 1959). The dense shrub cover observed on the west side of the river today is such that visibility from the rifle pits is often only 1 or 2 metres.

It seems plausible that the 44 pit clusters observed in dense shrub, or shrub and grass cover in 1976 were located in areas of grass or much less vigorous grass and shrub when they were dug in 1885. Similarly, the 27 pits now located in forest but within approximately 10 metres of grass areas (clusters numbered 21N69, 21N81, 21N116 and 8 rifle pits of 21N64) were probably located closer to grass, possibly even within the prairie areas in 1885.

Seventeen entrenchments (21N65, 21N113 and 1 pit of 21N64) were located in prairie vegetation at some distance from forest. Only 11 pits (21N76 and 21N111) were well within the wooded areas. One hundred and forty of 151, or 93 percent, of all pits were located on or near grass areas in 1885. Eighty-two percent were near the forest/grass margin.
Four characteristics of defensive earthwork distribution have been tentatively identified. These are:

1. an overall clustering in the section 18 to section 19 boundary area;
2. clustering of pits adjacent to trails;
3. location of pits on or near areas of sloping terrain, and
4. location of pits on or near grass areas at the forest/grass margin.

The explanation of these characteristics will be dealt with briefly.

The final advance of the Canadian militia on Batoche, May 9, 1885, was from the east (Middleton 1886: Appendix C). Between April 17 and 24, however, the troops had been divided into two columns, advancing along both banks of the South Branch of the Saskatchewan (Stanley 1961: 356). Métis and Indian scouts had kept Riel and Dumont informed of these movements (Stanley 1961: 356) and it seems likely that the overall clustering of defences noted around the section 18 to section 19 line was designed to defend the structures in that area and to prevent the advance of Middleton's western column across the Saskatchewan at the Batoche ferry. Structures in other areas on the west bank do not appear to have been well defended, although the observed absence of defences in these areas may be due to their destruction by cultivation.

As noted above, large numbers of pits were located adjacent to trails in the section 18 to section 19 line area, and further entrenchments were spaced at intervals along trails leading to the ferry crossing from the south and southwest. The strategy, obviously, was to repel the
expected militia advance along the trails and to ambush and snipe from adjacent pits. Although Riel feared a north-west attack from the Mounted Police stationed at Prince Albert (Stanley 1961: 357), the northern and western approaches to the section 18 to section 19 area received only minor defense preparations in comparison to the southern approaches.

Within the selected strategic areas, it has been noted that pits were located on sloping terrain and near forest vegetation. The locations on sloping terrain ensured that the advancing militia would be exposed and silhouetted on the horizon while the Métis were sheltered below. Similarly, the militia forces would be exposed on open prairie while the defensive forces were sheltered at the forest edge. Trees and shrubs would provide cover for movements of the defenders. The strategic advantages of these locations were commented upon by contemporary observers (Adam 1885: 350-351; Middleton 1886: 32-33; P.C.L.C., BA 318 Vol 2: 197, The Battle of Batoche's Ferry; P.C.L.C., BA 318 Vol. 2: 253, after the Battle). The same tactics apparently were also used in the battles at Fish Creek and Cut Knife (Stanley 1961: 370).

Presumably the same attributes of distribution observed for defenses on the west side of the South Saskatchewan would have been observed on the east side had those rifle pits not been destroyed. The few remaining defensive earthworks suggest that a similar strategy did exist (refer to Table 1 and Fig. 1, clusters 21N8B, 21N83, 21N89, 21N91, 21N95, 21N118 to 21N120, 21N122 to 21N124). Historical maps (Cole op. cit.; Haig op. cit.), historical accounts (Adam 1885: 337-351; Middleton 1886: 30-34, Appendix C), 1949 aerial photography (E.M.R., N.A.P.L., A11985-38) and recent correspondence (P.C.L.C. BA 2, Vol. 4, letter to the director National Parks
Branch, 1952; P.C.L.C. BA 317, Vol. 2, letter to Richmond Mayson, 1955; P.A.C. Rg. 4, Vol. 375 70-3-3, memorandum to Mr. Markin, re Historic Sites at Batoche, ca. 1925) expand the data base in regards to defensive earthworks and indicate that the same characteristics of distribution were observed as previously noted. This implies that the same "roles" of distribution were followed by the forces defending Batoche on both banks of the South Saskatchewan.

This section has dealt with the patterns observed in the distribution of a specific type of limited activity site for the historic period at Batoche. The observed patterns have been described and a number of observations have been made regarding the sets of rules which produced those distributions.
Historic Settlement Patterns at Batoche

Although the distribution of defensive works at Batoche has interesting implications relative to a particular historic event, those factors influencing the structure of major site patterning may be regarded as a topic of greater concern. Even a preliminary review of the literature pertinent to the historic period at Batoche raises a series of questions for which an analysis of settlement pattern might shed light. Among these the following are singled out as most notable. Although a wide range of variables made the lower South Saskatchewan valley attractive, what specific attributes of the Batoche area influenced the Métis people to settle there? Were changing transportation systems a causal factor in settlement pattern change? Of what relative importance were the economic activities of freighting and agriculture at different time periods? What was the influence of the establishment of the St. Antoine de Padoue Church on the settlement of Batoche? What was the effect of the 1885 uprising and its aftermath upon the settlement? How did changing settlement patterns at Batoche relate to the communities of St. Laurent, Fish Creek, Duck Lake, Rosthern and Prince Albert, as these communities varied in size and importance? Did friendship or kinship relations play a role in the observed attributes of settlement pattern? Did government attitudes towards Métis land ownership influence settlement patterns?

Such questions centre on a delineation of the specific factors responsible for the structure of the settlement patterns at Batoche. The first step in assessing these
factors, however, is a description of Batoche settlement patterns. This section has been divided into three topical areas. The first deals with the data base and reconstruction of settlement patterns. The second and third provide a more extensive discussion of variables relevant to the settlement of the area in addition to several tentative explanatory hypotheses and tests of the observed patterns.

Data Base and Settlement Pattern Reconstruction
The 1976 field season produced a variety of data regarding the historic period of occupation at Batoche. These data have been compiled on Figure 3. While over 100 assorted structures were recorded, complete archaeological data on these structures have yet to be obtained. Test excavations leading to the exposure of structural outlines were limited to approximately 30 structures. More complete descriptions for each of these structures have been prepared by Donahue (this volume).

Dating of historic structures on the basis of artifact analysis was limited by small, non-representative samples and by the need to develop a system of artifact analysis prior to actually undertaking the task (see Hall, this volume: Donahue and Hall 1977). Date ranges for selected operations and suboperations were suggested by Hall. Still, it must be emphasized that the analyses were carried out at an early stage of study and, as such, are tentative and subject to revision and correction.

It was necessary to synthesize archaeological data on the locations, dimensions and dates of occupation of structures with historical data on the same topics. In this way it has been possible to develop preliminary indications of settlement
Figure 3. Historic sites, Batoche National Historic Park, 1976 (drawing by D. Milton).
patterns for various dates through the history of Batoche. The articulation of the historical and archaeological records has been carried out in the form of map preparation. Two sketches provide a preliminary reconstruction of community patterns in the years 1880 and 1890. This coverage will be extended to earlier and more recent dates as analysis proceeds. However, here it is but possible to provide a brief sketch for these time periods.

The first settlers were residing at Batoche between 1872 and 1875 (Payment 1976: 7; Jarvis 1877: 160). Reverend George Grant (1967: 141) noted in 1872 that a scow kept at a point on the South Saskatchewan by the Hudson's Bay Company was to be replaced in the following year by a regular ferry. This ferry, located at the point where the Carlton trail crossed the river, was later operated by Xavier Letendre dit Batoche (Giraud 1954: 7). Earlier bateaux of the Hudson's Bay Company had been maintained in the Batoche area since at least 1862 (Scott 1968: 16; Cheadle 1931: 59; Russell 1971: 8) although their location may have varied from year to year.

The archaeological evidence of the structures at Batoche prior to 1880 is as yet limited. The earliest appearing site (21N37) is similar both in terms of features and artifact content to hivernant Métis cabin sites in the Cypress Hills (Elliott 1971). From the small assemblage of associated artifacts, a time interval was derived for the site which extends into the pre 1880 period (Hall: pers. comm.). The data, however, are too few for conclusive identification.

Sufficient archaeological and historical data have been compiled to prepare two preliminary sketches "Batoche Area ca. 1880" and "Batoche Area ca. 1890" (Fig. 4, 5). These illustrate the structures, trails and improved land for the dates indicated. Improved land
Figure 4. Historic settlement pattern, Batoche ca. 1880 (drawing by D. Milton).
Figure 5. Historic settlement pattern, Batoche ca. 1890 (drawing by D. Milton).
refers to areas which were under cultivation and/or enclosed by fencing. Although the archaeological record was given prime consideration in the resultant land use maps, existent historical maps were consulted to flesh out much of the detail. Dominion Land Surveyors entered the area in 1878 and their work was the basis of continually revised editions of plans for each township in the area. (E.M.R., L.S.B. Plans of Township 43, Range 1, West of the Third Meridian, 1880, 1889, 1890, 1911, 1917). In addition, the surveyors produced plans and accompanying field notes of major trails with structures and adjacent improved lands indicated (E.M.R., L.S.B. Plan no. 4598, Plan of Road from Carlton Forks South to Batoche's and Gabriel's Crossings, also Branch Roads therefrom to Duck Lake. Milner Hart, 1885; E.M.R., L.S.B. Plan no. 8233, Traverse of trail from a Point on Qu'Appelle and P. Albert Trail to Batoche, with Field Book no. 6013. J. Lestock Reid, D.L.S., 1889; E.M.R., L.S.B., Plan no. 30925, Plan shewing a portion of Trail from Duck Lake to Batoche. J. Lestock Reid, 1889; S.L.S. plan no. 46, Plan of Trail from Fish Creek to McLeod's Crossing, with Field Book no. 63. J. Lestock Reid, D.L.S., 1891; S.L.S. plan no. 1043, Plan shewing lots surveyed in Saint Laurent Settlement, East Side South Saskatchewan River. Montague Aldous, D.L.S., 1878). Several sketch maps were also produced by members of the militia which fought in the battle of 1885 (P.A.C. Map collection T-84-Batoche, Plan of the attack on Batoche. George F. Cole, 1885; P.A.C. Map collection B/540, Sketch of Battle Field of Batoche, Plate vii from Canada Sessional Papers 1886, Vol. V, No. 6A. Captain R.E.H. de H. Haig; M.P.A. North West Rebellion Collection 21, Plan of Position at Battle of Batoche. Messrs. Burrows and Denny, Surveyor's Intelligence Corps, 1885).
Additional land use information was obtained from aerial photographs of the area. Infra-red transparencies of the Batoche site were taken in 1976 (Prairie Migratory Bird Research Centre, University of Saskatchewan, Saskatoon. Roll numbers R764, R765, R769, R7610). However, the most valuable air photography proved to be that from 1949 (E.M.R., N.A.P.L. Flight lines A11964, A11970, A11985). These were the earliest flight lines over the area and they recorded the location of many of the early Batoche structures. Several structures dating from the late 1800s were still standing while ruins indicated the precise locations of many other early buildings. Demolition and the extension of cultivated areas since 1949 have obliterated many of the trails, buildings and ruins apparent on the photographs.

Archival records have also supplied information useful in compiling the settlement patterns on Figures 4 and 5. The rebellion losses claims (P.A.C. RG15, Vols. 914, 915, 917, 918) filed subsequent to the battle of 1885 and the homestead patent applications of the 1880s (S.A. Homestead File 81148, St. Laurent District, 1884, 1885, 1888) record the numbers and sizes of buildings and the extent of cultivated and fenced land. These are located by river lot.

The historic record indicates that a number of additional buildings existed in locations other than those illustrated in Figures 4 and 5. In some cases, however, no locational data were recorded and in others such data were not accurate. Unless archaeological evidence for historically recorded structures had been obtained, they were not plotted. The only exceptions to this were the structures, trails and improved land indicated on river lots 40 to 42, 54 to 63 and on the north boundary of section 19. These areas were beyond the area of the 1976 field survey.
For the period between 1890 and 1950 complete reconstructions of the historic settlement patterns have yet to be carried out. Nevertheless, a brief albeit tentative sketch of settlement pattern changes can be given based on dates obtained from preliminary artifact analysis (Hall: pers. comm.).

A number of farmsteads appear to have been constructed on the west side of the river near the turn of the century or within approximately 15 years thereafter. At least three sites (21N70, River Lot 19; 21N73, River Lot 15; 21N75, River Lot 13) (Fig. 3) in the southwestern park are tentatively dated to this period by artifact analysis. Two of these structures (21N73, 21N74) had been demolished by 1949 while the third (21N70) appears to have been abandoned (N.A.P.L. A11970-207, A11985-37). One other site in this area (21N36) may have been demolished around the turn of the century while at still another (21N74) a number of structures were added to sites along the section 18 to 19 boundary line. These continued to be occupied in 1949 (N.A.P.L. A11985-37).

On the east side of the river, it would appear that structures in the main village area (river lots 47 and 48) that had been occupied in 1890 were abandoned by 1930. An exception to this statement was the former residence of Xavier Letendre dit Batoche (21N11) having a somewhat extended occupation. Main village structures, with the noted exception and one shed, had been removed by 1949 (N.A.P.L. A11964-54). Outside of the village, one complex in river lot 46 (21N7) is known to have originated sometime after 1890 and, according to local informants, remained occupied into the 1940s. It too, however, was gone by 1949. Finally, structures associated with two farmsteads in the northeast park had undergone either
modification or demolition by 1949. At one (21N15, river lot 43) all buildings had been removed while at the other (21N16, river lot 44) additions had been made and a number of earlier buildings torn down.

The number of farmsteads along Saskatchewan Highway 225 increased dramatically after 1890. Unfortunately test excavations at these sites have not been carried out and construction dates cannot be provided. In 1949 approximately 20 farmsteads were scattered along the road in river lots 40 to 63 (N.A.P.L. All964-56, All970-208, All985-39).

In summary, a number of farmsteads were constructed on the west side of the river following 1890 and others were enlarged. Before 1950 most had declined in number of structures with some disappearing completely. On the east side of the river, structures in the lower portions of lots 40 to 48 were gradually abandoned and destroyed between 1890 and 1949. A large number of structures were built along Saskatchewan Highway 225 in this period and most remained occupied in 1949. The areas of improved agricultural land increased over time on both sides of the river.
The description of Batoche settlement history outlined in the previous section cannot be adequately explained without reference to the associated works of archaeologists, historians and geographers. Such studies have supplied data regarding the significant variables in the settlement of the Batoche area. They also advance hypotheses or emphasize particular variables which are felt to be dominant forces in the development of Western Canadian settlement.

This section is divided into three subsections. The first deals with archaeological data from Metis sites other than Batoche. The second notes historical works regarded as being of major theoretical and substantive significance to the study of historic settlement at Batoche. Finally, the third employs historical and geographical data to elaborate on the variables pertinent to a study of settlement pattern systems at Batoche.

Archaeological Data on Métis Sites
Data from a site in the Cypress Hills have been used to provide archaeological reconstructions of the Métis hivernant material culture of two winter cabins (Elliot 1971, 1972). While the emphasis was on the reconstruction of cabin site activity areas "...beyond the material and a few social aspects of hivernant subculture, the archaeological record fails" (Elliot 1971: 149). This result may be due to the
limited data base and area of study. However, the reconstructions are reflective of hivernant Métis for the period 1860 to 1886 and are useful for the interpretation of early settlement patterns at Batoche. Moreover, the structural remains and assemblage content from one Batoche site (21N37) are comparable to those described for the Cypress hills hivernant Métis (Elliot 1971: 24-41).

Two other archaeological studies of Métis cabin sites are only now being prepared for publication. One of these, based on excavations at the Buffalo Lake Métis site in Alberta, again concentrates on hivernant culture (Doll and Kidd 1976). The other, however, looks at a more complex Métis site in the former Red River settlement (Forsman 1977). Although the analysis of the latter is limited primarily to restoration objectives and a structural history, when available, it should prove useful for comparative purposes at Batoche.

Major Works on Western Canadian Settlement

Métis settlements have been the topic of extensive historical investigation. Massive archival records pertaining to Métis culture exist due to the close relationship of the Métis with institutions of the fur trade, the Catholic and Protestant churches, and the governments of Canada and the western provinces in the development of the Canadian West.

These records are the basis of the definitive work by Giraud (1945) on the origins, development and historic role of the Métis. This study provides the most thorough available compilation of historic data on the Métis of Batoche, St. Laurent, Duck Lake, Fish Creek and other areas throughout the West.
The central thesis of the study seems to be the contact of civilized cultures with the primitive "barbarism" of the wilderness (Morton 1950: 4). "Leur (les Bois-Brules) formule de vie se precise, en effet, au contact du nomadisme et l'économie sedentaire" (Giraud 1945: 762). The origin of the Métis people and the development of their distinctive economy and "Conscience Nationale" was intimately connected with the penetration and consequent development of the west by the fur trading concerns of the English and French (Giraud 1945: 142-625). One especially important aspect of the Métis economy was large scale organized buffalo hunting (Giraud 1945: 800-816). The Métis hivernants or winter rovers followed a yearly round of activities which included hunting, fishing and trapping (Giraud 1945: 817-823). The wooded prairie buttes, the shores of lakes and rivers, and the rich pasturages of the South Saskatchewan are described as favoured locations for Métis hivernant camps (Giraud 1945: 820). Camps were at times set up in the neighbourhood of the trading posts where the Métis were employed in various functions or services (Giraud 1945: 1016-1023).

Giraud describes a class of Métis, "bourgeoisie", which involved itself in a greater variety of economic activities than the majority of Métis. Based in the Red River, they organized transport enterprises to provision the various outlying fur trading posts with merchandise imported from Europe and the United States while the return trip would see furs substituted as cargo. The "bourgeoisie" themselves were also active traders, collecting the fruits of the buffalo hunt from more nomadic Métis and Indians (Giraud 1945: 885-961). Thus, they would act as middlemen to the Hudson's Bay Company. These traders established themselves
in areas of hibernant or Indian encampment that were well-populated with fur bearing animals and/or near fur trading posts (Giraud 1945: 822).

Following the Red River uprising of 1869 and the disappearance of the buffalo, the Métis gradually adopted a more settled and agricultural way of life establishing permanent villages throughout the Northwest (Giraud 1954). In the selection of locations for settlement, the Métis were governed by many of the same needs which had influenced the locations of earlier, more temporary villages. Villages were situated near fur posts, around lakes and rivers in the forested areas of the prairie and parklands as well as in locations where the transport of cargo by freighters presented a new source of profit (Giraud 1945: 1017-1020). Giraud also places particular emphasis on the role of the church in establishing sedentary villages. "Dans l'évolution qui devait graduellement atténuer les distances entre les Blancs et les Métis, le clerge assuma un rôle primordial" (Giraud 1945: 693). "Les missionaires ne cessent-ils d'encourager ces nomades a renoncer a leurs peregrinations pour se river plus solidement au sol de la colonie..." (Giraud 1945: 701). Giraud (1954) emphasizes the importance of the creation of missions in Saskatchewan and Alberta to the subsequent development and continuing occupation of their associated Métis villages.

Other major works dealing with the western Métis include those of Stanley (1961, 1963). Stanley, like Giraud, views the Métis as a unique nationality. "Neither European nor Indians, they were an in-between people " (Stanley 1963: 5). He stresses, however, the political and military organization of the Métis as a dominant force in their unique development. Toward this end, he thoroughly reviews the interaction of
this organization with the representatives of the Government of Canada in the Batoche area.

Stanley outlines three major grievances among the Métis. The first of these was the lack of scrip allotment to the Western Métis who were not included in the Province of Manitoba grants after the 1869 political insurrection (Stanley 1961: 246-249). In addition to the request for scrip there was the urgent request by Métis settlers to receive the secure patent title to their land without being submitted to the three year waiting period required of recently arrived settlers under the homestead laws. The Métis also resented the payment required for odd numbered sections and Hudson's Bay company or school lands and, in general, requested special consideration under the Dominion Lands Act (Stanley 1961: 249-255).

A third complaint of the Métis was the imposition of the sectional land survey upon their holdings. This system was contrary to the river lot subdivisions in areas which had already been settled. The river lot system, a land holding pattern transposed from French speaking eastern Canada, insured water frontage for each homestead with a back extension for cultivation and pasture (Stanley 1961: 15, 255-259).

W.L. Morton provides insight into the historical significance of location for the success of western settlements. His major hypothesis "is that the settlement of the West was in large measure a competition for site...The position, environment, and technology" of a settlement provided "comparative advantage for production, exchange, or transfer" (Morton 1951: 97). The advance of successive frontiers of settlement, each with its new form of civilization, created
relative advantages for a series of site types. Fur posts were best located at seasonal assembly points of Indian bands (Morton 1951: 98). Métis "squatter sites" required a union of wood, water and clearing. "The trees which fringed the banks of prairie streams furnished shelter, fuel, and fencing; the open plain behind gave a clear run to the plow and afforded pasture and hay for livestock" (Morton 1951: 99). The advance of the agricultural frontier at first seized these areas but later favoured two new types of settlement areas. The "homestead site" was located in areas favoured by land fertility and favourable rail location including freight rates (Morton 1951: 100). The "distributive site" was located in areas favoured by transport systems, productive agricultural hinterland and capital for development (Morton 1951: 101). These site distinctions are important to an understanding of the settlement patterns at Batoche.

In summary the distribution of vegetation, faunal resources, water and agricultural land presented a variety of environments in the Canadian West. The attractiveness of the different environments to the Métis varied with changes in their economy and technology. Initially, fishing, trapping and hunting (in particular the buffalo hunt) were important. Subsequently, agriculture and freighting gained new importance in the Métis economy. The locations of trading posts and seasonal assembly points of Indians also influenced settlement. Other significant factors were the influence of religious institutions and government policies towards the Métis and, finally, the advance of the agricultural frontier with its railroads and distributive centres.
Variables Significant to the Explanation of Batoche Settlement Patterns

In addition to the major historic works on the influence of various factors to historic settlement patterns, a wealth of lesser historical and geographical studies exist. These, in combination with the sources noted above, can be used to provide an expanded sketch of the variables affecting settlement patterns at Batoche.

While a preliminary discussion of the vegetation, soil, climate, landforms and animal life for the Batoche area is provided in the introduction to this volume, a more complete review is needed. This review must also look at historic Indian populations, locations of early trading posts, changing transportation systems, activities of religious and governmental institutions, and the history of communities other than Batoche. Of the latter, those communities within the lower South Saskatchewan Valley between approximately Saskatoon and the Saskatchewan forks are considered to be of utmost importance. This region was surveyed in the long lot subdivision system in the 1870s and 1880s (E.M.R., L.S.B. Plan of Townships 41, 42, 42A, 43, 44, 45, Range 1, and Township 41, Range 2, West of the Third Meridian, 1890) (see Fig. 6). It includes the communities of Fish Creek, Batoche and St. Laurent-Grandin.

Climate
The climate of the lower South Saskatchewan area is typically continental with short hot summers and long cold winters
(Abouguendia and Coupland 1976: 5). Rosthern, 11 kilometres southwest of Batoche National Historic Park, has a mean January temperature of \(-19.6^\circ C\), a mean July temperature of \(16.9^\circ C\) and a range of extreme recorded temperatures from \(-50.6^\circ C\) to \(39.4^\circ C\). Annual precipitation averages 382 millimetres, 65 percent of which falls between April and September (ibid.). The lower South Saskatchewan falls within a climatic area more favourable to agriculture than any other in Saskatchewan (Shields and Rostad 1969: 106, 107).

Temperatures in the Canadian West have been milder since 1900 than during the three decades before the turn of the century. Severe winters occurred in the 1880s and the year 1897 ended a comparatively dry precipitation cycle. A precipitation maximum had occurred in the 1870s (Redman and Ripley 1976: 29-33). Studies of tree rings from Batoche and Duck Lake generally confirm the tendencies observed throughout the West (Redman and Ripley 1976: 33-39).

**Vegetation**

The Batoche area is located in the forest-grassland transition area of Saskatchewan (Coupland and Rowe 1969: 73-75). The present vegetation is dominated by groves of trembling aspen and balsam poplar, interspersed with open areas of blue gramma and fescue dominated grassland, upland shrubs, wetland vegetation and cultivated land (Abouguendia and Coupland 1976: 12-16). The forest types occupy the moister positions while the grasslands correlate with the drier gently rolling and hilly areas (Abouguendia and Coupland 1976: 16). The distribution of open and wooded areas at Batoche was much the same in the recent historic past
Coniferous trees do not occur naturally at Batoche at the present time although this may not have been the case during the eighteenth century (Redman and Ripley 1976: 7).

The natural plant food sources observed in the 1976 field survey included chokecherries, saskatoon berries, hawthorn fruit, rose hips, hazel nuts and various mushrooms. Maple sap was obtainable in the South Saskatchewan Valley (Russell 1971: 60) but maple trees do not appear to grow naturally in the area surveyed in 1976. To the north of the St. Laurent area, the vegetation tends towards aspen and spruce forest while to the south, vegetation types are more dominated by grasses (Coupland and Rowe 1969: 76-77).

**Fauna**

Fish species common in the lower South Saskatchewan River are whitefish, sturgeon, goldeye, burbot, northern pike, sucker and walleye (Atton 1969: 83). Common game birds with breeding ranges encompassing the Batoche park area are coots, ducks, geese, teals, cranes, grouse and partridge (Abouguendia and Coupland 1976: 73-74). Additional duck and geese species migrate through Batoche (Abouguendia and Coupland 1976: 75). Game food sources in the historic past included the snowshoe rabbit, jack rabbit, wapiti, mule deer, whitetailed deer, moose, bison, grizzly bear, black bear and beaver (Maher 1969: 80-82) with fur-bearing species such as coyote, red fox, muskrat, ermine, weasel, mink, badger, and mountain lion still present (Abouguendia and Coupland 1976: 71-72). In general, the availability of fur bearing species is greater as distance north of Batoche increases (Maher 1969: 80-82).
The distribution of buffalo was especially significant to Métis hunters and this topic has been extensively studied. The abundance of bison in the lower South Saskatchewan area was subject to both seasonal variation (Moodie and Ray 1976) and the gradual extermination of the species in western Canada (Roe 1934).

Roe (1951) and Haines (1970) have argued against regularity in buffalo herd movements. This, however, is disputed by Moodie and Ray (1976) who have specifically examined the seasonal movements of buffalo in the Canadian Plains during the fur trade period. Using the primary accounts of fur traders and missionaries, they have demonstrated that:

- a regular migration into the parkland in winter, and back onto the prairie in spring and summer, was characteristic of buffalo movements in the region...
- The specific temporal and spatial manifestations of this general movement, however, were conditioned from year to year by a variety of factors whose effects were largely predictable to both the aboriginal and non-aboriginal inhabitants of the region. Most important among these factors were winter mild spells, heavy snow, hunting pressures and fires (Moodie and Ray 1976: 45).

Batoche was located within an environment of winter shelter and grazing land favoured by bison (Morton 1939: 337).

The original distribution of the plains buffalo included the Batoche area and extended approximately 200 kilometres on a line due north and 400 kilometres on a line due east (Roe 1951: inset Map on the Range of the Buffalo in North America). By 1874, however, the buffalo frontier had been gradually pushed westward by the Métis hunters to a line extending from the Cypress Hills region northeast to the Saskatchewan rivers (Roe 1951: 469). This would place them
approximately 25 kilometres west of Batoche. The bison nevertheless remained numerous around Carlton as late as 1876 and a great many were left in the northcentral area around Edmonton (Roe 1951: 469-470). Following this date, the numbers declined rapidly. For a time, small bands were occasionally found at southern locations but by the mid 1880s the bison in Canada was virtually extinct (Roe 1951: 470-487).

**Soil Capability for Agriculture**

On the west side of the river near Batoche aeolian plains of dune sand are predominant while on the east side glacio-lacustrine plains correspond with somewhat loamier soils (Abouguendia and Coupland 1976: 82-83) (Agricultural and Rural Development Act, Canada Land Inventory, Soil Capability for Agriculture, N.T.S. sheet no. 73B). Soils on the east side of the South Saskatchewan in Township 43 (Range 1, West of the Third Meridian) have moderately severe to extreme limitations that restrict the range of crops or require special conservation practices. Soil productivity varies from low to moderately high under good crop selection and conservation practices. Poor drainage and steep topography subject some areas to severe agricultural limitations (Agricultural and Rural Development Act, Canada Land Inventory Soil Capability for Agriculture, N.T.S. Sheet No. 73b).

Soil capability for agriculture on the west side of the South Saskatchewan river is so low that the soils are incapable of sustained production of annual field crops. The soils are subject to erosion, have an undesirable structure, low natural fertility and low moisture holding capacity. They
are suitable only for forage crops and require forest and brush clearing (ibid.).

Areas of more productive soil than that observed at Batoche exist at St. Laurent-Grandin, Fish Creek, Duck Lake and St. Louis. Superior soil also occurs further upstream and downstream in the South Saskatchewan valley and in areas east and west of the valley (ibid.).

The perceptions of agricultural capability might have been somewhat different in earlier times. This, however, could be determined only by a thorough examination of surveyors' notes and maps and the classifications of the grades of land opened to homesteaders.

**Historic Indian Occupation**

Sufficient archaeological data have yet to be accumulated to determine whether the Batoche locale was a point of seasonal assembly for Indian bands during prehistoric or protohistoric periods. The Lower South Saskatchewan area and the plains to the east were occupied by the Gros Ventres, also referred to as the "Atsena" and the "Fall" or "Rapid" Indians, prior to the influx of whites (Morton 1939: 16, 113, 278). The Batoche area was at one time known as la Fourche des Gros-Ventres (Payment 1976: 7). The influence of the Europeans, their horses and guns was such that the Assiniboines appeared in the area between 1690 and 1720 (Ray 1974: 20-21) and the Cree by 1765 (Ray 1974: 22-23). Following battles in the 1790s (Morton 1939: 456-457; Ray 1974: 98) the Gros-Ventres retreated to the southwest and abandoned the area to the new groups.
Historic Trading Posts

In 1785 two trading companies established posts on either side of the river at a trail crossing of the South Saskatchewan in Township 45, Range 1 (Morton 1939: 337-338). Two subsequent posts which were used between approximately 1804 and 1810 were established in an area slightly upstream. They were primarily "Pemmican posts" (Smythe 1968: 190-192). Three different historic sources describe approximately 11 different locations for the same four posts (Morton 1939: 338, 457, 619; Smythe 1968: 190-192, Figure 6B; E.M.R., NTS 73B/16, 1962). This information is compiled in Table 2 and illustrated in Figure 6. It is hoped that the archaeological survey of the South Saskatchewan River area being carried out under the direction of Ian Dyck (1976: pers. comm.) will produce useful information pertaining to these posts. The 1976 field survey searched only one of the areas indicated and failed to find traces of an early post.

Transportation Systems

The trail, noted above as crossing in Township 45, Range 1, is one of the earliest recorded for the area. Until the mid 19th century, transportation of goods to and from the fur posts of the North West was accomplished primarily by canoe or York boat. By 1840, contacts between the Red River settlement and American posts on the upper Red River by means of cart trails became more frequent (Giraud 1945: 974-985). In 1852, railway and steamboat connections from the eastern seaboard reached St. Paul and in 1859, the Hudson's Bay Company established the use of steamboats on the Red River (Glueck 1956: 45-47). The development of this new
Table 2. Approximate Locations of Early Trading Posts. (The locations numbered in this table are illustrated in Figure 1.)

<table>
<thead>
<tr>
<th>Post Name</th>
<th>Company</th>
<th>Dates</th>
<th>Location Number</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Branch</td>
<td>North West Co.</td>
<td>1785-</td>
<td>1a</td>
<td>Smythe 1968: 190</td>
</tr>
<tr>
<td>House I</td>
<td></td>
<td>1794</td>
<td>1b</td>
<td>Morton 1939: 338, 457</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1c</td>
<td>Smythe 1968: Fig. 6b</td>
</tr>
<tr>
<td>South Branch</td>
<td>Hudson's Bay Co.</td>
<td>1785-</td>
<td>2a</td>
<td>Smythe 1968: 191</td>
</tr>
<tr>
<td>House I</td>
<td></td>
<td>1794</td>
<td>2b</td>
<td>Morton 1939: 338, 457</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2c</td>
<td>Smythe 1968: Fig. 6b</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2d</td>
<td>E.M.R., N.T.S., sheet no. 73B/16</td>
</tr>
<tr>
<td>South Branch</td>
<td>North West Co.</td>
<td>1804-</td>
<td>3a</td>
<td>Smythe 1968: 191</td>
</tr>
<tr>
<td>House II</td>
<td></td>
<td>ca. 1810</td>
<td>3b</td>
<td>Morton 1939: 619</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3c</td>
<td>Smythe 1968: Fig. 6b</td>
</tr>
<tr>
<td>Carlton</td>
<td>Hudson's Bay Co.</td>
<td>1804-</td>
<td>4a</td>
<td>Smythe 1968: 192</td>
</tr>
<tr>
<td>House II</td>
<td></td>
<td>ca. 1810</td>
<td>4b</td>
<td>Morton 1939: 349, 619, 949</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4c</td>
<td>Smythe 1968: Fig. 6b</td>
</tr>
</tbody>
</table>
Figure 6. St. Laurent settlement and surrounding area (drawing by D. Milton).
supply route to Fort Garry coincided with the gradual abandonment of York boats in the supply of western posts. Transportation was increasingly accomplished by Red River cart (Giraud 1945: 979-985).

The Carlton trail, connecting Fort Garry with Fort Carlton on the North Saskatchewan and extending to Edmonton, was the principal trail for traffic to the northern plains area. It was served by a number of secondary trails (Giraud 1945: 980). The trail crossed the South Saskatchewan in the Batoche area and while the exact crossing point may have varied from year to year, a bateau appears to have been kept in the vicinity of Batoche since at least 1862 (Scott 1968: 16; Cheadle 1931: 59; Russell 1971: 8; Appendix A). A permanent ferry was probably established in 1873 (Grant 1967: 141). This barge service was the first on the waterways of the prairies (Giraud 1954: 7) although a second Carlton Trail ferry was later established nine kilometres upstream at Gabriel's Crossing (Russell 1971: 8).

In 1874 the steam boat Northcote was launched on the Saskatchewan River (Peel 1972: 27) inaugurating a new phase of transportation between Winnipeg and points as far west as Medicine Hat and Edmonton. Steamboat freighting on the Saskatchewan rivers increased until about 1882 despite continuous difficulties with rapids, wrecks, low water levels and unpredictable channel changes (Peel 1972: 36-146). These difficulties were particularly pronounced on the South Saskatchewan where only two commercial voyages reached Medicine Hat (Peel 1972: 137-146). A gradual decline in this form of transportation occurred until 1889 when no further navigation was conducted. Even at the height of the steamboats' popularity, guarantees of fast delivery, or even delivery at all, were lacking. A good percentage
of the freight, therefore, remained for the Red River cart brigades (Collard 1967: 46; Giraud 1945: 980).

Secondary trails in the immediate area of Batoche ran primarily north and south (P.A.C. H3/701, Map of the Seat of Riel's Insurrection, Showing the Connection of Prince Albert with other points in the North West, 1885; P.A.C. V1/701, Map Shewing Mounted Police Stations and Patrols throughout the North-West Territories, 1886) (see Fig. 5 and Appendix A). These connected Batoche with other communities along the banks of the South Saskatchewan and also extended to Prince Albert and to the Battleford trail.

Trails were used during the winter months to carry the correspondence of the Hudson's Bay Company by snowshoe and sled (Giraud 1945: 985). As permanent settlements were established they were used increasingly by sleighs and jumpers (Russell 1971: 142; Donkin 1889; Hughes 1920).

The extension of railway connections into the west gradually displaced cart traffic. By June of 1882 the Canadian Pacific Railway main line had reached Regina (Innis 1971: 106) and by September of 1883 the rails were in use as far as western Alberta (Innis 1971: 111). Branches were rapidly extended throughout the prairies. The road from Regina to Prince Albert was completed in October 1890 and Calgary and Edmonton were connected in 1891 (Innis 1971: 141). Railway freight and passenger traffic increased steadily after 1882 (Innis 1971: 130-158).

While the line from Regina to Prince Albert was under construction, freight continued to be hauled by cart from South Qu-Appelle on the main line to Prince Albert and points between. In 1890, however, cart freighting virtually ceased on the Carlton Trail (Russell 1971: 141). The Regina to
Prince Albert trail line passed eight kilometres west of Batoche. Trail freighting degenerated into short distance hauling between the rail line towns and grain elevators and the homes of ranchers and farmers (Russell 1971: 142).

Gradually, municipal roads became established on the allowances intended for this purpose (P.A.C., S/500, Scarborough's New Map of the Prairie Provinces, 1939; P.A.C., S/502, Mundy's Indexed Map of Saskatchewan 1934: P.A.C. Vi/502, Saskatchewan South, Department of Natural Resources, Province of Saskatchewan, 1935). Municipal roads were generally established on a grid system matching the grid land divisions although in the Batoche Trail and the East River Trail (see Fig. 5 and 6). Saskatchewan Highway 225 (termed the East River Trail in this report) is now called the "River Road" by local residents. The Batoche ferry for the Carlton Trail was transferred from the river lot 47 to 48 boundary to Section 19, all subdivisions being within Township 43, Range 1, West of the Third Meridian. This ferry crossing was not abandoned until the 1960s. Most of the secondary trails in the Batoche area, aside from the east River Road noted above, are no longer in use (E.M.R., N.T.S., Sheet numbers 73B/9, 73B/16, 73A/12, 73A/13).

Establishment and Growth of Other Communities
A number of other communities in the area were originally occupied by Métis settlers (See Fig. 6). St. Louis was established in 1873 and by 1882 had a population of approximately 30 families (Giraud 1954: 7). It is now the seat of the St. Louis Rural Municipality with a population of approximately 400 (Richards and Fung 1969: 28-29). St.
Laurent-Grandin was established in 1874 by roughly 40 families of winter rovers (Giraud 1954: 5-6). It received an influx of Manitoban Métis in 1882. Presently, it consists of about eight homes and a church (E.M.R., N.T.S., Sheet no. 73B/16). Fish Creek was also established by about 1882 although again its present constituency includes but a church, cemetery and several scattered farms (E.M.R., N.T.S., Sheet No. 73B/9). Duck Lake, founded in 1876, was initially populated by families from the Red River settlement and a nucleus of western Métis (Giraud 1954: 6). It is located on the Canadian National Railway and on Saskatchewan Highway 11. Today it is one of the more populous communities in the area with 500 individuals (Richards and Fung 1969: 28-29).

Rosthern, Hague and Wakaw are all communities of a thousand or more (Richards and Fung 1969: 28-29). They, however, were established by early non-Métis agricultural settlers. Prince Albert (population 25,000) (Richards and Fung 1969: 28-29) was occupied by pioneer non-Métis farmers in 1873 and developed rapidly thereafter (Russell 1971: 48; Stanley 1961: 183). Saskatoon was established in 1883 as a Temperance Colony (Stanley 1961: 186) and is now the major city in the region with a population of 116,000 (Richards and Fung 1969: 28-29).

The rapid settlement of Saskatchewan following 1900 was encouraged by the prospects for agriculture (Kristjanson 1969: 38). Following the railways and available agricultural land, rural settlements filled in the prairie landscape (McCann 1969: 66-69). Even so, since 1901 the farm and rural community components of the population have declined steadily in relationship to urban growth (Kristjanson 1969: 38). Saskatoon and Prince Albert have been the major regional...
supply centres for the lower South Saskatchewan since the advent of the railway (McCann 1969: 69-72).

Religious Institutions
Father Andres of the oblate Fathers established himself near 50 families of winter rovers around Gabriel's crossing in 1871 (Giraud 1945: 6). This small colony decided to settle along the Saskatchewan and, according to Giraud (1954: 6), the Father selected a propitious site for the establishment of the village and mission. The proposal was not realized until 1874 when the new locale became the colony of St. Laurent de Grandin. The St. Antoine de Padoue mission was established at Batoche in 1881 (Giraud 1954: 6) and a rectory and church were constructed in 1883 and 1884 (Payment 1976: 5). A mission was established in 1882 at St. Louis (Giraud 1954: 7).

Prince Albert was the site of a Presbyterian mission (1886) to the Cree Indians and English half-breeds (Stanley 1961: 183; Russell 1971: 46). The temperance group which founded Saskatoon (Stanley 1961: 186) was religious in character. Rosthern and Hague were initially settled by the followers of the Mennonite faith and the major religious group is still Mennonite in these communities.

Government Policies
The three major grievances of the Métis regarding land ownership were the subject of repeated petitions from the South Saskatchewan Métis including those of Batoche. The Métis of the South Saskatchewan expressed their desire to have the
allotment of scrip land grants attended to in 1874. It was not until the spring of 1885, however, that the Government of Canada took action on their repeated requests (Stanley 1961: 246-250). Similarly, requests for exemption from the Homestead Act were forwarded to the government from the St. Laurent area as early as 1878. Subsequent petitions, including one from Batoche in 1882, again were not acted upon by the government until 1885 (Stanley 1961: 250-255).

In 1878 a special survey was conducted to accommodate the long river lot farms of the St. Laurent area. It included portions of Townships 43 and 44, Range 1, West of the Third Meridian (S.L.S., Plan no. 1043, Plan Shewing lots surveyed in Saint Laurent Settlement, East Side South Saskatchewan River. 1878). Subsequent to this date, Métis settlers occupied lands at Batoche and in other parts of the St. Laurent Settlement which had originally been surveyed in the grid system. Requests on behalf of those settlers for a resurvey were submitted to the government between 1882 and 1884 (Stanley 1961: 256-259). This was not conducted until 1890 when extended areas of the river lot survey appeared on township plans (E.M.R., L.S.B. Plans of Townships 41, 42, 42A, 43, 44, 45, Range 1, and Township 41, Range 2, West of the Third Meridian).

The reaction of the Canadian government to the uprising of 1885, in the form of the expeditionary force of the Canadian Militia, had immediate effects in the destruction of Métis buildings, land improvements, and other possessions (P.A.C. RG15, Vols. 914, 915, 917, 918, List of Claims and Awards, Prince Albert District). Archival data pertaining to this topic for the Batoche area are now being collected by Payment (1976).
Explanatory Hypotheses and Recommended Tests

In preceding sections, those variables affecting Métis settlement considered to be significant by a variety of researchers have been outlined. Here, an assessment of these variables with regards to an understanding of Batoche settlement patterns will be undertaken. The primary objective is a delineation of the specific factors governing the structure of settlement at Batoche; subsequently, suggestions are made toward testing the relative importance of each variable. Unfortunately, time limitations and the restricted nature of the present data base have precluded any form of quantitative analysis. These difficulties will be elaborated on and recommendations will be made for further field work to correct the present shortcomings.

Prior to 1870 the economy of the Canadian West was dominated by the fur trade. The phase of settlement associated with this period saw the establishment of four trading posts in the South Saskatchewan valley near Batoche. These posts were located within the southern ranges of a variety of fur-bearing animals but were established with the primary objective of collecting the produce of the buffalo hunt from the Gros Ventres, Cree and Assiniboine Indians who occupied the area. The South Saskatchewan Valley was within the range of the North American bison and provided an attractive environment for their winter shelter. The valley provided wood, water and fish resources and the river was the major transportation route for trade.
One Métis hivernant camp (21N37) appears to have been identified by the 1976 survey and it is possible that further artifact analysis will demonstrate that additional structures were occupied in the area prior to 1870. Presumably the same resources of game, wood and water made the area attractive to the winter rovers. The presence of the trading posts in the area may have contributed to its use between 1795 and 1810. A major cart trail passed through the area and a crossing was in use at Batoche by 1862, possibly earlier. This factor might also have made the locale attractive to its early occupants.

The data base for the period 1870 to 1890 has been more extensively developed and allows the postulation of hypotheses regarding the relative importance of economic and other factors in the establishment of permanent settlement in the Batoche and larger St. Laurent area. This hypothesis is supported by the fact that the buffalo were by this time concentrated in areas further to the south and west and after 1874 were no longer found in the lower South Saskatchewan. Although the area did contain some fur resources, these were more abundant to the north. Thus, had the Métis economy been totally concentrated on the fur trade, the area would have been less attractive than others and settlement would likely not have been undertaken at Batoche.

The development of sedentary agriculture on the part of the Métis should be characterized in the settlement pattern by the establishment of permanently occupied residences and farm buildings. This is the case in the data observed for the Batoche area. As in other areas of Métis agricultural settlement, a pattern should exist in which farmsteads were
spaced at intervals along the river associated with parcels of land utilized in the long lot system. A visual examination of settlement maps prepared for the Batoche area and historic maps of the larger St. Laurent area seems to indicate that this is indeed the case.

The distribution of soil restrictions on agriculture is not uniform. In addition, the importance of religious institutions in inducing the Métis to establish permanent settlements has been stressed. Some Métis were directly involved in commercial activities such as trading and freighting while others provided services to trading establishments. Such activities are favoured by locales with advantages of transportation. These factors should produce certain variations in settlement observable over time and at any given time. Areas favoured by superior soil, by the presence of religious establishments, or by the presence of transportation routes should logically have been occupied prior to others if these factors were indeed important. Some indication of the relative importance of the variables under consideration might be gained by a tabulation of which areas were occupied first in the St. Laurent area. In the case of Batoche itself, a number of residences were constructed prior to the establishment of the St. Antoine de Padoue parish in 1881. Gaps of about five kilometres were left largely unoccupied on both sides of the river between St. Laurent-Grandin and Batoche. This would appear to rule out the possibility that the settlement was the result of a spread from the St. Laurent-Grandin Parish. The area was equal or poorer in agricultural capability than other parts of the St. Laurent Settlement and areas immediately adjacent on the North Saskatchewan River, but it was occupied prior to the
more productive regions. Although a number of farmsteads were spaced at some distance from each other, approximately five residences with other structures were located within a few hundred metres of the Carlton trail.

A quantitative test of the relative importance of the variables of interest would involve the application of nearest neighbour analysis (Dacey 1960) to the settlement pattern observed in 1880. Rather than a random or uniform linear distribution of residences, one would expect some clustering adjacent to religious institutions in areas of superior agricultural capability and in areas adjacent to major transportation routes at this time. Although the initial pattern might have involved clustering, subsequent agricultural settlement would have spread until the entire area was occupied. A tendency towards a more uniform spacing dictated by the requirements of a given amount of land for successful farming might be expected. This could be tested for by the repetition of nearest neighbour analysis at succeeding intervals.

With the increasing importance of rail transportation after 1890, locations adjacent to the Carlton trail would decline in value as sites for trade and transportation activities. Sites adjacent to the new rural road system and closer to distribution centres would become more valuable. The spacing tendency caused by requirements for agricultural land would discourage nucleation adjacent to religious institutions. It might also be of interest to determine if considerations of distance from the Saskatchewan River varied over time in the decisions of settlers regarding the location of their farmsteads. A continuation of a slightly higher density of settlement on prime agricultural land might be expected.
A relatively uniform amount of land would be required by all agricultural settlers and this factor would produce consistent distance between farmsteads with some variance due to other factors. Secondary factors such as the desire for friendship or the use of a common access road could cause farmsteads to be paired at property boundaries. The subdivision of land holdings among offspring might also produce a secondary identifiable spacing pattern. Such a pattern would be expected some time after the initial occupation of the area. Influences on farmstead spacing other than that of competition can be tested for by the application of the Markovian model to the settlement data. This technique has previously been found useful for the identification of spacing patterns in linear settlements (Reynolds 1976). When distances between points in a linear distribution are measured, the technique identifies the significant spacing intervals associated with one or more variables affecting the spacing.

To carry out the type of analysis suggested here, further excavations are necessary to obtain accurate information on the numbers and locations of structures which existed during various periods. At present, just two maps have been prepared and they are separated by an interval of only ten years. Refinement of the maps for 1880 and 1890 is most likely possible. Although major structures such as stores and homes have probably been illustrated correctly, some minor buildings could well have been omitted. Of more importance is the possibility that additional residences existed in the lower portion of lots 46 and 50 and in the upper parts of lots 44, 45 and 46 along the East River trail. Structures seem to be indicated in these areas by Haig (op.
cit.) and/or Cole (op. cit.). Artifact scatters have been located in two areas (21N44 and 21N88) in the lower part of lot 46 and at another (21N87) in the upper part. Additional excavation to confirm and date the presence of residences should be carried out. A complex of structures on the lot 44 to lot 45 boundary (21N85) has not been tested to determine the dates of construction.

The period of initial development of the settlement pattern is of special interest. The first Métis settlement occurred prior to 1880 and excavations should be directed at determining if any structures, particularly those depicted in Figure 3, were established prior to that date.

The data for the period after 1890 are also particularly poor. As noted in the data base section, several complexes (21N70, 21N73, and 21N74) were constructed and abandoned between approximately 1900 and 1950. Some changes also occurred at one site (21N74) in the section 18 to section 19 boundary line area. Further excavations can provide a sufficient artifact inventory to improve the present vague dates and to ensure that these structures were not erected at dates earlier than those suspected.

The same situation applies on the east side of the South Saskatchewan River where the settlement pattern shifts are generally apparent, but where data fall short of the accuracy required for plotting maps at successive dates. Abandonment dates for structures in the main village area (21N1-4 and 21N7-14) are not clear and the dates of construction of almost all of the structures in the upper portions of lots 44 to 53 are undetermined.
In summary, extant structures and suspected or known locations of structural remains throughout the Batoche National Historic Park should be excavated to gain a sufficient artifact inventory for precise dating of their occupation. The ultimate goal would be the development of a sequence of accurate settlement pattern maps for the period of Métis occupancy. Historical data have proven valuable in preparation of the present maps and this will be further supplemented with the publication of Payment's (1977) structural and settlement study of Batoche. The excavation of structures with historically known dates of construction and dismantlement would be particularly useful, as would be the excavation of deep refuse deposits. These would provide artifact inventories corresponding to known time periods which could then be used to help interpret assemblages from structures of an unknown age.

Determining structure function, as well as date, is important. In cases where individuals take up such an area that they cannot be legitimately treated as points, nearest neighbour analysis should be conducted to their centres (Clark and Evans 1954: 450). Farmsteads occupy a fairly substantial area and the family residence could plausibly be regarded as the centre. In most cases a single residence is associated with other structures and it can be identified relatively easily. Along the section 18 to section 19 line, the lot 46 to lot 47 boundary, the lot 43 to lot 44 boundary and in lots 52 and 53, the density of structures places greater emphasis on the use of archaeology in determining structure function.

To conduct nearest neighbour analysis it is desirable, whenever possible, to select an area for investigation that lies well within the total area covered by the entire popu-
lation. The presence of a boundary tends to distort the value of the statistic as an indicator of the form of spacing (Clark and Evans 1954: 451). Since the population under study is not concentrated in any one area but is scattered for some distance along the river, it becomes difficult to select a boundary for the analysis. Indeed, although the nucleus of Batoche seems to have been initially located at the lot 47 to lot 48 boundary, subsequent maps have referred to it as being approximately two kilometres (E.M.R., N.T.S. Sheet no. 73B, 1955) and even five kilometres further south (E.M.R., N.T.S. Sheet nos. 73B/9, 73B/16, 1962). In referring to historic maps from the 1880 period (S.L.S., Plan no. 1043, Plan shewing lots surveyed in Saint Laurent Settlement), it seems that the area indicated in Figures 4 and 5 may actually be such that the furthest edges of a population cluster have been omitted. Maps prepared from a combination of historical and archaeological data will undoubtedly provide the best possible reconstructions of the Batoche settlement pattern. However, the accuracy of the historic maps can only be evaluated by a comparison to the archaeological-historical reconstruction in areas where both have been produced. Should the accuracy of the historic maps prove sufficient, the map area could be expanded for application of nearest neighbour analysis to correct the error introduced by artificial boundaries.
Conclusions

The objective of this paper has been to describe the historic settlement patterns at Batoche and to outline the factors responsible for those patterns. The initial section concentrated on military features associated with the 1885 battle at Batoche. Four variables were identified by a visual examination of feature patterning and these, in turn, were related to strategical considerations of the Métis and Canadian militia.

Data pertaining to the locations of structures, trails and improved land were compiled although as yet only two settlement pattern maps have been prepared. A review of major historical works identified what were probably the major factors influencing settlement at Batoche. Additional sources were used to provide further detail on the variation of these factors over space and time. In the final section, suitable tests were suggested to evaluate the role each factor played in governing the changes in settlement patterns at Batoche. The actual statistical analyses, however, were precluded by virtue of time restrictions and an incomplete data base.
Appendix A. Supporting Evidence for Historical Map Plotting

In this appendix the data used to plot the historic sketch maps of Batoche for 1880 and 1890 are provided in detail. The township plans for 1880 and 1890 were used to draw the legal subdivisions of river lots and sections in use during those years. The historical and archaeological evidence of structures for each subdivision is described.

Batoche Area ca. 1880, Preliminary Sketch (Figure 4)

Trails

Montague Aldous (S.L.S., Plan no. 1043, Plan shewing lots surveyed in Saint Laurent Settlement, East Side South Saskatchewan River. 1878) provides a rough idea of the trail system on the east side of the South Saskatchewan. In most cases his map is borne out by indications of trail remnants on 1949 aerial photos (E.M.R., N.P.A.L. A 11964-54 to 57, A11970-205 to 207, A11985-36 to 39. 1949). In addition, Reid's information from 1889 is also used (E.M.R., L.S.B., Plan no. 8233, Traverse of trail from a Point on Qu'Appelle & P. Albert Trail to Batoche with Field Book No. 6013. 1889). Reid's 1891 map is used (S.L.S., Plan no. 46, Plan of Trail from Fish Creek to McLeod's Crossing, with Field Book No. 63. 1891) for the accurate plotting of the major trail running to the north and south.
The major east-west trail, crossing the South Saskatchewan near the river lot 46 to river lot 47 boundary, has received a variety of names; among these are "the Winnipeg and Battleford trail", the "Prince Albert trail", the "Saskatchewan trail", and "the main trail from Fort Ellice to Edmonton". It is, however, most correctly referred to as the Carlton trail (Russell 1971: 1, 99-100). The main trails running north and south have also received a variety of names. In 1976, local informants referred to them most frequently as the "river road" or the "river trail". The trail on the west side of the South Saskatchewan connecting Gabriel's Crossing, Batoche and St. Laurent is hereafter referred to as the "West River Trail". The trail on the east side of the Saskatchewan, connecting the same points and Fish Creek, is referred to as the "East River Trail".

Structures and Improved Land

Section 19

Aldous (op. cit.) illustrates a portion of improved land on the north boundary of the west 1/2, section 19. Reid's 1879 field book (S.L.S. Field Book no. 882, J. Lestock Reid, 1879) and a Township plan (E.M.R., L.S.B. Plan of Township No. 43, Range 1, West of 3rd Meridian, First edition, 1880) show that the area within section 19 consists of about 5 acres of cultivated land and 15 acres of fenced land. Two "houses" are also illustrated. The precise locations of the structures and field boundaries are taken from aerial photo All964-54 (E.M.R., N.A.P.L.).
River Lot 41
Aldous (op. cit.) illustrates two structures at the west end of this lot. Aerial photos do not provide sufficient data to allow for precise plotting of location. Nevertheless, Aldous seems to have been generally reliable in his work and is used for the location illustrated. Later maps also illustrate structures in this area.

River Lot 43
Aldous (op. cit.) indicates one structure. Emmanuel Champagne took up permanent residence in 1877, on what later became river lot 44. (S.A.: Homestead File B1148, St. Laurent District, 1884 and 1885) and later registered a homestead claim on lot 44 and a pre-emption claim on lot 43. Over the years the Champagne family established a number of structures on lot 43 and it is likely that one of the buildings listed by Champagne in 1884 and 1885 corresponds to that illustrated by Aldous. Archaeological survey and excavation have located the remains of two structures. The artifact inventory is, as yet, insufficient to provide dates for the occupancy.

River Lot 44
Aldous illustrates one structure in 1879 (op. cit.). Judging from Champagne's homestead claims (op. cit.), he built a two-storey house on this lot in the fall, 1878. Archaeological testing and air photos demonstrate that at least seven structures occupied the site over time. The dates of occupation for the various structures have yet to be determined.
River Lot 47
Although Aldous (op. cit.) mapped only an area of improved land, there must also have been structures on this lot in 1879. Xavier Letendre had resided continuously there since 1873 (S.A., Homestead file, 81148, St. Laurent District, 1884, Claim of Xavier Letendre to river lots 45, 46, 47 and north 1/2 of 48). Jarvis (1877: 160) has noted that high waters in the spring of 1875 had forced people who were living at the crossing to abandon their homes. Letendre's home was probably located adjacent to the improved land and near the river, as in other cases illustrated by Aldous (op. cit.). Archaeological investigations revealed remains of two structures in this area (21N10 and 21N11). The artifacts from one date it slightly earlier than the other. This building seems to correspond to a shed illustrated in a photograph of Xavier Letendre's later, more substantial home (S.A., photo A82, n.d.). This shed, however, has window panes which one would not ordinarily expect and may have been the original home prior to the construction of the more elaborate structure. The area of improved land indicated is taken from Montague Aldous' 1879 map (op. cit.).

River Lot 48
Aldous (op. cit.) maps one structure at the west end of river lot 48 in 1879. The location corresponds to excavated structural remains in this area (21N14).
Batoche Area ca. 1890, Preliminary Sketch (Figure 5)

 Trails

By combining a variety of sources it is possible to determine the locations of a number of trails in use around 1890. It is more difficult to provide some sort of ranking to indicate which trails in the Batoche area received the most use and which were of secondary importance. A number of "short cut" trails developed and others passed buildings or farmsteads which not all trail users would visit. Even a major trail could consist of a number of ruts from the diagonal hitching of carts (Russell 1971: 2) or the use of alternate paths when conditions were difficult. This type of situation was observed by ground survey on the west side of the river and can be seen in aerial photo A11985-38 (E.M.R., N.A.P.L.) on the trails west of the church in lot 50. For the purpose of this map, the major trails are those officially recorded by the Dominion Lands Surveyors. Other "short cut" or branch trails are considered secondary.

On the east side of the South Saskatchewan, two branches of the Carlton trail approach the ferry from slightly different directions. The secondary southern branch is taken from aerial photo A11985-39 (E.M.R., N.A.P.L.). Haig (P.A.C. Map collection B/540, Sketch of Battlefield of Batoche, Plate vii from Canada Sessional Papers 1886, Vol. V, No. 6A), Burrows and Denny (M.P.A. North West Rebellion Collection 21, Plan of Position at Battle of Batoche, 1885), and Cole (P.A.C. Map collection T.84-Batoche-1885, Plan of the attack on Batoche) show that this trail was in use. The major northern branch was mapped by Reid in 1889 (op. cit.) and was also marked by Cole. Portions of this trail were found by the 1976 field survey and remain visible on air photos.
A11985-38, A11985-39, and A11985-40 (E.M.R., N.A.P.L.). Where no remnants are visible on the 1949 photographs, Reid's 1889 map (op. cit.) was used. The East River Trail running north to St. Laurent and south to Fish Creek is shown on Cole (op. cit.), Burrows and Denny (op. cit.) and Haig (op. cit.). It is most precisely recorded by Reid in his 1891 notebook (op. cit.) and follows, for the most part, the same path as today's Saskatchewan Highway 225.

Other secondary trails include a "short cut" running northeast of the structure row in lot 47 up to the River trail. The junctions of this trail with the major trail are noted by Reid in 1889 and 1891 (op. cit.). This path was noted by Burrows and Denny (op. cit.), Cole (op. cit., and Haig (op. cit.) and was still partially visible on A11985-38, in 1949 (E.M.R., N.A.P.L.). Other trails north of lot 47 are indicated on Haig's 1885 sketch (op. cit.) and conform to those visible on A11964-55 (E.M.R., N.A.P.L.). Trails between the church and village area were derived from a comparison of Haig (op. cit.), Cole (op. cit.) and Burrows and Denny (op. cit.) with aerial photo A11985-38 (E.M.R., N.A.P.L.). The short trails leading from the Xavier Letendre house area on lot 47 to the ferry and the row of stores are illustrated by Cole (op. cit.). Trail remnants were found by the field survey.

On the west side of the river, the major trails are taken from an 1890 edition of a township plan (E.M.R., L.S.B. Plan of Township No. 43, Range 1, West of the Third Meridian. Third edition, 1890) and from an 1889 plan (E.M.R., L.S.B., Plan no. 30925, Plan showing a Portion of Trail from Duck Lake to Batoche, J. Lestock Reid). The accuracy of this information was improved by the field survey and by reference to A11985-37
(E.M.R., N.A.P.L.). Other trails on the west side were noted by ground survey and plotted from the 1949 aerial photography. In the section 18 to section 19 area "short cuts" would have been necessary to avoid descending and climbing the river bank slope. The trail between the ferry area and structures in river lot 19 is illustrated by Haig (op. cit.).

Section 18

Burrows and Denny (op. cit.) map one structure in the ferry crossing area on the west side of the river. The sketch maps by George F. Cole (op. cit.) and Captain H. de H. Haig (op. cit.) indicate two structures marked "houses" by Haig. The rebellion losses claim of Messrs. Walters and Baker (P.A.C. RG15 Vol. 918, File #892789, List of Claims and Awards, Prince Albert District) describes their store as being at Fisher's crossing on the opposite side of the river from the Métis traders, thus placing it in section 18 or 19. Ludger Gareault (P.A.C. RG15 Vol. 914, File #892789, List of Claims and Awards, Prince Albert District. Claim of Ludger Gareault on behalf of Xavier Letendre) stated that the upstairs of the 20 x 22 feet structure was used as a dwelling. Walters (op. cit.) noted that there was also a stable and that Alexander Fisher's buildings nearby were sometimes used as storehouses.

These sources would seem to indicate that at least one store/dwelling combination and a stable existed here. Archaeological investigations have revealed the outlines of six structures to date. Of these, one (21N34) does appear to have an artifact inventory characteristic of the 1880s. Two other buildings (21N27 and 21N29A) are indicated on the sketch.
Section 19
Although two structures and an area of improved land were indicated on the north boundary of section 19 in 1880, it appears that by 1890 the structures were abandoned. Abraham Montour had been the original settler but may have left by about 1889 (Diane Payment 1976: pers. comm.).

River Lot 17
Field survey operations located a complex of structures approximately 600 metres west of the Saskatchewan river. A house with attached lean-to and two extant sheds were recorded (21N74B, C, D, and E.). Two additional ruins were also documented (21N74F and 21N74G). The location corresponds reasonably well to that of a structure indicated by Burrows and Denny (op. cit.) in 1885. Analysis of a preliminary surface collection indicated that some bottles were definitely made prior to 1900 (Valerie Hall 1976: pers. comm.). The farmstead continued to be inhabited until at least 1949 (E.M.R., N.A.P.L. Al1985-38). Further excavations may discover additional structures dating to 1890.

River Lot 19
Both Burrows and Denny (op. cit.) and Haig (op. cit.) illustrate a structure in the area of river lot 19, some distance west of the river. Test excavations (21N36) were carried out at a cluster of four depressions in the location plotted. These produced structural evidence and an artifact inventory which suggests an occupation including the 1880s (Valerie Hall 1976: pers. comm.).
River Lot 41
Haig (op. cit.) Burrows and Denny (op. cit.) and Cole (op. cit.) has three structures in this area on their 1885 sketches as did Aldous in 1879 (op. cit.).

River Lot 43
Haig (op. cit.) depicts one structure in lot 43. Cole (op. cit.) has three structures marked although the degree of distortion makes it difficult to tell if they are actually in lot 43 or 42. The homestead claim of Emmanuel Champagne (op. cit.) states that he had broken seven acres on the lot between 1880 and 1881 and it seems his use of this land continued to expand. It also appears that at least a few of the buildings listed by him in 1885 were on lot 43, as in 1879. Two buildings (21N15) are rather arbitrarily depicted adjacent to the Champagne buildings on lot 44. The limited excavation program has been insufficient for dating. The area of improved land indicated on lots 43 and 44 represents 40 acres of broken and fenced land (S.A. Homestead File 81148, St. Laurent District. 1885). It corresponds roughly to the areas indicated by Burrows and Denny (op. cit.) and Cole (op. cit.). Other parts of these river lots remained uncultivated in 1949 (E.M.R., N.A.P.L. All970-207).

River Lot 44
In his 1885 homestead claim Emmanuel Champagne (op. cit.) lists one store, 30 feet by 15 feet, three stables, 20 feet by 50 feet and two meat houses. Since two of these have been depicted on lot 43, the remaining five are illustrated
on lot 44. The exact locations of most of these early structures remain to be determined by excavation. At least one (21N16) appears to have been identified. This structure (21N16) is seen on air photo All985-38 (E.M.R., N.A.P.L.) and it may be that some of the other five buildings illustrated in the 1949 cluster also date to the 1880s. Haig (op. cit.) and Burrows and Denny (op. cit.) label one as "Champlain's house".

River Lot 45
In 1885, William Vaudal described himself as being "of Lot 45 St. Laurent" (S.A. Homestead file 81148, St. Laurent District. Statement corroborating the claim of Emmanuel Champagne). Nevertheless, structures dating to the nineteenth century have not as yet been found on this lot. The area of improved land on lots 45 and 46 adjacent to the river corresponds to the fence marked by Burrows and Denny in 1885 (op. cit.) and the ploughed area denoted by Cole (op. cit.). Since the area appears unbroken in air photo All985-38, it would seem more likely that the area was fenced, but not cultivated, in 1885.

River Lot 46
Xavier Letendre's homestead application of 1884 (op. cit.) notes "1 store unfinished on lot 46" and also states that he has agreed to convey two acres of lot 46 to Baptiste Boyer upon obtaining title. Excavations revealed Batoche's store (21N1) and a structural outline (21N3) which conforms to that described by Boyer (P.A.C. RG15 Vol. 915, File #892789,
List of Claims and Awards, Prince Albert District. Claim of Baptiste Boyer) as his home and store at Batoche. These buildings, however, are actually part of a row on lot 47. Burrows and Denny (op. cit.), Cole (op. cit.) and Haig (op. cit.) all depict this row of structures, but also illustrate one or two buildings to the north in what would be lot 46. Test excavations in this area of lot 46 (21N44 and 21N88) produced a small sample of artifacts dating from 1880 to the early 1900s. The area is now disturbed by cultivation and the excavations have yet to provide firm evidence of any structures.

River Lot 47
Four buildings are illustrated in the row adjacent to lot 46. These correspond to structural traces revealed in a number of excavation areas (21N1, 21N2, 21N3 and 21N4). Joyce Fidler, Emile Parenteau and other local informants stated that one (21N1) had been Batoche's store. Cole (op. cit.) and a photograph (S.A. no. A82) dating from around the turn of the century depict a shed standing south of this site. The same photo depicts a second small structure at the location of one of the other tested areas (21N2). Perhaps these two buildings would be the storehouses for harness and flour noted by Xavier Letendre in his rebellion losses claim (P.A.C. RG15 Vol. 914, File 892789. List of Claims and Awards, Prince Albert District). The structural outlines revealed by a third test operation (21N3) and the corresponding building in the photograph match the description given by Baptiste Boyer for his store (op. cit., Claim of Baptiste Boyer). J. Lestock Reid's field notes from 1889
(op. cit.) illustrate four buildings corresponding to the above noted sites (21N1, 21N2, 21N3 and 21N4). They are labelled "store", "store", "telegraph office and police barracks" and "house" respectively.

On his homestead claim of 1884 (op. cit.) Xavier Letendre listed his house, trading shop, store, storehouse and two stables. The location of the house, several hundred metres southwest of the row of stores, is indicated by Cole (op. cit.), Burrows and Denny (op. cit.) and by Reid's 1889 material (op. cit.). Excavation in the area (21N34) revealed a foundation which conforms to the description by Letendre in his rebellion losses claim (op. cit.) and to photographic views of the Letendre house (S.A. Photo A82, ca. 1900). It is difficult to determine, however, which additional buildings stood in the house area. The numbers, descriptions and dimensions for buildings vary between Letendre's rebellion losses claim and his homestead claim. Even though such obvious structures as the store and main house can be plotted, determining the correct area within lot 47 for the remainder and correlating the description with the excavated structures remains virtually impossible at this stage. Aerial photo A1985-38 (E.M.R., N.A.P.L.) reveals that Letendre's house was still standing in 1949. Photographs of the lot 46 to lot 48 area dating to 1885 (G.F.A. Photos #NA-363-33 and #NA-363-40), while not clear, also illustrate structures in this area.

The area of improved land consists of a slight extension of that area indicated by Aldous in 1879 (op. cit.). Although Xavier Letendre lists a total of 25 acres of land under cultivation and 100 acres under fence in 1884, this does not correspond with the maps of Cole (1884), Burrows and Denny (1885) and Haig (1886). More specifically, they do not indicate any large area of fencing but rather "open flat" and
"open plateau" over much of lots 45 to 48. Accordingly, the total area of improved land mapped on these lots is closer to 40 acres than to 100. Diane Payment (1976: pers. comm.) has suggested that Letendre's acreage of improved land probably declined somewhat between 1884 and 1890.

River Lot 48
Burrows and Denny (op. cit.), Cole (op. cit.) and Haig (op. cit.) continue to indicate a building in 1885 which corresponds to that of Aldous (op. cit.) in 1879. As before, the exact location is thought to have been pinpointed (21N14). Cole would seem to have an additional building and this is corroborated by a photograph (G.F.A. Photo #NA-363-33) showing Batoche in 1885.

River Lot 50
The St. Antoine de Padoue rectory and church were erected in 1883 and 1884 (Payment 1976: 5) and are illustrated on this lot. In addition, there was a school house and barn although the erection date of the school house and the exact location of the barn have yet to be determined. The ruin of the school house is seen on photo All985-38 (E.M.R., N.A.P.L.) in 1949. The building was probably constructed sometime between 1887 and 1892 (Payment 1976: 62). A new barn, built in 1895, was intended to replace an earlier structure which was deteriorating (Payment 1976: 61). Such a building would have been standing in 1890. Test excavations (21N25 in this area failed to locate it.
River Lot 51

Cole (op. cit.) and Haig (op. cit.) each show two structures on the west side of the trail leading to the church. These correspond to two depressions visible on A11985-39 (E.M.R., N.A.P.L.). This area has been cultivated since 1949. A preliminary analysis of artifacts from a surface collection (21N101) of the area provides a tentative time range from the 1850s to the 1880s (Valerie Hall 1976: pers. comm.).

River Lot 52

In 1888 Jean Caron states in his application for homestead patent to lot 52 (S.A. Homestead File 81148, St. Laurent District) that he has a house, a stable and a storehouse on the lot. Reid indicates one structure in 1891 (op. cit.). Those structures appear to correlate with features uncovered in 1976. These include the extant house (21N18A), a shed (21N18B) and an earlier structure (21N18C) covered by a more recent barn.

In 1888 Caron (op. cit.) notes that he has agreed to give A. Cole one acre on which to build a blacksmith's shop. Reid, in 1891 (op. cit.), recorded Cole's house and a blacksmith's building. Test excavations in the approximate area (21N20A) appear to have located the blacksmith structure. This building and an additional one corresponding to Reid's location for Cole's house are still standing on A11985-38 (E.M.R., N.A.P.L.). Caron's homestead application in 1884 (S.A. Homestead File 81148, St. Laurent District) states that he has 40 acres under fence and that he broke six acres of land in 1882. By 1888 his acreage seems to have declined to ten acres of fenced and cultivated land (Caron, op. cit.)
possibly due to rebellion losses. The indicated area of improved land conforms to that delimited by Reid in 1891 (op. cit.). It generally remains within the cleared area visible on All985-38 (E.M.R., N.A.P.L.) in 1949.

River Lot 53
Reid (op. cit.) indicates one structure on this lot in 1891. Excavations revealed structural remains (21N23B) which at one time adjoined an extant structure on the lot. A sufficient sample of artifacts has yet to be recovered to date this earlier structure. However, it does appear to be the building indicated by Reid. The marked area of improved land is also indicated by Reid.

River Lots 54 to 62
The structures and improved land on these lots are essentially those indicated by Reid's field notes of 1891 (op. cit.). Reid generally indicates those portions of improved land immediately adjacent to the trail. These are terminated on the accompanying map within the cleared areas apparent on aerial photo All970-207. The only additional source to be consulted is that of Aldous who indicates improved land on lots 61 and 62 on his 1879 map (op. cit.). This land is still under cultivation on aerial photo All970-207 (E.M.R., N.A.P.L.) and was probably also in the same state in 1890.

Reid's 1891 notes (op. cit.) provide the locations of structures for lots 55 and 57. However, Reid depicts those structures to be immediately adjacent to the trail. The structures in lot 59 and 61 are thus somewhat arbitrarily located. It seems likely that farmsteads would have accompanied
the improved land. Diane Payment (1976: pers. comm.) supports the idea that farmsteads were to be found on the lots in 1890. The structure on lot 59 is one of a cluster on photo All970 (E.M.R., N.A.P.L.). The structure on lot 61 is located adjacent to the entrance trail to the improved land although no historic records of its location were used.
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