CULTURAL DYNAMICS IN THE GRASSLAND-BOREAL-DECIDUOUS TRANSITIONAL ZONE OF SOUTHEASTERN MANITOBA: 1000 B.C. TO A.D. 1000

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by

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ABSTRACT

Artifactual material from the multi-component Bjorklund Site is described and discussed. It is determined that the Laurel Phase represents the movement into southeastern Manitoba of a new group of people as the Laurel assemblage is discontinuous with that of the resident late Archaic Larter or Pelican Lake Phase. The subsequent Late Woodland Manitoba or Blackduck and Selkirk Phases are seen as providing evidence of cultural continuity from the Middle Woodland Period to the Historic Period in southeastern Manitoba.

The Larter or Pelican Lake Phase is compared to the neighbouring and roughly contemporaneous Lake Forest Archaic (incorporating Old Copper, Glacial Kame, Red Ochre and Laurentian) and the Shield Archaic tradition of the Boreal Forest region. It is concluded that the greatest degree of cultural interaction is evidenced in Archaic components of the Canadian Shield which may be traced to plains-adapted peoples of the Larter Phase and the woodland-adapted peoples of the Lake Forest region. It is further suggested that the Shield Archaic as presented by Wright (1972b) does not merit tradition status and is not a useful theoretical construct.

The Laurel Culture as a member of a broader Lake Forest Middle Woodland configuration, is seen as an evolution-

ary development from a Lake Forest Archaic cultural base with the introduction of ceramics from an external source. The Lake Forest Archaic ancestry from Laurel is supported by the available radiocarbon dates, ceramic correspondences throughout the Lake Forest, adaptation to a similar environment, similar subsistence base and the high degree of correspondence in the artifactual trait lists of the two cultures. Much of the Laurel ceramic material beyond the borders of the Lake Forest zone is thus considered indicative of an expansion of Laurel peoples who either left the Lake Forest permanently or on a seasonal basis to exploit the resources of the neighbouring ecological zones. The displacement of Larter peoples by those of the Laurel Culture is considered to have been successful primarily because of the greater diversification and hence efficiency of environmental exploitation by the latter group. An additional and perhaps deciding factor may have been the onset of a major climatic episode during the period of Laurel cultural development. The Sub-Atlantic is associated with a southerly and westerly advance of the Boreal Forest. This would have resulted in a depresssion of the Parkland edge in southeastern Manitoba, thus causing the wintering grounds of the bison to lie west of their earlier location. Larter peoples, who depended almost exclusively upon bison for food would have found the area less favourable and this 'new' ecological niche was rapidly filled by people of eastern derivation with a diffuse economic base aptly suited to changing environmental situations and transitional ecological zones.

The study concludes with a brief discussion of the relationship between Laurel and Blackduck populations and the problems involved in the ethnic identification of the prehistoric populations of southeastern Manitoba.

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Objectives

This paper arises out of four years of fieldwork at the multi-component Bjorklund Site in southeastern Manitoba. The geographical location of this site and the large amount and variety of Middle Woodland ceramics recovered from it are believed to render three fundamental lines of analysis feasible.

The Bjorklund Site contains four defined components. The earliest is the late Archaic Larter Phase which is represented by two projectile points, a quantity of unifacially and bifacially worked artifacts and large amounts of lithic debitage and faunal material. The next occupation is by Laurel peoples who are associated with the first ceramics in southeastern Manitoba. Laurel Phase materials are by far the most numerous at the site, and a great deal of lithic, ceramic and faunal artifacts were excavated from this component. The Late Woodland Period commences with the appearance of the corded pottery of the Manitoba or Blackduck Phase. Above this lie the fabric impressed ceramics of the Selkirk peoples who inhabited the site shortly before the beginning of the historic period. Only a few sherds of Selkirk Ware were recovered from this thin component.

Using the Bjorklund Site material with reference to other local assemblages, the first objective of this study may be achieved: a review, and if necessary a revision, of the culture-history of southeastern Manitoba between 1000 B.C. and A.D. 1000. The three phases in this interval, Larter, Laurel and Blackduck, are well represented in this area but little attention has been paid to the relationship between them. The problem of whether Laurel derives from Larter has been virtually avoided since MacNeish's (1958) early work. Considerably more study has been generated in regard to the question of continuity between Laurel and Blackduck, although the results are controversial. Most workers have either asserted continuity or implied discontinuity. It is hoped that the quantity and diversity of Laurel and Blackduck artifacts at the Bjorklund Site serve to shed more light on this problem.

The second objective is complementary to, or at least an expansion of the first. This involves an examination of broader regional prehistoric manifestations in an attempt to determine the cultural and adaptive relationships of cultures in the Grassland-Boreal Forest-Lake Forest transitional area. The emphasis here is upon the Laurel Culture, its origins, later developments and relationships to adjacent and contemporaneous cultures. Late Archaic complexes in each of these three ecological zones are examined with regard to their material culture, environmental adaptation and settlement pattern inasfar as these are determinable. These cultural elements are compared with those of the Laurel Culture in order to determine the most probable ancestor to Laurel. A similar comparison is then made of Laurel and Blackduck throughout the distributional range of each culture again with the problem of continuity in mind.

The clarification of the continuity problem forms the basis of the third objective of this paper. This final aim, interpretation of the relationship between climatic and hence environmental change, and cultural change is of wider interest than regional prehistoric sequences. The study of culture change is of fundamental interest to anthropology as an understanding of the manner in which culture, conceived as a dynamic element of the total environment, undergoes transformation yields insight into the nature of culture and ultimately man. Three major climatic changes occur in the interval between 1000 B.C. and A.D. 1000 and transitional periods of these are correlative with the three archaeological complexes in this period. The assertion of a causal relationship, however, is contingent upon an understanding of the adaptive mechanisms, social organization and settlement patterns of the cultures involved and how these relate to different environments.

To achieve these objectives, the paper is divided into three major sections. The first deals with the natural environment, how it has changed over time, the kinds of resources which would be available at various periods in prehistory and the nature of climatic change. Chapter II consists of a descriptive analysis of the Bjorklund Site artifacts with a summary of the sequence of occupations and their interrelationships. The third and final chapter examines the relationship of these to contemporaneous cultures and speculates on the role of environmental change in cultural change.

CHAPTER I

THE NATURAL SETTING

Introduction

It seems axiomatic that an interpretation of cultural adaptation requires an understanding of the environment to which that adaptation is oriented. Consequently, the following sections on soils, glaciology, topography, fauna, vegetation and paleoenvironment are presented in order to delineate the ecological framework with which the prehistoric peoples of southeastern Manitoba interacted. Many of these sections, emphasize the transitional nature of the area, lying as it does at the margin of three great vegetational zones; the grasslands, the deciduous forest and the boreal or conifer forest. The reason for this emphasis lies in the nature of climatological (and hence environmental) change and the potential for diversified subsistance base in such areas.

The most well-known early work in paleo-climatology was by Antevs (1948, 1952, 1955) who postulated a steady increase in temperature with the retreat of the Wisconsin ice, reaching a maximum between 7000 and 5000 B.P. and then declining slowly to the present. More recent studies, particularly those of Bryson, Baerreis and Wendland (1970), indicate that climatic change does not occur in this manner. Sawyer (1966) has noted that climate changes differentially in response to localized conditions. Furthermore, there is evidence that the non-linear behaviour of the atmosphere is such that it will shift abruptly through a series of "quasi-stable states" (Fultz 1959; Bryson and Lahey, 1958; Wahl, 1953) in response to either a continuous or discontinuous external forcing function. Bryson, Baerreis and Wendland (1970:53) estimate that the duration of the transitional period between quasi-stable states may be on the order of a few decades.

Assuming with Hare (1953) that although a number of interacting variables are involved climate is the ultimate ecological control, and that vegetation is relatively sensitive to climate, then an abrupt shift in climate may be expected to influence any or all of the following variables: temperature, precipitation, humidity, and vegetational zones and their associated fauna. Needless to say, the precise physical manifestation of any climatic influence upon any of these variables depends upon the nature and magnitude of the climatic change.

Baerreis and Bryson (1965), among others, have noted that ecotones (areas near the margins of biomes, or major ecological zones) contain floral and faunal species of both neighbouring zones. Ecotones are subsequently areas of increased density and variety of plant and animal life, and may therefore be considered favoured areas for human occupation. Climatic fluctuations may be reflected in differing frequencies in species characteristic of either adjoing biome. This phenomenon has been designated the 'edge effect' by Odum (1960). Whereas the heart of a biotic region is relatively stable, in response to climatic changes its margins are far less so. The instability of ecotones indicates that the full impact of any climatic fluctuation will be felt in such areas (Bryson and Wendland, 1967).

Southeastern Manitoba encompasses three major biotic communities and hence constitutes a biome. This is not however, the case throughout the entirety of the post-glacial period. Two climatic episodes are directly relevant to a study of regional prehistory between 1000 B.C. and A.D. 1000.

There is general agreement that the Sub-Atlantic Episode which commenced at approximately 500 B.C. is roughly analgous to the present climate and that vegetational zones achieved their present distributions during this period. If the position is taken that climatic fluctuations have been relatively minor since the onset of the Sub-Atlantic (Bryson and Wendland, 1967:280), then the potential for the emergence of economies based upon diversified resources has been present since that time. Prior to the Sub-Atlantic, the Pre-Boreal Episode was characterized by warmer and dryer conditions. The available evidence suggests that the area was more heavily dominated by grassland vegetation and the prehistoric inhabitants of southeastern Manitoba depended primarily upon grassland fauna for subsistence with relatively minor secondary utilization of plant materials.

Whether these two distinct adaptive patterns represent two distinct groups of people exploiting the area successively or a single group which remains <u>in situ</u>, adapting to environmental change is a problem which must be solved archaeologically.

The prehistoric remains most commonly used by the archaeologist to interpret past cultures, however, are technological in nature and thus represent adaptations to the environment.

The relationship between culture and the environment is complex and incompletely understood. Nonetheless it is hoped that the following sections will provide environmental background against which problems of prehistoric cultural adaptation may be considered.

Topography and Deglaciation

At its maximum, the Wisconsin ice sheet covered all of Manitoba and the northern half of North Dakota (Terasmae, 1973). A radiocarbon assay on organic deposits in south-western Manitoba suggests a date of 13,000 B.P. for the clearing of this area (Pettipas, 1970) and by 12,500 B.P. most of the southern portions of the province were free of ice (Prest, 1969). The early stages of the glacial Lakes Agassiz and Souris were formed at this time. The latter continued to expand into areas to the north as the glacier waned and may have been connected with Lake Algonquin at its eastern limits. Minor ice re-advances following Agassiz formation are recorded by moraines extending across the northern portion of its basin. It would appear that the lake level dropped at least once between 11,000 and 10,000 B.P. as a radiocarbon date of 11,740 $\pm$ 200 is associated with the highest of the Campbell beaches which parallel the course of the Red River in North Dakota. These beaches were probably abandoned shortly after this date and Lake Agassiz I clays were subject to drying and erosion while plant debris washed into the basis.

The final re-advance (Valders) occured between 11,800 and 11,600 years ago, at which time a lobe of ice extended southward to Kinosota on Lake Manitoba (Prest, 1969). This event is synchronous with the rise of Agassiz water levels to the Campbell strandline. These levels remained relatively constant until 9000 B.P. Upon retreating from the Campbell beaches, Lake Agassiz continued to recede, primarily northward, until by 7300 B.P. it had completely drained into Hudson Bay (Elson, 1967). The three major river systems of southern Manitoba--the Red, the Assiniboine and the Winnipeg eroded Agassiz sediments and by 3000 B.P. an alluvial terrace had formed in these river valleys.

These phenomena have resulted in a rather varied physiography. Much of southeastern Manitoba lies in the southeastern section of the Manitoba Lowlands, bounded by the Red River to the west and to the east by the Precambrian Shield.

The Bjorklund Site, in the Winnipeg River Basin, lies within the Southeastern Lake Terrace area (Smith and Ehrlich, 1967). This region is part of the Agassiz basin and occurs above the 800 foot contour interval. The topography has been shaped by "deposition of glacial till, glacio-fluvial outwash, the scouring of higher sites by wave action, deposition of lacustrine sediments and ponding and swamping of depressional sites" (Smith and Ehrlich, 1967:20), thus also contributing to the amount of variation in the texture of surface deposits. Most of the area is gently rolling and characterized by many small lakes, swamps and a few westward flowing streams. Slightly to the west, the Campbell beach has formed a low, irregular, sandy escarpment.

The Winnipeg River and its major Manitoba tributaries, the Whitemouth, Whiteshell and Rennie Rivers flow to the north and west along the western margin of the Canadian Shield through a narrow, moderately well drained level clay plain. This system drains approximately 48,480 square miles from Lake of the Woods into Lake Winnipeg which averages 713 feet above mean sea level.

Soils

The typical soils along the banks of the Winnipeg and Whitemouth Rivers have been subsumed within the Whitemouth-Framnes Group by Smith and Ehrlich (1967). The parent materials upon which these soils have developed consist of unconsolidated rock material dislodged from the underlying bedrock formations by glacial and melt-water activity, mixed with the alluvial deposits of modern water-courses, wind-blown sand and organic deposits. This major group is composed of the Birch Point, Lorteau, Whitemouth, Elma, Hadashville, Middlebro and Kipling Series. These may be Dark Grey Wooded, Gleyed Dark Grey Wooded or Gleyed Dark Grey soils, but all are moderately fertile, good agricultural soils with medium to high water-holding capacity.

The soil of the Bjorklund Site is characteristic of the Whitemouth series and as such is moderately well drained Dark Grey Wooded soil developed on strongly calcareous, moderately fine textured alluvial sediments. The alluvium, in this case a fine silty clay, is underlain by a lacustrine clay substrate.

The topography of the immediate area is essentially level, with a slight rise to the east terminating in the ridge formed by the erosive action of the Whitemouth River. Surface run-off is rapid and internal drainage is moderate.

Whitemouth series soils have thin organic layers that may be absent due to earthworm activity. Below this the distinct Ah horizon grades abruptly into a platy, often mottled Ae horizon above a strong textural B horizon. The latter grades into a pale brown C horizon.

While there is considerable variation in surface textures throughout the Whitemouth Series area and some variation in depositional depths even across the site, a fairly representative profile of the Bjorklund Site is as follows:

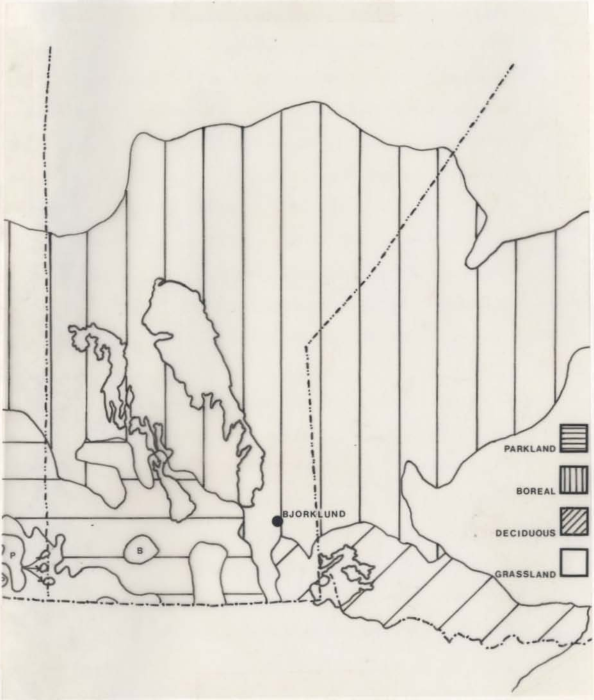
Ah	0-6 inches, dark grey to black loam slightly acidic
Ae	6-8 inches, dark brownish grey clay-loam, slightly acidic
Bt	8-14 inches, dark brown-grey clay, slightly acidic
Bc	14-18 inches, dark greyish-brown silty clay, neutral
C	18-30 inches, pale brown silty clay, mildy alkaline

While this adaptation from Smith and Ehrlich's (1967:90) characterization of the Whitemouth Series profile implies readily distinguishable horizons, it must be remembered that this 'ideal' is not always realized. Many horizon boundaries are often all but invisible to the naked eye and variation in depths may occur over distances as small as fifty feet. Such is the case in the northeastern quadrant of the Bjorklund Site where the mottling, generally characterisitic only of the Ae horizon in this area, extends downward well into the BC horizon.

Fauna

The coincidence of several ecological zones in southeastern Manitoba allows for the appearance of several faunal species with varying subsistence patterns (see Map I). Furthermore, many species engage in a migrant seasonal round encompassing two natural habitats and it may be expected that this may have had an influence upon the seasonal rounds of the aboriginal inhabitants of the area.

The bison was an important resource to both grassland and forest adapted peoples in prehistoric and early historic times. Estimates of the bison population at white contact are on the order of sixty million (Cameron, 1972:19). The bison rutting season is in midsummer and the animals congregate in large herds on the open grasslands at this time. Grassland grazing continues until the beginning of winter when the large



Map 1. Forest Regions in Southern Manitoba (after Rowe,1972)

herds divide into smaller groups and move into the parklands. Single calves are born in May and full maturity is attained at eight years of age.

The ranges of several cervids extend into southern Manitoba and are known to have been of importance to native peoples. Moose are distributed throughout most of the conifer forests and parklands of Canada. In winter moose occupy upland slopes to feed on the twigs of maple and ground hemlock. With the advent of summer, this species descends to the margins of lakes and muskeg where new shoots and water-lilies are plentiful.

Woodland caribou also exhibit an essentially boreal adaptation, feeding on lichens, fungi, mosses and shrubs. Unlike the barren-ground species, woodland caribou gather only in small groups and wander within a relatively restricted area.

The white-tailed deer inhabits the deciduous forests and areas of second growth in the intermediate stages of forest succession (Peterson, 1966:324). Essentially a browser, this species feeds on shrubs and some non-woody plants in summer and may congregate or 'yard' near cedar swamps in winter and early spring where food and shelter can be found. Like the other cervids, the deer's rutting season is in the fall and the young are born in middle to late spring.

South central Manitoba is the eastern limit of the distribution of mule (or black-tailed) deer. These too are browsers, feeding on the twigs and shoots of a variety of trees and shrubs. This species is somewhat gregarious and often travels in small bands. In hilly regions, mule deer ascend the slopes in the spring and feed at lower elevations throughout the winter--the opposite cycle to that of the moose.

Elk, alternately known as red deer or wapiti, originally occupied the western mountains, the parklands and the plains. These grazers feed on a variety of grasses herbs shrubs and trees and hence were more abundant on the plains than in the woodlands until extensive human settlement began. Elk tend to be migratory, ascending to higher elevations in summer and feeding at lower altitudes during winter. These animals gather into large herds with the onset of cold weather and under favourable conditions such aggregates will not appreciably diminish until the rutting season in September and October.

Black bears are widely distributed throughout the forested regions of Canada. This omnivore subsists on carrion of all types, berries and other fruit, grass, and other vegetation such as buds and leaves, fish, small mammals, birds, frogs, insects and their larvae. In early historic times bear skins were used as blankets, the meat for food and the fat and grease for food, fuel, medical and cosmetic purposes. Bears tend to remain within a fairly well defined territory and undergo a state of decreased activity during the winter. Respiration drops considerably at this time but the bear remains conscious and is easily aroused if disturbed. The winter den is not necessarily well concealed; often a fairly exposed site with only a minimal covering of brush will suffice. Black bears lose only a slight amount of weight during the winter. In the spring, however, they lose most of the fat acquired in the fall as food is usually scarce until early summer.

Numerous smaller fur-bearing animals also occupied the area. Mink, otter, beaver and muskrat are essentially pan-Canadian in distribution, inhabiting areas near lakes and streams. Marten, fisher, snowshoe hare and lynx occur in abundance, generally preferring the coniferous forests, while weasel, squirrels, eastern chipmunk and fox are adapted to a more generalized forest situation. A variety of fish, particularly northern pike, perch, bass, pickerel and brook, lake and speckled trout occur in the numerous lakes and streams. Turtles are common and are known to have been of importance in prehistoric economies. Several varieties of fowl including geese, ducks and grouse were at the most important avifauna.

In addition to the aforementioned, a number of other species represented at the Bjorklund Site are presently relatively rare to absent in the area. These include porcupine, grey wolf, woodchuck and wolverine (essentially boreal adapted); and the plains pocket gopher and coyote which prefer grassland situations.

Vegetation

Southeastern Manitoba occurs at the margins of at least three major ecological zones. In Dice's (1943) terminology these are the Hudsonian, Canadian and Illinoian Biotic Provinces.

The Hudsonian is a broad band of primarily spruce forests which span North America. Ecologists have referred to its characteristic vegetation as 'taiga'. The boundary between the Hudsonian and Canadian is fairly easily discernable with the white and black spruces of the former yielding to white pine, Norway pine and a variety of deciduous species across a transitional strip approximately fifty miles wide. In the west, where the Hudsonian meets the Illinoian, there is a transitional belt of aspen and balsam poplar which grow in isolated groves surrounded by prairie. This situation has been designated 'Aspen Parkland' (Bird, 1930), 'Poplar Grove Savanna' (Shelford, Jones and Dice, 1926) or simply 'Parkland' (Lewis, Dowding and Moss, 1928).

The Canadian Biotic Province occupies a small portion of southeastern Manitoba. This zone, alternately termed 'Lake Forest' or 'Great Lakes-St. Lawrence', is characterized by hardwood forests with sugar maple being most abundant.

The Illinoian Biotic Province occupies much of south-central Manitoba and may be compared favourably with the

'True Prairie' of Clements and Shelford (1939). Much of this province is gently rolling with steep bluffs bordering some of the valleys. Local soil conditions and slope exposure are responsible for the alternation of forest and prairie throughout most of this region. Grasses, moderately tall and generally growing in bunches are by far the dominant flora of the Illinoian. Along its northern margin aspen, eastern cottonwood, poplar and several species of willow are most common while richer deciduous forests of elm, sycamore and bur oak form the dominant vegetation to the east.

More recently, Rowe (1972) has subdivided the eight major forest regions of Canada into 90 'sections', each

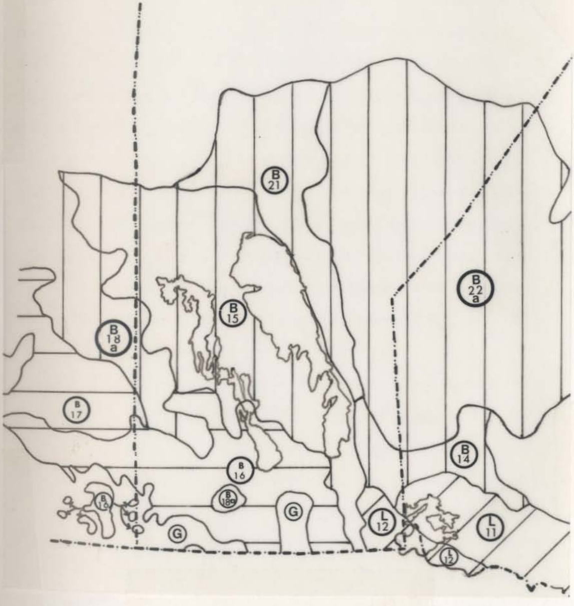
> Conceived as a geographic area possessing an individuality which is expressed relative to other sections in a distinctive pattering of vegetation and of physiography (Rowe,1972:2).

Seven of these sections occur in southern Manitoba (see Map 2). The Boreal sections include:

B14	Lower English River
B15	Manitoba Lowlands
B16	Aspen-Oak
B21	Nelson River
B22a	Northern Coniferous

Forests of the Great Lakes-St. Lawrence Region make a minor intrusion into southeastern in the Quetico (L11) and Rainy River (L12) sections. The remainder of southern Manitoba is considered grassland.

The Northern Coniferous Section terminates at the western margins of the Precambrian Shield. Vegetation



Map 2. Forest Sections of Southern Manitoba (after Rowe,1972)

is typically Boreal with black spruce dominant both in the uplands (where it is associated with jack pine) and on the more poorly drained lowlands where tamarack also occurs. Stands of balsam poplar, balsam fir, trembling aspen and white spruce occur where more favourable soil and localized climatic conditions prevail. These species also occur on the Nelson River Section immediately to the west. The presence of Lake Winnipeg and the effect of the lacustrine clays and sands deposited by Lake Agassiz on subsequent soil development and topography is reflected by a higher frequency of trembling aspen, balsam poplar, white spruce, white birch and balsam fir. Black spruce remains the dominant forest cover, although marked swamp conditions in many areas is reflected in growth restriction of this species. Green ash and Manitoba maple occur on a few river banks and bur oak appears at the extreme southern tip of this section.

Both the Nelson River and Northern Coniferous Sections are bounded to the south by the Lower English River Section which covers nearly the entirety of the Whiteshell Provincial Park. Characteristically boreal vegetation such as balsam fir, white pine and jack pine is found although the latter is no longer restricted to sandier soils extending also to clay and silt soils after burn-off. The dominant cover, on the better drained sites consists of trembling aspen, balsam poplar and white spruce with black spruce and tamarack occurring in the shallow bogs. Eastern white pine and red pine, intrusive from the Great Lakes-St. Lawrence Region to the southeast appear on rocky river banks, lake shores and sand ridges while green ash, white elm and bur oak, more characteristic of the neighbouring sections to the west are also found in some riverine settings. Although the Bjorklund Site falls within the Lower English River Section, it is located less than three hundred yards from theeastern 'border' of the Manitoba Lowlands Section.

Jack pine, trembling aspen, and bur oak are common on the low ridges of the lowlands with localized representation of white elm, green ash, Manitoba maple and eastern white cedar. Black spruce, tamarack, swamps and meadows are found in poorly drained areas, while better-drained sites along watercourses are characterized by good stands of white spruce, trembling aspen, balsam poplar and occassionally balsam fir and white birch.

The Aspen-Oak and Aspen Grove Forest Sections form a belt extending from south central Manitoba to the foothills of the Rocky Mountains in the north west. These sections constitute a transitional zone between the Boreal Forest and the grasslands of the central plains. Only the former will be considered here. Vegetation is characterized by the deciduous elements of the Boreal Forest forming either a closed forest or a grove situation depending upon local conditions. The dominant tree species here is the trembling aspen which is found in continuous stands in the north and in small patches around wet depressions on the plains. Balsam poplar and white elm are fairly common, throughout this section as is bur oak--particularly along river banks. Green ash, Manitoba maple, and eastern cottonwood occur on alluvial soils as do basswood and black ash in the south east.

The Great Lakes-St. Lawrence Forest Region is represented by the Rainy River and Quetico Sections in south-eastern Manitoba. The latter, however, is such a minor intrusion as to be of no great significance in this discussion. The northern boundary of the Rainy River Section coincides with the presence of eastern white cedar in a swamp association consisting of black spruce, tamarack willow and alder scrub. The red and eastern white pines, now more common to the east, have been depleted by fire and logging operations and jack pines have replaced them. Balsam poplar, balsam fir, and white spruce are found inland from rivers while white elm, basswood, Manitoba maple and bur oak occur along the river banks. Trembling aspen is common throughout, with the largetooth aspen increasing in frequency to the east in the Quetico section. The forests of this section illustrate the influence of the northward migration of the Great Lakes-St. Lawrence forests as well as the influence of the tension zone between forests to the east and prairie to the west (Rowe, 1972:111).

Climate

In relation to world conditions southeastern Manitoba is characterized by a Dfb climate (Koppen and Geiger, 1936). Lying near the centre of the continent it lacks the ameliorating effects of large bodies of water nearby and hence there is a considerable range between summer and winter temperatures. Winter temperatures are highly variable from month to month depending on the nature and flow of air masses over the area. Prolonged periods of intense cold may occur due to a steady stream of polar air. Conversely, in some winters milder air masses of Pacific origin may dominate, thus bringing milder weather. These factors may be responsible for a deviation of as much as 25°F from the mean monthly temperature.

Temperatures rise rapidly in spring and drop in autumn with equal rapidity--April and October being the primary transitional months. The mean growing season is less than 100 days in duration. The shortness of this season compounded by light yearly precipitation (approximately 20 inches) would deleteriously effect crop growth were it not for the fact that 60 to 70 per cent falls within the growing season. Sunshine averages 2000 hours per year with an average slightly less than 300 hours in July, the sunniest month. This amount, relatively high for the latitude, is also conducive to agricultural activity.

In summer, thunderstorms are frequent due to intense heating and the resulting strong convection. Such storms are often accompanied by hail and both are most frequent from June to August. In contrast to the grasslands droughts are rare in southeastern Manitoba, although floods are fairly common. These are particularly serious when the three causal factors: heavy winter snow accumulation, a cold spring resulting in a late break-up and heavy spring precipitation are jointly operative.

Winter snowfall is relatively light, but the average of fifty inches may be distributed throughout ten months. Snowfalls are not recorded for July and August and a June snow is rare, but a snowfall in September is not unusual.

Presented below are tables of temperatures, precipitation and frost free days for several stations in southeastern Manitoba. Of these, the Seven Sisters data are perhaps the most relevant as this station is located less than one mile south of the Bjorklund Site (see Smith and Ehrlich, 1967:21,22).

Table 1

Mean Monthly and Annual Temperatures in Degrees Fahrenheit[1]

Station	Great Falls[2]	Indian Bay[3]	Seven Sisters[4]	Winnipeg[5]
Jan.	-1.0	-0.6	0.0	0.1
Feb.	3.1	3.6	4.3	4.1
Mar.	16.4	16.6	17.0	17.0
Apr.	35.9	35.8	36.4	38.0
May	51.3	50.3	50.6	52.4
June	61.5	60.6	60.9	61.7
July	68.2	66.9	67.8	68.3
Aug.	65.7	64.4	65.5	66.0
Sept.	54.3	53.7	54.3	55.1
Oct.	42.6	42.4	42.8	43.2
Nov.	23.2	23.2	23.5	23.3
Dec.	7[illegible]	7.3	7.9	8.7
Mean	35.7	35.4	35.9	36.5

Table 2

Mean Monthly Precipitation in Inches[6]

Station	Great Falls[7]	Winnipeg	Indian Bay
Jan.	1.41	1.00	1.26
Feb.	0.87	0.81	0.95
Mar.	0.98	1.08	1.23
Apr.	1.04	1.17	1.28
May	1.72	2.00	2.00
June	2.81	3.18	3.15
July	2.57	2.71	3.41
Aug.	2.34	2.76	2.94
Sept.	2.51	2.17	2.34
Oct.	1.16	1.42	1.46
Nov.	1.21	1.14	1.37
Dec.	1.00	0.87	1.11
Mean	19.62	20.31	22.53

Table 3

Frost Free Days[8]

		Indian Bay	Great Falls	Winnipeg
Last	Mean	May 26	May 21	May 27
Spring	Earliest	Apr 28	May 7	Apr 26
Frost	Latest	Jun 17	Jun 8	Jun 27
First	Mean	Sept 7	Sept 25	Sept 15
Fall	Earliest	Aug 27	Aug 30	Aug 21
Frost	Latest	Oct 15	Oct 14	Oct 16
Frost	Mean	114	127	111
Free	Longest	147	154	146
Season	Shortest	75	100	83

1. Data obtained from mimeographed circular CDS No. 2-65 Climatology Division, Meteorological Branch, Toronto.
2. From the thirty year period 1931 to 1960.
3. From the thirty year period 1931 to 1960.
4. From the ten year period 1951 to 1960 adjusted to the standard mean period 1931 to 1960
5. From the thirty year period 1931 to 1960.
6. Data obtained from the records of the Dominion Meteorological Division, Department of Transport, Toronto.
7. From the twenty-five year period 1936 to 1961.
8. Data obtained from the <u>Climatic Summaries for Selected Meteorological Studies in Canada, Volume III, Frost Data.</u>, Meteorological Division, Canada Department of Transport, Toronto.
9. Frost occuring on or before July 15 was classified as a spring frost, and frost on or after July 16 was considered a fall frost.

Paleoenvironment

Paleobotanical evidence suggests that both arctic and boreal vegetation types existed at the southern periphery of the Wisconsin ice sheet in late post-glacial times. A series of radiocarbon dates from southern Saskatchewan indicate that forested conditions occurred in abundance between 10,700 B.P. (S-183) until at least 10.050 B.P. (S-41) (Mott, 1973:13). Little can be said of the nature of this vegetation, however, as modern analogues of the early spruce dominated assemblages have not been found. On the basis of their analysis of post-glacial climatic changes, Bryson, Baerreis and Wendland (1970) have concluded that the Boreal Forest extended into the sandhills of Nebraska and northeastern Kansas. Studies of fossil molluscs from North Dakota suggest that the immediate post-glacial climate was mild and more humid that at present.

Terasmae (n.d.) has posited the prevalence of prairie conditions along the Missouri Coteau subsequent to 10,000 B.P. as there is a decline in the abundance of arboreal pollen at the Scrimbit Farm Site in southern Saskatchewan after this period. This would appear to be in general agreement with Delorme's conclusions based on a study of freshwater ostracods. Delorme (1965) sees a warming trend during glacial retreat in southern Saskatchewan followed by a brief cooling period (correlative with Valders) prior to a second warming trend which culminated in "a prolonged time of widespread aridity and drought which began about 8500 years ago." (Mott's, 1973) Clearwater Lake pollen profile indicates that generalized prairie conditions have existed in the region from 10,000 B.P. to the present.

The initial flora to occupy the Tiger Hills region of southwestern Manitoba in early post-glacial times has been characterized by Ritchie and Lichti-Federovich (1968:878) as:

> closed stands of spruce with minor elements of poplar, birch, and black ash on mesic sites; an extensive shrub of Shepherdia and Salix on less stable seral sites; and a community of grasses and herbs dominated by Artemisia, Cyperaceae and Graminae on the most unstable and the most xeric sites.

But here too verification is difficult due to the absence of modern analogues to the fossil pollen assemblages. As was the case in southern Saskatchewan immediately to the west, Ritchie (1969:1348) concludes that the initial spruce occupation of recently ice-freed land gave way at approximately 10,000 years ago to a

> treeless vegetation, dominated by grasses and forbs, but also with willows, juniper and Sherpherdia argentea in appropriate situations.. .... in response to a warmer and drier climate.

Further east, Ogden (1967) has also found evidence of a sudden climatic change at 10,000 B.P. He notes that the climatic change which initiated the post-Valders retreat altered surface ocean temperatures and deep-sea sedimentation rates profoundly. Pollen samples from lakes and bogs in southern Minnesota indicate the replacement of post-glacial spruce pollen by birch and pine near 10,180 B.P. Ogden's study of pine transgression throughout the northeast indicates that it occurred abruptly as the associated radiocarbon dates cluster between 10,500 and 9,500 B.P.

As extensive pollen record from Qually, near the North Dakota-Minnesota border, indicates the primacy of Picea (60 to 80 per cent) near the southern shores of Lake Agassiz between 10,000 and 11,000 B.P. Macrofossils provide evidence of Larix laricina, Betula papyrifera, Picea glauca, Populus balsamifera, and Fraxinus pennsylvanica. The dominance of spruce and macrofossil assemblages of this period corresponds with contemporaneous sites in eastern Minnesota and the Upper Great Lakes (Watts and Winter, 1966; Cushing, 1965) central North Dakota (McAndrews, 1967) and in the sandhills of South Dakota (Watts and Wright, 1966).

The subsequent peak of Pinus and deciduous tree pollen is synchronous with the retreat of Lake Agassiz from the Campbell strandline. A radiocarbon date from Bog D on the Mississippi River in western Minnesota suggests a date of 8560 ± 120 (Y-1419) for the end of the pine maximum in this region. The Campbell beaches mark the final major high-water level of Lake Agassiz before its disappearance 7000 years ago. The rise in herb pollen during this period, reaching strong maxima in the prairie regions, and the dominance of Quercus in the east may be interpreted as prairie and oak savanna respectively (McAndrews, 1966). Other deciduous forest species such as poplar, birch, elm, maple and ironwood occur on favourable eastern sites on the morainic uplands around lakes and along streams. Pollen spectra indicate that conifers were not plentiful. Macrofossils include Populus balsamifera (6200 ± 320; W-860) and Fraxinus (6750 ± 320; W-862) in alluvial deposits along the Red River near Winnipeg. Upland prairie plant macrofossils from northeastern South Dakota include Amorpha canescens, Petalostemum candidum, Panicum cf. capillare, Chenopodium hybrididum var. gigantospermum, Polygala verticillata, Helianthus cf. laetiflorus, Verbena bracteata cf. Ratibida pinnata, cf. Oenotherd biennis, Lactuca canadensis, type Artemisia ludoviciana, Erigeron, Aster and Potentilla millegrana (Watts and Bright, 1968).

A peak in Ambrosia pollen is reached in most pollen diagrams in the prairie region between 7000 and 8000 B.P. and this suggests to Shay (1967) a period of maximum aridity. This period is commonly known as the Altithermal or alternatively the Hypsithermal. This warm dry interval in central North America has been designated the Atlantic

Climatic Episode by Baerreis and Bryson (1965) and a synthesis of 640 radiocarbon dates believed to indicate "significant changes in the environment" led Bryson, Baerreis and Wendland (1970) to estimate its duration at 8450 ± 320 to 4680 ± 490 B.P. Relatively few vegetational shifts are seen during the Atlantic. The decline in arboreal pollen from southern Saskatchewan after 10,000 B.P. led Mott (1973) to conclude that prairie conditions have endured over the last 9000 years. While he concedes that further changes must have occurred, he feels that additional work is required before they may be clearly delineated.

Bryson, Baerreis and Wendland (1970) correlate this episode with an increased north easterly penetration of Pacific air into central Minnesota and eastward to the Atlantic coast. As Pacific air is associated with prairie conditions, the authors posit a maximum easterly extension of grasslands at this time--possibly as far as western Pennsylvania (Bryson and Wendland, 1967:291). Rapid <u>in situ</u> wasting of the Cochrane ice occurred in early Atlantic times and the Boreal Forest rapidly followed its retreat northward. The southern margin of boreal vegetation lay to the north east of its modern location (Bryson and Wendland, 1967:292; McAndrews, 1966).

Beginning at about 4000 years ago in the southern Lake Agassiz basin, a sudden change in the pollen assemblages of the eastern uplands suggests a transition from oak savanna to a closed forest characterized by paper birch, oak, elm, basswood, ash, sugar maple and ironwood. Conifer species, chiefly pine, also expanded into this eastern area. These events may be assoicated with the Sub-Boreal Climatic Episode dated at 4680 $\pm$ 490 to 2890 $\pm$ 510 (Bryson, Baerreis and Wendland, 1970). In the Sub-Boreal the eastern extremities of the grasslands contracted westward as far as Iowa (Bryson, Baerreis and Wendland, 1970:58). Bryson and Wendland (1967) suggest a south westward migration of both the northern and southern margin of the Boreal Forest of approximately two degrees of latitude in late Sub-Boreal times (ca. 1500 B.C.). They feel that there is considerable evidence of a cooler climate during the Sub-Boreal suggestive of a more meridianal circulation of the atmosphere (ibid 292), a strong high pressure ridge over the Rocky Mountains in summer and a stronger flow of arctic air into central Canada (Bryson, Baerreis and Wendland, 1970:58-59). The Sub-Boreal Episode is contemporary with the first intensive human occupation of southern Manitoba. A number of prehistoric cultures are discernible at this time, but all seem characterized by a subsistence pattern based upon large-scale exploitation of bison and to a lesser extent other big game species.

A further environmental change occurred subsequent to the Sub-Boreal, and this has been designated the

Sub-Atlantic (Baerreis and Bryson, 1965). The statistical determination of its duration is 2890 $\pm$ 510 to 1690 $\pm$ 410 (Bryson, Baerreis and Wendland, 1970:63), although dates of 550 B.C. to 400 A.D. (Bryson and Wendland, 1967:280) and 500 B.C. to A.D. 260 (Reeves, 1970:150) are more commonly used. White pine appears in the southern Agassiz basis at 2700 B.P. and is dominant by 2000 B.P. (McAndrews, 1966). The initiation of the growth of upland muskeg in central Canada at approximately 430 B.C. (Bender, Bryson, and Baerreis, 1965) is indicative of increased moisture at this time. Byrson and Wendland (1967:292) contend that the borders of the Boreal forests did not change appreciably at this time, but Ritchie's (1969) palynological studies in the Riding Mountain area of southwestern Manitoba suggest that the southerly movement of the Boreal Forest which Bryson and Wendland associate with the middle to late Sub-Boreal is more nearly correlative with the commencement of the Sub-Atlantic (Ritchie, 1969:1348-1349). Archaeological evidence tends to corroborate Ritchie's assertion as the virtual disappearance of characteristic grassland fauna such as bison, concomitant with the appearance of conifer adapted species (such as the snowshoe hare) in archaeological assemblages is roughly coincident with the initial appearance of ceramics in southeastern Manitoba ca. 500 B.C. to A.D. 1 (see MacNeish, 1958: 176-177).

Bryson and Wendland (1967) have suggested a displacement of the position of the upper-air anticyclonic eddy normally located over the Great Basin in summer may have been responsible for the wetter, cloudier, cooler summers and the stormier winters. Vegetational zones shifted to their approximate historical positions. Ritchie (1969) reports the appearance of Picea, Pinus, Larix, Betula, Quercus, Alnus and small amounts of Abies at 2500 B.P. and this pattern remains constant in Riding Mountain to the top of the sequence. To the south, in the Tiger Hills area (Ritchie and Lichti-Federovich, 1968) Parkland vegetation, initially appearing at approximately 1500 B.C., became dominant over the grassland by 500 B.C.

The appearance of one final floral species during the Sub-Atlantic warrants consideration. McAndrews' (1969) palynological studies of Rice Lake in northwestern Minnesota revealed a pollen spectrum extending from oak savanna to deciduous forest to pine-hardwood forest to a post-settlement ragweed zone. Seeds and pollen of wild rice (Zizania aquatica) occur in the pine-hardwood portion of the profile. McAndrews notes that while wild rice occurs throughout the Upper Great Lakes, it is most prevalent in the pine-hardwood forests of southeastern Manitoba, northeastern Minnesota, northern Wisconsin and the portions of Ontario adjacent to Minnesota. The initial appearance of wild rice was radiocarbon dated at 2450 ± 100 B.P., although McAndrews corrects this to 1935 ± 100 B.P. as he feels that the sample was contaminated by dead carbon. Nonetheless it would seem that the spread of wild rice into this area occurred in early to middle Sub-Atlantic times. The potential significance of this to prehistoric subsistence patterns should not be underestimated. Wild rice provides over 50% of the food for wild ducks on some Minnesota lakes in autumn (Moyle, 1944:177) and in 1888 it was estimated that wild rice comprised a quarter of the food of the Winnebago, Shish, Cass and Leech Lake Chippewa bands (U.S. Supreme Court Transcript, 1922:160).

Post-Sub-Atlantic climatic fluctuations were relatively minor, and in fact, may be classed as sub-episodes within the Sub-Atlantic (Bryson and Wendland, 1967:280). The Scandic Episode (ca. A.D. 400 to A.D. 900) saw an "improvement" of conditions, being characterized by less precipitation, warmer mean temperatures and erosion in stream valleys (Reeves, 1969). The subsequent Neo-Atlantic (ca. A.D. 900 to A.D. 1200) witnessed a slight increase in effective summer precipitation and a concomitant decrease in the drying westerlies. There appears to be a slight advance of the southern edge of the Boreal Forest and corn farming became practical across the plains (Bryson and Julian, 1963).

The Pacific Climatic Episode (ca. A.D. 1200 to A.D. 1550) is characterized by increased westerlies and a partial return to conditions similar to those of the Sub-Atlantic.

A winter jet stream in the far south associated with blocking highs over northwestern Europe and a reduced summer penetration of tropical air northward into Canada is indicated by historical data (Bryson and Wendland, 1967:296). The Boreal Forest may have extended further to the south in the Great Lakes region during this period.

The Neo-Boreal (ca. A.D. 1550 to A.D. 1850) was generally a cooler period than at present, with mean autumn temperatures possibly being as much as 4°F below modern temperatures. Glaciers once again formed in the Rockies as far south as New Mexico. The Neo-Boreal terminated with the historically documented return of strong westerlies in mid-latitudes (Lamb, 1966).

CHAPTER II

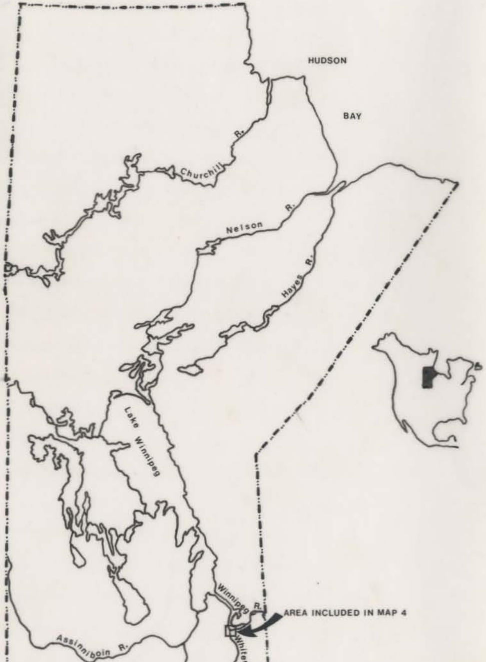
THE BJORKLUND SITE

Introduction

The Bjorklund Site is situated on a ridge above the north shore of the Whitemouth River approximately 500 yards from its confluence with the Winnipeg River in southeastern Manitoba. The geographical co-ordinates are 50 degrees 7 minutes north latitude by 96 degrees 2 minutes west longitude (see Maps 3 and 4).

The University of Winnipeg Archaeological Field School excavated the Whitemouth Falls Site, located directly across the Whitemouth River from the Bjorklund Site in the Spring of 1972. Mr. Bob Porth, a resident of Seven Sisters and owner of the land adjoining the Bjorklund Site, brought his collection to the attention of Dr. J. H. Steinbring, the director of the field school. A surface survey of the north bank of the Whitemouth River was subsequently made by J. Steinbring, D. Polotylo, J. Pelleck and A. Buchner. While some material was collected at this time, the full significance of the area was not realized until the following year.

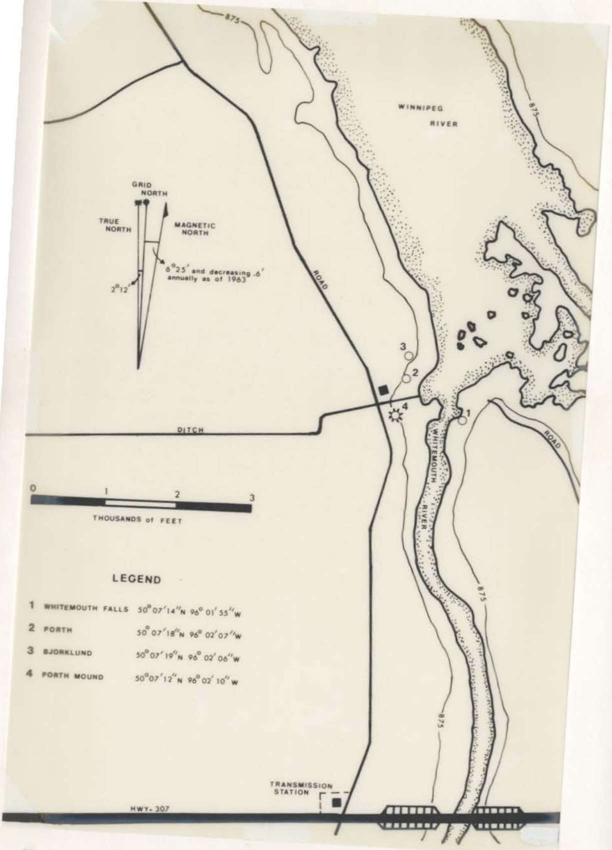
The 1973 field school continued excavation of the Whitemouth Falls Site, but large amounts of charred bone and pottery fragments eroding from the opposite riverbank on the property of Mr. J. Porth, induced Dr. Steinbring to initiate five excavational units in that area also. This



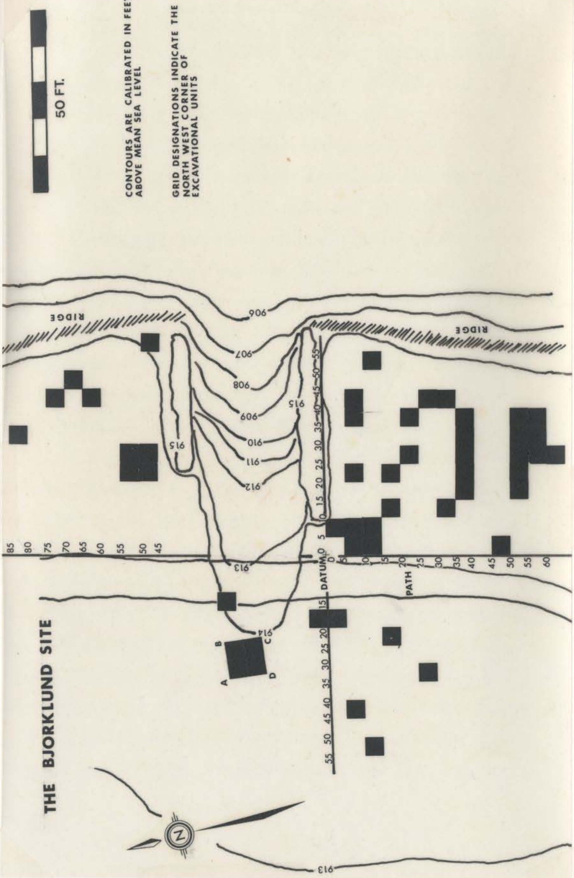
Map 3. Manitoba

locus was subsequently designated the Porth Site. On the second day of excavation, Mr. Bjorklund of Seven Sisters, commenced bulldozing operations for the construction of a launching ramp on the Crown Land immediately east of the Porth property. A cursory inspection of the banks of the bulldozer cut which extended 100 yards from the top river terrace to the river revealed vast amounts of Middle and Late Woodland ceramics and a variety of lithic artifacts. Assurance was gained from Mr. Bjorklund that he would suspend further work until three test units could be excavated.

These units, A. B and C, were excavated to a depth of 20 inches in arbitrary 2 inch levels (see Map 5). Nearly 3000 pot sherds were recovered in addition to several stone projectile points, scrapers, drills, flakes and numerous bone fragments. An elk cranium associated with cord roughened ceramics, and a bison longbone at the same level as a corner-notched projectile point were collected for radiocarbon assay. These samples yielded dates of A.D. 1330 ± 75 (Gak-4712) and 800 B.C. ± 95 (Gak-4713), respectively. The latter confirmed earlier suspicions of an Archaic occupation of the site. The abundance of prehistoric materials in these three five foot units when considered in the light of the virtual absence of artifacts on the riverbank prior to bulldozing indicated that the site had been virtually undisturbed by



Map 4. The Confluence of the Whitemouth and Winnipeg Rivers



Map 5. The Bjorklund Site

natural erosive agents.

The attentions of the 1974 field school were focused entirely upon the Bjorklund Site. A permanent datum was established at the southeastern corner of the junction of the bulldozer cut and the road (see Map 5) and x and y axes were established roughly parallel to these two features respectively. This resulted in the grid orientation lying 15 degrees east of magnetic north. The centralized datum divided the site into four quadrants, each occupying approximately equal areas. The four units thus defined were considered distinct strata for sampling purposes. The southeastern quadrant was chosen for initial sampling as this area was relatively flat and treed less densely than the other quadrants. Utilizing systematic unaligned random sampling (Mueller, 1974), ten units were surveyed in working southward from the x axis. This method, as opposed to simple random sampling, ensures equal areal coverage while retaining a sufficient degree of randomness for statistical tests of the significance of horizontal artifact distributions. In addition, four units were placed in a block formation in the northeastern quadrant. This served the purpose of testing the artifact density of both quadrants relative to one another. All units were excavated to level 6B (12 inches below surface) during the field school. This depth was believed to represent the beginning of the Woodland Period.

Following the termination of the field school, a crew of seven, under the direction of A. P. Buchner completed these fourteen units, extended the southeast quadrant southward with three further squares and completed five units in the southwestern quadrant. By this stage, definite tendencies in distribution were discernible. The southwestern quadrant yielded the smallest amount of artifactual material, but more faunal remains than the rest of the site. All material in units of the southeastern quadrant decreased slowly but steadily from north to south. The exception was a flexed human burial at a depth of 30 inches in S55E35. Excavation of this unit ceased immediately and a series of transects were placed around this unit, and excavated simultaneously until the entire skeleton was exposed. The feature was then removed and two samples were submitted for radiocarbon dating. Both samples, one bone and one charcoal, yielded Middle Woodland period dates.

The University of Winnipeg Field School of 1975 returned to the Whitemouth Falls Site but a crew of three continued excavation of the southeast quadrant at Bjorklund during this time. In early July they were joined by six additional workers. Nine units were initiated in the south-east quadrant, five in the northeast, and three in the northwest quadrant including Unit D. By mid-August a total of 51 excavational units and transects had been completed and backfilled. The total number of specimens collected to date was on the order of 44,000 and 8 features had been defined.

At the close of excavations some preliminary statements on the size of the site and its distributional characteristics could be made. While artifacts indicative of an Archaic occupation were distributed sparsely throughout the site at the lowest levels, they were most frequent in the units adjacent to the bulldozed area. Prehistoric artifacts in general declined in frequency to a point sixty feet south of datum with the exception of the artifacts accompanying the burial. Test units eighty feet south of datum yielded no artifactual material. Artifacts were distributed fairly continuously from datum eastward to the ridge. The northern edge of the site appears to lie at the juncture of the ridge and the path. This is not indicated on the map, but lies 225 feet northeast of datum. The northeast quadrant, however, produced less material than the southeast. The western limit of the site is difficult to determine. Testing west of the three test units A, B and C was hampered by the marshy and highly irregular nature of this area. Artifacts were considerably less frequent in the southwest quadrant, and if this combined with the distribution of surface finds is considered, then a western occupation limit of 75 feet from datum seems reasonable. The most prolific units (determined in terms of density of artifactual material) were those lying near the bulldozer cut and the ridge, particularly N50E55, S10W50 and test units A, B, C and D. As these encircle the bulldozed area, it is inferred that the greatest part of the most intensively occupied portion of the site was destroyed by this method.

Ceramics

Pottery is by far the most numerous type of artifact represented at the Bjorklund Site. While an actual sherd count has not been made, their high frequency in all units relative to other artifact types suggests a minimal estimation of approximately 30,000 pieces. This total includes 565 rim sherds from both excavated and surface contexts. Only 17 rims (3 per cent) were attributable to the Selkirk Phase while Manitoba Ware constituted 24 per cent (137 rims), of the sample. Middle Woodland ceramics (almost exclusively Laurel) were represented by 411 rim fragments (73 per cent). The pattern of decreasing frequency of artifacts throughout the Woodland period is not unique to the Bjorklund Site. A similar tendency was noted at the multi-component Whitemouth Falls Site on the opposite bank of the Whitemouth River.

For purposes of analysis, sherds were initially grouped by ware on the basis of profile, method of decoration and paste, and then subdivided into types. Each type was then examined and the constituent sherds were grouped into categories representative of single vessels wherever possible. This method is believed to have several advantages over the presentation of individual rimsherd descriptions. The data are presented in a more concise manner and a certain measure of vessel variability in such attributes as profile and thickness may be obtained. In instances where a relatively large sample precludes the possibility of intensive ceramic reconstruction, vessel groupings yield a fairly accurate impression of vessel shape and size. Discrete vessel counts are more compatible with seriation techniques as differential vessel size and the inherent potential for a mean differential in the number of sherds per vessel will tend to bias the sample towards the larger specimens should individual sherd counts be used. Once a fair sample of each vessel is obtained, various tests of association can be applied to modes in order to establish or confirm type classifications.

Selkirk Ceramics

Selkirk pottery, alternately known as Winnipeg Fabric-impressed Ware, is characterized as grit-tempered, fabric impressed with outflaring rims, squat shoulders, and wide sub-conoidal bases. Rarer attributes are rounded lips, a straight profile and cord-wrapped paddle-edge decoration on the rims and lips. Where the latter occur, the decoration consists of varying combinations of oblique and horizontal lines, often with a row of circular punctates between 10 and 20 mm. below the lip. The presence of lamination and absence of coil fractures indicate that vessels may have been manufactured by the paddle and anvil technique. Heavy carbon deposits on the interior of many vessels suggest that pots were fired upside down (after MacNeish, 1958:162-170).

Three vessels of this ware occurred at the Bjorklund Site. Selkirk vessel 1 is represented by 9 rims, 3 of which were surface recoveries. The lip is flattened and lacks decoration as does the rim. The excavated rims occurred in levels 1B and 2A of Unit S55E30. These levels contained numerous fabric impressed body sherds, and were the uppermost ceramic-bearing levels in the unit. The body sherds indicate a slight constriction at the neck such that the rim forms a 160 degree angle with the body (Profile type 1, Figure 1). A row of circular punctates, applied at an angle into the wet clay and spaced 15 mm. apart, occur 25 mm. below the lip (see Plate 1a). The rim thickness 10 mm. below the lip is 5 mm.

Selkirk vessel 2 is much like vessel 1 in terms of lip treatment surface finish and thickness, but the profile (type 2) indicates a slight outflaring of the rim beginning 10 mm. below the lip. Carbon deposits are not as dense in the interior of this vessel as they were on the preceding

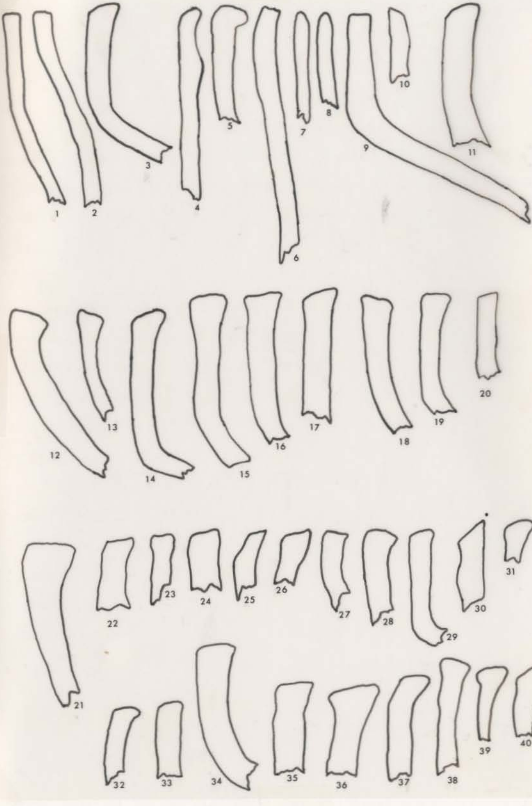


Figure 1. Profile Types

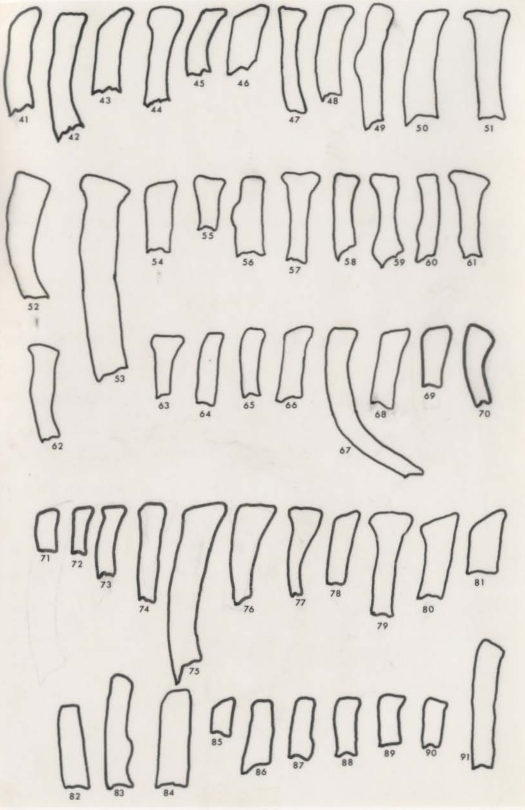


Figure 1. (continued)

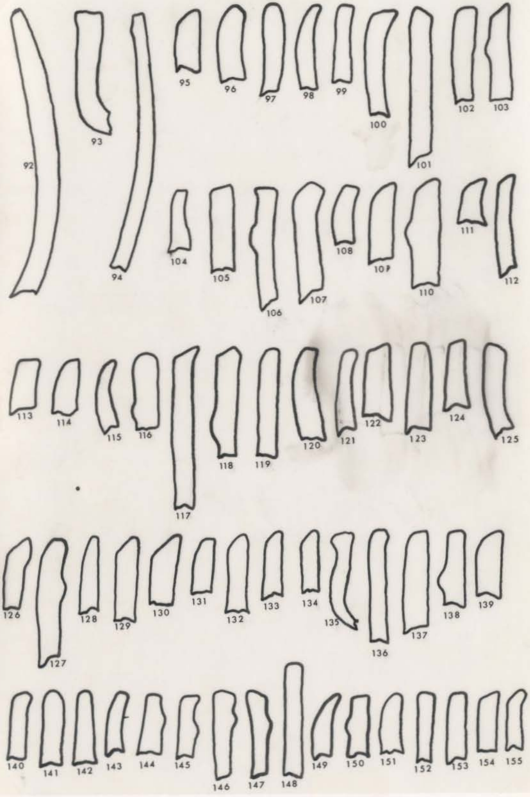


Figure 1. (continued)

Figure 1. (continued)

pot and numerous horizontal striations are thus visible. It is suspected that these were formed by the hand of the potter used to rotate the vessel while shaping it by the paddle method. This vessel is represented by 6 rims and approximately 30 body sherds which occurred as a concentration in Level 1B of Unit S35E20. A partial reconstruction (Plate 1b) indicates a diameter of approximately 14 cm. at the lip of the complete vessel. No intentional decoration is discernible on any of the sherds.

Selkirk vessel 3 is represented by one rim (Plate 1c) and a shoulder sherd. Both were excavated from the upper levels of Unit C. The original provenience cannot be determined due to the surficial disturbance caused by the bulldozer. Rim thickness 10 mm. below the lip is 9 mm., making it by far the thickest of the three Selkirk vessels. The horizontal striations noted on vessel 2 are again present on this vessel. One major difference, however, is that on this pot, the fabric impressions extend over the lip. The profile indicates a pronounced shouldering (type 3).

The absence of decoration on vessels 2 and 3 suggests compatibility with the Alexander Fabric-impressed type (MacNeish, 1958:166). It is solely on the basis of the encircling punctates that vessel 1 is more similar to MacNeish's (1958:170) Sturgeon Punctate type. MacNeish attributed the latter to late prehistoric times and placed the former in both the prehistoric and historic periods. The total lack of early historic materials at the Bjorklund Site and the stratigraphic provenience of these three vessels can serve only to confirm the proto-historic placement of these styles.

Many attributes of Selkirk pottery, such as vessel shape, method of manufacture, lip treatment, linear punctates and the occassional use of oblique and horizontal cord-wrapped stick impressions as decorative elements suggest that this ware may be derived from the earlier Manitoba Ware. MacNeish (1958:167) suggested such a derivation for his Sturgeon Falls Fabric impressed type.

Blackduck Ceramics

Manitoba Ware is generally more variable than Selkirk, due to the greater number of design elements. Vessels appear to have been formed by the paddle and anvil technique although lips may have been formed by coiling and added later. Temper is usually grit (granite, mica, feldspar, quartz etc.) and the texture is quite coarse--characterized by a laminated and porous paste. Maximum thickness occurs at the lip (6-13 mm.) and the body is considerably thinner (2-8.5 mm.). Cord markings run vertically over vessel exteriors but interiors are smoothed. Manitoba vessels generally constrict to the neck which is parallel with the vessel walls expanding again at the junction of the neck and body. Overall shape is elongate-globular with sub-conoidal bases. Surface decoration is only rarely totally absent, but is confined to the lip, rim (both interior and exterior) and neck. Motifs include varying combinations of oblique cord-wrapped stick or paddle-edge impressions on the lip, rim and neck, and similar horizontal impressions sometimes with punctates encircling the neck (after MacNeish, 1958:156-162).

Eighteen rimsherds, 2 of which were surface recoveries, exhibit vertical exterior cord marking with no exterior decoration. These are believed representative of 8 distinct vessels. Manitoba vessel 1 (Plate 2a) exhibits a vertical profile and a very slightly outflaring lip (type 4). Both the lip and the interior are smooth and the former bears short, parallel, oblique incisions spaced 3 mm. apart. Two vertically-oriented rectangular punctates are visible on the interior which have produced fairly discernible exterior bosses. These are 15 mm. apart and occur 15 mm. below the lip. The single rim and body sherd were excavated from level 5 of Unit C. These, plus a second rim found in a surface collection, are the only sherds which can be assigned to this vessel with certainty, although several similarly marked body sherds occurred between levels 1 and 5 in Units A and C. Vessel thickness 10 mm. below the rim is 6 mm. This is the only vessel of this class which exhibits any decoration whatsoever.

Furthermore, it was encountered at a markedly greater depth than the other three vessels. As some mixing is evident in this unit, it is expected that ~~its~~ depth at time of excavation is due to post-depositional disturbance.

Manitoba vessel 2 (Plate 2b) is represented by one rim from Level 1B of Unit N50E20. This was the first ceramic material encountered in this unit. Thickness is 5 mm. and the profile (type 5) is quite similar to that of vessel 1 with the exception that the flattening of the lip is more noticeable. No other rims or body sherds can be assigned to this vessel with confidence. A shallow concavity is present on the interior which may indicate one of the positions at which the vessel was held while being manufactured. Although this rim is quite short the profile shows some evidence of a slight constriction at the neck.

Manitoba vessel 3 (Plate 2c) consists of a minimum of 3 rims and 2 body sherds. More sherds of this vessel are certainly present, but a large number of cord-marked sherds occur in dense concentration in the southeast quadrant of the site and in the absence of decoration it is difficult to assign them to a particular vessel. The three rims were recovered from Level 1B of Units S15E20 and S35E15--approximately 20 feet apart. Vessel thickness is 6 mm. at all points on the 5 sherds. The profile (type 6) suggests a very gradual expansion from the rim to the base. The lip is smooth and plain. Aside from the vertical exterior cord impressions, no markings are present. Both rim reconstructions have interior depressions in the shape of a fingernail, 2 mm. below the lip which have caused a slight exterior bulge.

Two rims and 3 body sherds attributable to Manitoba vessel 4 were recovered from Levels 1B and 2A of Unit S15E20. The distinguishing characteristics of this vessel are its tan colour, its thinness (3 mm. at a point 10 mm. below the lip) and the roundness of the lip. Oblique striations on the interior of the rims and body sherds are suggestive of brushing. A single circular punctate was detected at the edge of one of the rims 6 mm. below the lip. The profile is illustrated as type 7 and is not indicative of any outflaring or neck constriction (Plate 2d).

A single rimsherd exhibiting vertical exterior brushing occurred in Level 1B of Unit N50E20. In many respects, this sherd resembles those of vessel 4, but is given separate vessel status on the basis of its greater thickness (6 mm.), evidence of slight constriction toward the rim (profile type 8) and absence of oblique interior brushing. Like vessel 4, vessel 5 (Plate 2e) has a rounded non-thickened lip. The exterior is tan colour, while the interior is blackened due to the presence of carbon deposits.

Manitoba vessel 6 (Plate 2f) is defined on the basis of a minimum of 2 rims and 3 body sherds from Level 2A of

Unit S55E30 and a third surface-derived rim. A partial reconstruction permits greater detail in the description of this vessel. A maximum thickness of 9 mm. occurs at the junction of the body and rim and decreases to 6 mm. at the lip. The lip is flattened and this seems to have resulted in a slight thickening in some portions of the rim. Oblique cord-wrapped stick or paddle-edge impressions spaced 2 mm. apart occur on the lip and aside from apparently random interior brushing, these are the only elements which could be construed as decorative. The profile (type 9) indicates a cylindrical shape from the lip to body above an abruptly expanding body. The exterior diameter at the mouth is estimated at 185 mm. Marked lamination is evident in both the rim and body sherds and this has resulted in some exfoliation of the former. This suggests a paddle and anvil manufacture for the entire vessel.

Manitoba vessel 7 (Plate 2g), represented by only one rimsherd from Level 2A of Unit S30E10, is unique in that it bears both oblique cord-wrapped stick or paddle-edge impressions on the lip and a deep circular punctate 15 mm. below the lip. A thickness of 6 mm. was measured at the flattened lip and 10 mm. below it. It is dangerous to make inferences about upper vessel shape on the basis of such a small sherd, but the profile (type 10) is suggestive of a tapering towards the lip.

A portion of vessel 8, consisting of 5 rims and one body sherd was reconstructed (Plate 3a). At least one other rim may be attributed to this vessel. The reconstruction allows an estimate of 260 mm. for the exterior diameter of the mouth. The profile (type 11) indicates a constricted neck and outflaring rim. The lip is flattened, cord-marked and non-thickened. The surface finish is quite indistinct and it is only with some difficulty that the cord markings are perceived. These impressions are not as vertical as in the case of the previous vessels, but run obliquely from right to left. It seems possible that the exterior was somehow smoothed, although evidence of this is lacking. Vessel thickness is fairly constant at 9 mm. All sherds assigned to this vessel were recovered from Levels 2B and 3A of Unit N50E25.

The eight aforementioned Manitoba Ware vessels are compatible with MacNeish's Cemetery Point Corded type which is defined as

> Cord-marked grit-tempered vessels with globular bodies and straight to slightly outflaring rims... The group is usually without decoration and only bears cord-marking on its lip and rim. A few sherds have oblique cord-wrapped paddle-edge impressions or notches on the lip, but these are rare (MacNeish,1958:162).

MacNeish noted that this type is rare in the Manitoba Focus, being more common in Selkirk times. With the exception of the vessel 1 which occurred in a deep context and vessel 8, recovered from Levels 2B and 3A, all Cemetery Point Corded vessels at the Bjorklund Site occurred in Levels 1B and 2A--the same levels in which the 3 Selkirk vessels were located. These levels appear to represent the termination of the development of Manitoba Ceramics, as all other Manitoba types have stratigraphic priority. Thus there is sufficient evidence to confirm MacNeish's assertion of contemporanity of Cemetery Point Corded and Selkirk ceramics. Furthermore, Cemetery Point Corded bears greater similarities to Selkirk pottery types than other Manitoba types. Shared attributes include vessel form, lip treatment, profiles, the frequent absence of decorative elements and the method of manufacture. Even the two methods of surface finishing, cord and fabric impressions require careful scrutiny in order to be distinguished. The oblique and horizontal cord-wrapped stick impressions, diagnostic of most Manitoba pottery types are common elements of the Sturgeon Falls Fabric-impressed type (Winnipeg River Ware, MacNeish, 1958:167). Consequently, contemporanity and the considerable overlap in technological, morphological and decorative attributes between the two wares in late Manitoba-Blackduck times is indicative of a genetic relationship. Whether and to what degree this is indicative of cultural continuity, however, is a problem which cannot be solved by reference to pottery alone.

Only 4 rims show clear signs of vertical exterior brushing and these are assigned to 2 separate vessels (9 and 10). Both exhibit oblique cord-wrapped stick impressions (right to left) on a thickened lip, similar impressions (also right to left) on the upper rim above a row of circular punctates. The brushing occurs below the latter and extends downwards to the edge of the sherds. The profiles of each are indicative of slight neck constriction and outflaring of the rim.

Vessel 9, (Plate 3b), the larger of the two specimens is distinct in that it bears horizontal brushing and right to left cord-wrapped stick impression on the interior of the rim. The punctates are spaced at 14 mm. intervals and occur 16 mm. below the rim. The thickness of the sherd is 8 mm. at a point 10 mm. below the lip (profile type 12). Vessel 10 (Plate 3c) bears indistinct vertical cord impressions on the interior and lacks horizontal interior brushing. The exterior punctates are 11 mm. apart and 10 mm. below the lip. Sherd thickness is 5 mm. (profile type 13).

The attributes of both vessels clearly relate them to MacNeish's (1958:159) Blackduck Brushed type. MacNeish suggested a late Manitoba Focus placement for this type, but this is difficult to confirm on the basis of the Bjorklund material. Vessel 9 occurred in Level 2B of Unit S15E20--2 inches below the Cemetery Point Corded vessel in that unit. The 13 rims assigned to vessel 10, on the other hand were recovered from Level 3B of the somewhat mixed Burial Extension Unit, Level 2B of Unit N50E20 (near the middle of the Manitoba column of this unit), and Level 2A of a unit which cannot be specified due to cataloguing error. This slender evidence can suggest no more than a 'post-classic' Blackduck assignment for this type.

In terms of observable attributes, the remainder of the vessels classificable as Manitoba-Blackduck share only 4 attributes: cord-wrapped stick impressions on a flattened and thickened lip with similar oblique impressions on the rim. Less common attributes are interior oblique impressions, punctates and horizontal corded impressions on the neck. As these elements occur on the neck as well as the rim, both portions of the vessel must be present for typological purposes. Consequently, 34 rims were initially removed from the sample. All of these exhibited oblique cord-markings on the rim and a thickened and flattened lip. Twenty-nine had similar markings on the lip, while only six had such impressions on the interior. All 18 sherds are horizontally fractured such that it is impossible to determine the presence of horizontals, punctates or brushing below the obliques. On the basis of colour, thickness, the profile, lip treatment, curvature, angles of oblique lines and texture these 34 rims are assigned to 24 vessels (not illustrated).

Two major systems have been used to order pottery similar to the remainder of the blackduck ceramics at the Bjorklund Site. MacNeish's (1958:157-158) Manitoba Horizontal type is characterized by oblique impressions over horizontals and may or may not be punctated. When present, the punctates are either circular or ovoid either below or on the horizontals or between the obliques and horizontals. Manitoba Herringbone (MacNeish, 1958:159) is characterized by the obliques but both punctates and horizontals are optional. The herringbone design is produced either by ovoid punctates or cord-wrapped stick impressions below the obliques and roughly at right angles to them. It is apparent that the similarities between these two types is so great that in some cases the distinction may depend upon the angle of the ovoid punctates below the obliques. This problem, in fact, is one which arises with some frequency.

Evan's (1961, 1962) studies of the Blackduck Focus or Headwaters Lake aspect utilized a somewhat different typological system. Washish Vertical Cord and Punctate is characterized by oblique cord-wrapped stick impressions on the upper rim above a row of circular punctates. Lip decoration consists of oblique or herringbone cord markings, or an incised herringbone pattern or may be absent. Horizontal impressions on the neck are consistently absent. Osufsen Cord and Punctate incorporates oblique or vertical cord impressions on the rim. Horizontal cord-wrapped stick impressions on the neck are usually present but need not be. One or two rows of punctates generally occur between the horizontals. Lip decoration, when present, consists of oblique, herringbone or cross-hatched cord impressions. Schocker Cord-impressed is a minority type, characterized by herringbone cord impressions on the lip and oblique over horizontal cord impressions on the rim and neck.

Mayer-Oakes (1970:151-243) attempted a synthesis of these two typological systems in his description of the ceramic materials excavated from sites located to the northwest of Lake Winnipeg in 1961 and 1962. This,however, was successful only to the degree that his own material could be uniformly described, Mayer-Oakes makes no use of the Manitoba Horizontal type, presumably dividing such specimens between the Schocker Cord-impressed and Osufsen Cord and Punctate categories depending upon lip decoration and the presence of punctates. Clearly we are in need of a systematic and uniform method of classification for Blackduck-Manitoba pottery by means of which types may be readily identified and described. It would seem that a difference in orientation of a punctate of a few degrees or the 'optional' presence of punctates are not sufficient grounds for distinctions at the 'type' level of classification.

Such an undertaking, however, is beyond the stated objectives of this analysis. The typology utilized incorporates both earlier systems with modification for descriptive purposes. MacNeish's Manitoba Horizontal type is retained and Osufsen Cord and Punctate and Schocker Cord-impressed are subsumed within it as all modes of each occur on Manitoba Horizontal and this term is more commonly used in this area. The term Waskish Vertical Cord and Punctate is only applied to vessels which lack horizontals, and Manitoba Herringbone is defined on the basis of a herringbone pattern on the rim produced by either ovoid or linear punctates or cord-wrapped stick impressions. Although the term 'type' is frequently used in reference to these, it is with the aforementioned qualifications in mind. The assignment of true type status to these groups is dependent upon an exhaustive survey of mode variations on a broad regional scale.

Only 4 rims, representing one vessel are classed as Waskish Vertical Cord and Punctate. Some difficulty was encountered in distinguishing these from variants of Manitoba Herringbone which lacked horizontals and in which the herringbone pattern was produced with ovoid and rectangular punctates. Careful analysis of these punctates revealed that in many cases cord impressions were visible, thus confirming their assignment to the Manitoba Herringbone type. The single Waskish vessel (Plate 3d) is, in fact, somewhat problematical. No punctates are visible on the reconstructed portion of the rim, but several neck sherds were recovered from Levels 2A and 2B of S30E40 on which oblique punctates were visible. The orientation of these was such that the possibility of a Manitoba Herringbone assignment was precluded. No horizontal impressions or other decorative elements were evident on the 56 neck and body sherds attributed to this vessel. The profile (type 14) reveals a sharply expanding body commencing 40 mm. below the lip. The rim thickness is 7 mm. The long exterior obliques (27 mm.) run from right to left as do the shorter (12 mm.) interior oblique impressions. The lip decoration is somewhat unusual as the corded impressions run from left to right.

It is virtually impossible to determine the time-depth of this type on the basis of the scant evidence at the Bjorklund Site. Evans (1962:53) implies that as the Osufsen types exhibit the greatest similarity to Laurel ceramics, that Waskish is more recent. MacNeish (1958:158) lists a variant of Manitoba Horizontal which lacks the horizontals and claims that the type persists well into late prehistoric times. The location of Manitoba vessel 11 in Level 2A, at the top of the Blackduck sequence in S30E40 suggests a late prehistoric placement, but clearly more evidence is needed to confirm this.

Forty-two rims are classed as Manitoba Herringbone and these are believed to represent a minimum of 33 vessels. All vessels bear oblique cord-wrapped stick impressions on the upper rim and in all but one case these are from right to left. All lips are flattened and show varying degrees of thickening. Twenty-three (67 per cent) of the vessels exhibit oblique cord-wrapped stick impressions on the lip running from left to right. Five (15 per cent) and 4 (13 per cent) of the vessels bear similar markings in right to left and herringbone patterns respectively. One vessel shows no evidence of lip decoration. Nine vessels (27 per cent) bear interior decoration and in all cases this consists of oblique right to left cord-wrapped stick impressions. Only 5 vessels lack exterior horizontal cord impressions (Plate 4a-e). One of these is represented by only one surface recovery, while a second occurred near the centre of the vertical distribution of Manitoba ceramics in Level 4B of Unit D. The remaining 3 vessels, however, were recovered from the uppermost ceramic-bearing levels in their respective units. This is suggestive of a simplification of decorative modes in late Manitoba-Blackduck times. Rim thickness, measured at a point 10 mm. below the lip, ranges from 4 to 9 mm. with a mean thickness of 6.5 mm.

The herringbone motif is clearly produced entirely by a cord-wrapped stick on only 9 vessels, ovoid and rectanguloid punctates being much more common. In a few cases, notably Manitoba vessel 12 (Plate 4a), the lower half of each rectangular punctate is encircled by a more shallow depression bearing fine cord-markings. Consequently, it would seem that when the herringbone pattern is produced with punctates, the latter are a product of the tip of a cord-wrapped stick having been pressed into the wet clay. These punctates are thus indicative of the cross-section of the tool used in their manufacture.

Circular punctates are present on only 2 vessels (Plate 6a, c) and in both cases these occur between the horizontal impressions on the neck.

Table 4

Bjorklund Site Manitoba Herringbone Vessels

Manitoba Vessel No.	Level	Unit	Sherd Count	Plate	Profile
12	1B	S35E25	5	4a	15
13	4	C	4	4b	16
	2A	D			
	surface				
14	2B	D	2	4c	17
	4	C			
15	2	A	1	4d	18
16	surface		1	4e	19
17	3	C	6	5a	20
18	2	A	1	5b	21
19	2B	N55E20	1	5c	22
20	2	C	1	5d	23
21	3B	S10E50	1	5e	24
22	1B	N30W15	1	5f	25
23	4	A	1	5g	26
24	6	C	1	5h	27
25	2B	S35E30	1	5i	28
26	2B	–	1	5j	29
27	2B	S50E20	1	5k	30
28	2A	S55E30	1	5l	31
29	3A	N50E55	1	5m	32
30	2A	Bur.Ext.	1	5n	33
31	3	C	3	6a	34
32	3B	S50E30	1	6b	35
33	3B	S50E25	1	6c	36
34	6B	D	1	6d	37
35	2A	S55E30	1	6e	38
36	2B	S50E35	1	6f	39
37	3B	N55E20	2	6g	40
38	2A	S55E35	1	6h	41
39	surface		1	6i	42
40	1B	S55E35	1	6j	43
41	2A	N65E40	1	6K	44
42	3B	S35E35	1	6l	45
43	surface		1	6m	46
44	surface		2	6n	47

These 33 vessels are designated Manitoba Vessels 12 to 44 inclusive. Table 4 contains information on the provenience, illustration, profile type and number of sherds used in the reconstruction of each vessel. The chronology of this type relative to Manitoba Horizontal will be considered following the description of that type.

A total of 32 vessels of the Manitoba Horizontal type were defined on the basis of 45 rim fragments (Plates 7 and 8). Considerably greater consistency is found in the oblique rim impressions on these bessels (all are from right to left) than on the Manitoba Herringbone specimens. All lips are flattened and with only 2 exceptions (Vessels 53 and 57) are also thickened. All vessels bear linear cord-wrapped stick impressions of the lip although there is no consistency in their orientation. Nineteen lips (5 per cent) exhibit left to right impressions, 12 (38 per cent) bear right to left markings and 1 (3 per cent) is indeterminate. Interior obliques occur on 8 (25 per cent) vessels and in all cases these run from right to left. Seventeen (53 per cent) vessels bear circular punctates (Plate 7, a-1; Plate 8 a-e) and on all but one of these the punctates are below the uppermost horizontal line. Circular punctates thus appear to occur with significantly greater frequency on this type than on Manitoba Herringbone. The spacing of these punctates can be measured on only 6

Table 5

Manitoba Horizontal Vessels

Manitoba Vessel No.	Level	Unit	Sherd Count	Plate	Profile
45	1	B	5	7a	48
	3,4	C			
46	2A	S50E30	2	7b	49
	3B	S50E25			
47	4A	N85E30	1	7c	50
48	2A	S45E0	1	7d	51
49	3A	N50E55	2	7e	52
50	2B	S35E20	4	7f	53
51	2B	S35E20	1	7g	54
52	3B	S5E40	1	7h	55
53	5A	S10E50	1	7i	56
54	surface		1	7j	57
55	2B	S35E30	1	7k	58
56	surface		1	7l	59
57	3	A	1	8a	60
58	1	B	1	8b	61
59	3A	S15W25	1	8c	62
60	2B	-	1	8d	63
61	3A	S5E40	4	8e	64
	surface				
62	2B	S35E35	1	8f	65
63	1	B	1	8g	66
64	4	C	2	8h	67
65	1	B	1	8i	68
66	surface		1	8j	69
67	3B	S5E40	1	8k	70
68	2A,B	Bur.Ext.	1	8l	71
69	3B	N50E20	1	8m	72
70	2B	S5E20	1	8n	73
71	3A	D	1	8o	74
72	5B	D	2	8p	75
73	surface		1	8q	76
74	3A	N55E25	1	8r	77
75	2A	N65E40	1	8s	78
76	3A	S35E25	1	8t	79

vessels. The range of these measurements is 8 mm. to 31 mm. with a mean of 16.2 mm. They generally occur approximately 15 mm. below the lip. Oveid punctates, a common feature of the Bjorklund Site Manitoba Herringbone vessels, occur on only 4 of the Manitoba Horizontal specimens. Rim thickness measured at a point 10 mm. below the lip ranges from 4 mm, to 10 mm. with a mean of 6.3 mm.

These 32 vessels are designated Manitoba vessels 45 to 76. Table 5 lists the provenience, plate and profile references and the minimum number of sherds of each vessel. A cursory comparison of this with Table 4 reveals that both Manitoba Horizontal and Herringbone have quite similar vertical distributions. This need not imply contemporanity, however, as due to differential deposition across the site a given level may be of markedly different ages in different units. The relative chronology of these two types therefore requires an examination of the depths of each on an individual basis. Unfortunately, the coincidence of both types in a single unit which has not been subject to obvious disturbance is surprisingly rare. Such scant evidence would point to roughly equal temporal assignments. In 6 units which appear to exhibit uniform deposition, Manitoba Horizontal appears in the uppermost Laurel levels. In 3 units both Manitoba Horizontal and Manitoba Herringbone occur in such a level. Consequently it may be that Manitoba Horizontal commences somewhat earlier than Manitoba Herringbone but the evidence points more strongly to a long period of contemporanity. Both types are clearly prior to Cemetery Point Corded and subsequent to Laurel.

Conoidal bases are absent in levels associated with these two types. A number of sherds which are considered to be the basal portions of such vessels and the general rim profiles suggest a slight to extreme expansion of the body below the neck terminating in a rounded bottom. The significantly greater frequency of the Manitoba Horizontal and Herringbone types and their distinctiveness from the earlier Laurel types in terms of vessel shape and method of manufacture qualify them as the 'classic' Manitoba Phase ceramic manifestations in this area. All appear to have been manufactured by the paddle and anvil technique, although several of the rims (Manitoba Vessels 13, 24, 48, 50, 75) show indications of coil fracturing. It is not impossible that the vessels were first coiled and later paddled to smooth the body or that the bodies were formed entirely by paddling and the rims coiled and added later.

A transition between these types and the earlier Laurel types is not obvious, but several vessels were recovered from the Bjorklund Site which incorporate many of the attributes of both the Laurel and Manitoba Wares. Strictly speaking, none of these 13 vessels are classifiable as either Laurel or Manitoba as the terms are defined in this area. For this reason they are termed 'transitional vessels'. Although many could be considered aberrant varieties of Laurel or Manitoba Ware, their stratigraphic locations suggest a temporal placement in late Middle Woodland-early Late

Woodland times. Table 6 contains information on the minimum number of sherds assigned to each vessels, their provenience, profile type and illustration number.

Table 6

Laurel-Manitoba Transitional Vessels

Transitional Vessel No.	Level	Unit	Sherd Count	Plate	Profile
1	4B	N75E35	2	9a	80
	surface				
2	2A	S50E20	1	9b	81
3	surface		1	9c	82
4	3B	S20E25	3	9d	83
	2A	S30E10			
	2A	S10E5			
5	2A,3A	N85E25	2	9e	84
6	2B,3A	S35E35	2	9f	85
7	3A	S50E30	1	9g	86
8	4A	S50E25	1	9h	87
9	surface		1	9i	88
10	surface		1	9j	89
11	2A	S35E25	1	9k	90
12	3	C	1	9l	91
13	6A,6B	D	25	9m	92
	4	A			
	4,5	C			
	2	B			

Vessels 1 and 2 bear the oblique markings on the upper rim characteristic of Manitoba Ware, although it is evident that these were not formed by cord-wrapped stick impressions. A stick was first impressed into the rim to form oblique parallel 'troughs'. The 'pseudo-cord impressions' were then added by incision with a sharp instrument. Similar markings occur on the lips of both, running left to right on vessel 1 and right to left on vessel 2. Only vessel 1 bears such markings on the interior, these being of right to left orientation. Elliptical punctates are also present below the exterior obliques on this vessel. Both exhibit flattening of the lip and thickening is pronounced on vessel 1. Faint traces of red ochre were detected on both rim fragments of vessel 1. Vessels 3 and 4 (Plate 9c and d) are distinct in terms of lip treatment and interior decoration. The former incorporates a flattened, non-thickened lip and plain interior, while vessel 4 has a rounded lip with interior oblique impressions (right to left) produced with a loosely wound, 4 strand cord. Both vessels bear interior ovoid punctates which have produced faint interior bosses although on vessel 4 these are alternated with exterior punctates. These rims appear related to Evans (1961:48) Osufsen Boss and Cord type. It was on the basis of the presence of late Laurel attributes (such as bosses) on corded vessels that Evans posited continuity between the Laurel and Blackduck Wares. The profile of these two vessels is indicative of a very slight expansion below the neck.

Vessels 5, 6 and 7 appear very similar although the length of the external obliques and the lip treatment clearly distinguishes them as separate vessels. Vessels 5 and 6 bear oblique right to left impressions on the lip. The opposite orientation is present on the lip of vessel 7. Interior decoration is absent on all, with the possible exception of vessel 5 where intermittent horizontal striations may indicate lateral dragging of a cord-wrapped stick.

Circular exterior punctates are evidenced on all three vessels. The fracturing of Vessel 7 across one of these punctates permits speculation as to the nature of the instrument used. It would appear that the punctates were formed by the impression of an extremely thin stick (about 2 mm. in diameter) which was wrapped with a fine cord (1 mm. diameter). The profiles suggest vertical-walled vessels.

Vessels 8 to 11 are characterized by the absence of interior decoration and flattened and non-thickened lips. Oblique, right to left cord-wrapped stick impressions are present on all 4 specimens and similar horizontal impressions below the obliques were noted on Vessels 8 and 9. Right to left lip markings occur on vessels 8, 9 and 11 with vessel 10 displaying left to right corded impressions.

Vessel 12 is unique in that no external oblique markings are present. The sole external decorative motif is a series of widely spaced (13 mm.) horizontal cord-wrapped stick impressions. These were apparently executed with a loosely wound cord, as each impression is 2 mm. from the adjoining one. The lip is rounded, non-thickened and plain. A large, single interior punctate has produced a faint exterior boss between the second and third horiztontal. The interior also bears oblique and horizontally-aligned roughening--presumably accomplished by the same instrument used to produce the exterior horizontals.

Vessel 13 (Plate 9m) is by far the best represented in terms of the number of sherds assigned to it. In fact, the wide horizontal distribution of similar sherds across the site and the variation in colour and thickness of many of these, lead me to suspect that a number of similar vessels are present there, but conclusive evidence is lacking. This speciment exhibits a typically Laurel profile. The lip is thin and rounded with the vessel walls thickening to the shoulder. Vessel shape is apparently conoidal and the base was probably pointed or nearly pointed. Rim thickness 10 mm. below the lip is 5 mm. The exterior is marked by widely spaced (9 mm.) oblique (right to left) cord-wrapped stick impressions which run the full length of the reconstruction. A single punctate is present on the exterior of the reconstruction and on one of the additional 8 rims of this vessel. Intermittent cord impressions occur on the lip, but it is impossible to determine their orientation due to the extreme thinness of the rim. The interior is smooth and undecorated. MacNeish attributed similar specimens to his Lockport Cord-wrapped stick type (MacNeish, 1958:155–156) within the ware category Lockport Cord marked. This was the only type manifestation of this ware. Lockport Cord-wrapped Stick is characterized by:

> Widely spaced cord-wrapped stick or paddle-edge impressions in horizontal rows, or vertical or oblique stripes on round-lipped vertical-necked jars, which have cord-marking or smoothed-over cord-marking on their ellipsoid bodies (MacNeish, 1958:155).

Clearly this general description is applicable to other of the vessels placed in the 'transitional' category (Vessels 3, 4, 5, 6, 7) but in most cases these are represented by such small fragments that speculation on vessel shape is meaningless.

MacNeish also suggested that Lockport ceramics were manufactured by the coiling method. This is confirmed by the presence of coil fractures in the Bjorklund sample and the total absence of the lamination effect produced by the paddling method.

MacNeish asserted a primarily Nutimik Focus (Laurel) temporal assignment and this is partially confirmed by the Bjorklund evidence. Regardless of the shallow deposition of many of these vessels all are associated with solely late Laurel ceramics (Vessels 1, 2, 4, 5, 7, 8, 13), or occurred in levels which yielded both Laurel and Manitoba styles (Vessels 6, 11, 12). Only three vessels (3, 9, 10) were surface recoveries and hence their temporal relationships cannot be assessed on a stratigraphic basis. It is interesting to note that the Osufsen Boss and Cord type (Plate 9c and d) is extremely rare in Manitoba. If, as Evans (1961:53), asserts this type is indicative of a Laurel-Blackduck continuity then this must represent an antecedent type to classic Blackduck manifestations. Consequently, the origin of Blackduck ceramics is not to be sought in southeast Manitoba where such types are rare, but to the south and east where they are more common.

Two vessels are attributed to the Late Woodland period on the basis of stratigraphy and a few of their formal attributes, although they cannot strictly be classed within established Blackduck or Selkirk types. The exterior of the first (Plate 10a) exhibits no cord-wrapped stick impressions. Instead there are 3 rows of vertically oriented rectangular punctates which appear to have been formed with the tip rather than the edge of a cord-wrapped stick. This method was noted on several of the Manitoba Herringbone vessels. The lip is flattened, slightly thickened and cord impressed. The latter decoration, however, does not consist of oblique rows, but rather zig-zag impressions that traverse the breadth of the lip. The interior decoration is more conventional, consisting of oblique cord-wrapped stick impressions running from right to left. The profile (type 93) indicates that the body forms a a near right angle with the neck. Rim thickness is 6 mm.

The second vessel appears to have been quite small; the mouth diameter and height are estimated at 150 and 120 mm. respectively. This fact plus the crudeness of manufacture suggest that this vessel may have been a product of a young girl learning the potter's craft. The entirety of the external surface bears vertical cord-wrapped paddle impressions, but in this case the apparent use of the paddle and anvil technique of manufacture has not produced the uniform thickness characteristic of most Blackduck vessel walls. A row of irregularly sized, spaced and aligned punctates occur 6 mm. apart and 10 mm. below the lip on the average. These have produced pronounced interior bosses and have penetrated the vessel wall in several instances. The lip is rounded, undecorated and generally thinner than the rest of the vessel. The profile (type 94) suggests a shoulderless vessel with parallel sides and a rounded or sub-conoidal base(Plate 10b).

The provenience of each of these vessels appears to give a fairly accurate indication of the time depth of each. The first vessel occurred in Level 3A of Unit N55E20. Manitoba Herringbone rims were recovered from levels immediately above and below this level and hence a middle Blackduck assignment may be inferred. The juvenile vessel originated in Level 1B of S55E30. This level is associated with the latest Blackduck ceramics and some Selkirk material.

Laurel Ceramics

In Stoltman's (1973) analysis of Laurel Culture ceramics in northern Minnesota, the Laurel Ware is defined in such a way as to distinguish it from later wares in that general area and from contemporaneous Middle Woodland wares in the Lake Forest region. This definition was based upon the following attributes:

1. Absence or extreme paucity of cord marking of any kind, including cord-wrapped paddle body treatment and rim

decorations of cord or cord-wrapped stick impressions.
2. Decoration confined to the upper rim and neck area of the vessel, which means that high percentages of any sherd assemblage, normally over 50 per cent, will be composed of plain body sherds.
3. Frequent use of bosses and/or punctates either alone or in combination with other modes of decoration.
4. Absence or extreme paucity of rocker stamping.
5. Absence of interior channeling. (Stoltman, 1973: 114).

Determination of a uniform method of manufacture is somewhat problematical. MacNeish (1958) asserted that the coiling method was used in southeast Manitoba Laurel, but Stoltman notes that coil fractures are absent in the Minnesota sample although this may be a product of careful surface finishing. Hlady has stated

> It is interesting that in the question of technique in manufacture of Laurel ceramics, present-day political boundaries seem to be the dividing line between techniques. In Minnesota it is strongly argued that coiling was not used in manufacture. In Manitoba, Laurel pottery seems to always be the result of coiling (in Trottier, 1973:2).

Coil fractures were noted with some frequency among the Bjorklund Site Laurel sherds, but not as frequently as might be expected if this was the sole method of manufacture. It seems possible that either the method of manufacture or the quality of surface finishing are variable and may have temporal as well as spatial significance.

Vessel shape is somewhat variable but in general bodies are ellipsoid with sub-conical or flattened bases. Lips may be rounded, pointed or flattened. The majority of profiles indicate a slight degree of constriciton toward the lip (MacNeish, 1958:144).

Stoltman's most valuable contribution was the establishment of a systematic taxonomy for Laurel ceramics.

> Attributes were systematically examined in terms of the artisans' procedures. Beginning with materials and continuing through techniques of manufacure, (lip) shape, decoration, and finally, uses. From this step .... 18 modes were defined (Stoltman, 1973: 61-62).

The mode concept as employed by Stoltman is defined as:

> the customary behaviour of past artisans that is inferred by the archaeologist from the attributes of artifacts (Stoltman, 1973: 47).

Thus observable attributes which are a product of idiosyncratic or random behaviour are not considered. Once modes were established they were categorized as universal, independent or dependent.

Although grit tempering was the only truly universal mode, smoothed surfaces, non-thickened lips and an undecorated interior (excluding bosses and punctates) occurred on more than 95 per cent of the sherds and were subsequently considered universal. Such modes cannot be used in the definition of types as they are incapable of distinguishing individual groups of sherds within the sample. If a type is conceived as a "pronounced association" of at least two modes then clearly independent modes--those whose presence is not coincident with the presence of another mode--are also of no utility in type definition.

Stoltman considered a type to exhibit a structured variation in which two dependent modes constituted a core or 'central tendency'

> (defined from those artifacts manifesting all of the dependent modes characteristic of the type) surrounded by varieties, those artifacts that manifest some but not all of the dependent modes that define the core of the type. Sometimes it will be desirable to recognize sub-divisions within the core, while on other occassions, the lumping of some varieties together with some sherds from within the core of the same type on the basis of a shared mode will prove useful. Such within-type subclasses exclusive of the core and the varieties shall be regarded as subtypes (Stoltman, 1973:51).

With types thus established, six single component sites were seriated by the Double-Link (Renfrew and Sterud, 1969: 266-268) and Matrix Ordering (Robinson, 1951) methods and comparable results were obtained. The Pearson Site was determined to be the youngest as the highest frequency of exterior punctates occurred on vessels from this site and this attribute is common on Blackduck ceramics. The temporal significance of Laurel decorative modes could subsequently be considered. Comparison of Minnesota sherds assemblages with Laurel assemblages and radiocarbon dates from outside that state were indicative of a point of origin for Laurel ceramics to the south and east of northern Minnesota (Stoltman, 1973:86).

The core of the Laurel Dentate type incorporates the dependent modes of Simple Dentate and Punctates only (Stoltman, 1973:76). The most common patterning of these attributes is oblique or vertical dentates over horizontals with the punctates occurring near the bottom of the obliques. A total of 31 vessels (40) rims bearing these attributes occurred at the Bjorklund Site and these are designated Laurel Vessels 1-31 (Plates 11 and 12)

Table 7

Laurel Dentate Vessels

Laurel Vessel No.	Level	Unit	Count	Plate	Profile
1	4	B	1	11a	95
2	3	C	1	11b	96
3	5	C	1	11c	97
4	6,8	C	6	11d	98
	3	A			
	5A	D			
5	5B	D	1	11e	99
6	2B	N5W20	2	11f	100
7	3A,3B,4B	N5W20	6	11g	101
	2A	S5E5			
8	4B	S5W20	1	11h	102
9	4B	S5W20	1	11i	103
10	2A	S0W20	1	11j	104
11	2B	S10W55	1	11k	105
12	2A	S15W25	2	11l	106
	surface				
13	3A	S15W25	1	11m	107
14	3A	S15W25	1	11n	108
15	2B	S5E0	1	12a	109
16	4A	S15W25	1	12b	110
17	4A	S5E40	1	12c	111

Laurel Vessel No.	Level	Unit	Count	Plate	Profile
18	4B	S45E0	1	12d	112
19	3B	S10E50	1	12e	113
20	2B	N75E40	1	12f	114
21	3B	N55E25	1	12g	115
22	3A	S35E20	1	12h	116
23	3B	S15E10	1	12i	117
24	3A	S15E10	1	12j	118
25	3A	C	1	12k	119
26	3A	S5E20	2	12l	120
27	surface		1	12m	121
28	surface		1	12n	122
29	surface		1	12o	123
30	surface		1	12p	124
31	surface		1	12q	125
32	1B	N30W15	2	13a	126
33	3B	S10E5	1	13b	127
34	3A	S30E10	1	13c	128
35	4A	N30W15	1	13d	129
36	4A	S10E5	1	13e	130
37	3A	S30E10	1	13f	131
38	4A	N5W20	2	13g	132
	surface				
39	2A	N5W20	2	13h	133
40	surface		1	13i	134

As was the case with Manitoba Horizontal and Herringbone, the majority (71 per cent) of the oblique lines on the upper rims of these vessels run from right to left. Only 2 vessels (25 and 29) bears left to right obliques. The remainder are essentially vertical or bear obliques which run in both directions (Plate 11b). Nineteen vessels (61 per cent) exhibit lip decoration and in all cases this consists of rows of dentates which are not markedly oblique in either direction. Interior decoration, exclusive of bosses, is a rare attribute. Three vessels bear vertical or oblique rows of dentates. Whereas all 31 vessels bear the oblique or vertical horizontal motif, in 3 vessels this is in modified form.

Vessels 4 and 21 show evidence of a "step design" in the horizontals (Plate 11d, 12g). Vessel 16 incorporates parallel rows of vertical dentates below the horizontals (Plate 12b). Of course, these elements may occur on other vessels bur are indetectable due to the fragmentary nature of the rims.

The most common punctate shapes are ellipsoid or rectangular. These were produced by the impression of a square or rectangular object vertically or obliquely into the clay. In a few cases a circular object appears to have been used to produce the ellipsoidal shape by oblique impression. Circular punctates are present on only 7 (23 per cent) vessels.

The profiles (types 95-125) indicate that these vessels were essentially shoulderless, although about one-half exhibit a slight constriction 10-30 mm. below the lip which could conceivably be considered an incipient neck.

Lips are most frequently flattened (15 of 31 vessels). The remainder are rounded with the exception of 2 vessels (8, 24) which are bevelled on both the interior and/exterior portions of the rim, thus producing a medial ridge.

Rim thickness measured 10 mm. below the lip ranges from 4 to 10 mm. with a mean value of 7.0 mm.

Thirty-four rims were too fragmentary to permit the detection of horizontals and/or punctates. These could not be grouped into fewer than 32 vessels although minimum vessel count based upon such fragmentary evidence is extremely unreliable. Punctates were visible on 6 vessels while horizontals only were apparent on 9 vessels. All sherds bore oblique right to left dentate rows on the upper rim. Twelve vessels show evidence of lip decoration (oblique dentates) although due to the shape of the lips, the definition of these rows as 'interior' or 'lip' decoration was often problematical. These vessels are most likely attributable to the Laurel dentate category, but it is impossible to determine their variety.

Nine vessels (12 rims) bear dentate decoration but due to the manner in which these dentates were applied, the vessels cannot be considered within the type-core. These are illustrated in Plate 13 and are designated Laurel Vessels 32-40 (see table 7).

Vessels 32, 39 and 40 cannot be considered as within the type core solely on the basis of the absence of punctates. Vessels 33 and 34 incorporate punctates but these are alternated with bosses (Plate 13 b and c). It is interesting to note that the latter bears the "step design" observed on several of the type-core specimens. Vessels 35, 36, 37 and 40 lack the exterior obliques universal to the core-type vessels. The presence of horizontals or punctates cannot be confirmed on vessel 38, but a 'break' in the dentate obliques occurs.

The temporal placement of Laurel Dentate at the Bjorklund Site is fairly easily determined due to its relatively high frequency. These vessels occur most often in the upper Laurel levels and are occasionally associated with Manitoba Ware ceramics. A few dentate body sherds were recovered from Levels 4A and 5B of Unit D which were radiocarbon dated at A.D. 1050 + 105 (GX-4143) and A. D. 1027 + 125 (GX-4142) respectively. The high percentages of Blackduck ceramics in these levels, however, indicate that these dates much represent maximum estimates for the duration of Laurel at the site. The presence of Laurel Dentate to the exclusion of other Laurel types suggest that the dentate varieties represent the termination of Laurel ceramic development. Stoltman's seriation of the Minnesota material produced similar conclusions

> Percentages of Laurel Dentate greater than 10 seem to be indicative of latest Laurel times. Such high percentages of Laurel Dentate have so far been only reported from a small area of northern Minnesota and adjacent to Ontario and southeastern Manitoba (Stoltman, 1973:93).

In Stoltman's typological system, the Residual Punctate class, incorporating modes F-2 (Punctates Only) and G-6 (Non-decorated Rim) was also considered diagnostic of late Laurel (Stoltman, 1973:92). This class exhibits an unexpectedly low frequency at the Bjorklund Site. It may be that more are in fact present, but the fragmentary nature of many of the apparently plain rims precludes the possibility of detecting widely spaced puncates.

Only 11 sherds, representing 13 vessels of this class could be identified with confidence. Table 8 contains the illustrative reference and provenience data for these. The most important piece of information to be gleaned from this, is that all sherds of this type from sub-surface contexts occurred as the uppermost Laurel in their respective units.

Table 8

Residual Punctate Vessels

Laurel Vessel No.	Level	Unit	Count	Plate	Profile
41	2A 2B	S30E40 S35E35	3	14a	135
42	surface		1	14b	136
43	surface		1	14c	137
44	2B	S20E25	1	14d	138
45	1B	S35E20	1	14e	139
46	2A	N85E30	1	14f	140
47	3A	S55E25	1	14g	141
48	2A	N75E40	1	14h	142
49	2B	S10E50	1	14i	143

With the exception of Laurel Vessel 41 all exhibit oblique puncates, rounded, nondecorated rims, a thickness between 5 and 7 mm., and an essentially vertical profile. Vessel 41 is distinct in that the punctates are closely spaced, the profile is indicative of a flaring below the rim, the lip is flattened, and the surface finish is irregular--suggesting smoothed-over cord impressing. Rim thickness 10 mm. below the lip is 4 mm.

Stoltman (1973:77) separated bossed rims into two subtypes: Laurel Bossed subtype bossed and punctated, and Laurel Bossed subtype bossed. Only four sherds of this type from as many vessels occurred at the Bjorklund Site. These are designated Laurel Vessels 50-53 and are referencedin Table 8

Table 9

Laurel Vessel No.	Level	Unit	Count	Plate	Profile
50	surface		1	14j	143
51	2A	S55E25	1	14k	144
52	4B	S5E20	1	14l	145
53	2	B	1	14m	146

The sherds of this type share the absence of all other decorative motifs. Vessel 50 and 51 exhibit only bosses while 52 and 53 bear a row of alternatıng bosses and punctates. All lips are flattened and those of the bossed and punctated sherds are outstloping. The profiles indicate vertical vessel walls. Vessel thickness is between 5 and 7 mm.

Of the three excavated sherds, 51 and 53 were recovered from the uppermost Laurel levels, while 53 was recovered near the middle of the Laurel sequence. Stoltman (1973:92) notes that this type peaks in poplarity in the "late-middle to early-late portions of the sequence." This does not seem at variance with the Bjorklund stratigraphy. He further observes that:

> Percentages of Laurel Bossed in excess of 8 are unique to northern Minnesota within the Laurel culture. The clear temporal trends visible for this type and its subtypes thus appear to be inapplicable outside that state. (Stoltman, 1973:93)

The clearly late position of bossed rims in the Laurel chronology in both southeast Manitoba and Minnesota combined with the low frequency in the former area with the relatively high (8-40 per cent) frequency in the latter suggests that bossing is a trait which develops in a source outside Manitoba before the beginning of the Late Woodland Period. Evans (1961;52) noted the presence of bosses on both Laurel and the Osufsen Cord and Boss type and considered this evidence of continuity between the two wares. The confirmation of bossing as a late Laurel trait strengthens his assertion.

The Laurel Pseudo-scallop Shell core was defined on the basis of the strong positive association between the two dependent modes J1 (Pseudo-scallop Shell Decorative Instrument) and I-2 (Oblique or Vertical Over Horizontal motif) (Stoltman, 1973:74). Twelve rims (9 vessels) bearing pseudo-scallop shell impressions were recovered from the Bjorklund Site (see Table 10).

Table 10

Laurel Pseudo-scallop Shell

Laurel Vessel No.	Level	Unit	Count	Plate	Profile
54		surface	1	15a	147
55	5B	S25E40	3	15b	148
	4A	S15E20			
56	3B	S45E0	2	15c	149
	3B	S30E40			
57	2A	S35E15	1	15d	150
58		surface	1	15e	151
59		surface	1	15f	152
60	2B	S30E40	1	15g	153
61	4	A	1	15h	154
62	2B	S0W20	1	15i	155

The 9 vessels all bear the obliques or verticals, but horizontals are visible on only 54-58. With only one possible exception however, (59) it is inferred that this is due to the fragmentary nature of the specimens. Interior decoration occurs on only one specimen (54) and lip decoration on only two (54, 60). In both cases this consists of oblique right to left pseudo-scallop shell impressions. There appears to be no preference for flattened or rounded lips as four rims (56, 58, 59, 60) bear the former treatment and the latter have rounded lips. Thickness ranges from 5-7 mm. with a mean of 6.1 mm. Only two of the nine specimens conform with Stoltman's definition of the core-type (57 and 58). Vessels 54, 55, 56 and 59 bear punctates and the presence of horizontals cannot be demonstrated on 59, 60, 61 and 62.

The placement of the pseudo-scallop shell design within the Laurel chronology is somewhat difficult to determine due to the relatively small sample size. Two vessels were surface finds and one occurred in a badly disturbed context. Of the remaining 7 sherds, one occurred as the earliest ceramic material in the unit, two were recovered from upper Laurel levels but below Laurel dentate and the 4 remaining were near the centre of the Laurel sequence. This evidence, scant though it may be, would tend to support Stoltman' (1973:92) that

> The popularity peak of Laurel-Pseudo-Scallop Shell.....appears to occur in generally middle-Laurel times.

The Residual Plain category was defined on the basis of the absence of all decorative elements (including bosses and punctates) on the rim and lip (Stoltman, 1973:77). Unexpectedly, considerable difficulty was encountered in assigning sherds to this type. The first problem involved the very small sherds, many of which were in fact only lips. As no information regarding the presence or absence of design elements on either the interior or exterior of the rims could be deduced, 43 such sherds were eliminated from the sample. Thirty-one (72 per cent) exhibited rounded as opposed to flattened lips. No attempt is made to group these into distinct vessels. Additionally, 82 rims appeared to bear some sort of surface markings, but it was impossible to determine whether or not these were intentional due to their faintness, the diminitive size of the sherds, partial or total exfoliation or other types of post-manufacture obliteration of design traits. Consequently, these were also removed from the sample at this point. A minimum vessel count was again considered unfeasible.

The exclusion of these 'crumbs' reduced the sherd count to 29, which are believed to represent a minimum of 9 vessels. The reference data for these are given in Table 11.

Table 11

Laurel Residual Plain Vessels

Laurel Vessel No.	Level	Unit	Count	Plate	Profile
63	2B	N57E40	4	15j	156
64	3B	N0E5	1	15k	157

Laurel Vessel No.	Level	Unit	Count	Plate	Profile
65	surface		1	15l	158
66	2B	S10E50	3	15m	159
	4A	S30E40			
	2B	S50E30			
67	3	C	1	15n	160
68	3A	S10W55	2	15o	161
	surface				
69	2B	N5W20	4	15p	162
	surface				
70	3A-6	S20E35	12	15q	163
	surface				
71	surface			15r	164

Little can be said of these vessels. Only 3 of the 9 rim sections have flattened lips (65, 68 and 69). The profiles indicate vertical sides (64, 65, 67, 68, 69 and 71) or a slight degree of constriction at the mouth (66 and 70). Only Vessel 63 bears neck constriction and a moderate degree of lip thickening. Thickness ranges from 5 to 8 mm. with a mean of 6.5 mm. Evidence of the temporal significance of the Residual Plain sherds at the Bjorklund Site is scant and somewhat contradictory. Two vessels were associated with Laurel Dentate, one with punctates, one below Laurel Pseudo-scallop Shell, one below Laurel Dentate, one with early Late Woodland ceramics and one occurred in a highly disturbed context. If any conclusions can be deduced from this it would seem that Laurel Residual Plain occurs in middle to late Laurel times. This is in general agreement with Wright's (1967:100) finding that the frequency of the absence of decoration on Laurel vessels increases over time, and Stoltman's (1973:92) assertion that

> Residual Plain varies in relative popularity through a lenticular cycle beginning with 8 per cent at the base of the sequence, reaching a peak of 18.1 per cent in the middle, and declining to a low near 0 per cent at the top.

As Laurel Plain occurs in disproportionate frequencies in these three areas (Ontario, Minnesota and Manitoba), is found in Laurel components of virtually all ages, and exhibits differential trends in frequency in different regions, it may develop that this type is of little seriational utility. Plain vessels are undoubtedly the easiest to manufacture and hence may have been made at any time for a variety of uses other than cooking.

The definition of the Laurel Incised type-core was defined on the basis of the association of the two dependent modes, Long Oblique or Vertial Motif (I-4) and J4--Incising (Stoltman, 1973:76). Variability is provided in the oblique or vertical over horizontal motif, decorated and nondecorated lips and by various combinations of bosses and punctates. None of the vessels defined from the Bjorklund Site can be placed within the core of this type.

A total of 40 Incised sherds were recovered from the Bjorklund Site. While incising was quite evident on all of them, some sherds were too small to permit estimation of the length of the obliques. As long (15 mm. or longer) obliques or verticals were one of the dependent modes of this type, it was felt that some indication of length was necessary to warrant inclusion in the type. Consequently, 22 rim fragments were dropped from the sample, and 14 vessels were defined on the basis of the 18 remaining sherds. These are designated Laurel Vessels 72-85 and are referenced in Table 12.

Table 12

Laurel Incised Vessels

Laurel Vessel No.	Level	Unit	Count	Plate	Profile
72	5A	N55E20	1	16a	165
73	surface		1	16b	166
74	2B	S15W25	2	16c	167
75	2B	S10E5	1	16d	168
76	3B	N50E55	1	16e	169
77	surface		1	16f	170
78	3B	S50E25	1	16g	170
79	2A	S10E0	2	16h	172
	2B	S10E5			
80	5B	N50E55	2	16i	173
81	surface		1	16j	174
82	3A	N75E40	1	16k	175
83	1B	S55E35	1	16l	176
84	2A	S35E25	1	16m	177
85	3B	S0W20	1	16n	178

Punctates occur on all but one of these vessels (80) and horizontals are almost as common (73-80, 82, 83 and 85). The presence of these attributes negates a type-core assignment for any of these vessels. If, following Stoltman (1973:120), punctates are considered a late marker, the high frequency of punctates on incised sherds from the Bjorklund Site as compared to the Minnesota sites indicates that incising reaches a popularity peak later in the Laurel chronology in the north than it does in the south.

This is to some degree supported by the Bjorklund stratigraphy. Four Laurel incised vessels represented the earliest Laurel ceramics in their respective units, but these units generally contained little else in the way of diagnostic Laurel ceramics. On the basis of relative depth of deposition, incised sherds appear earlier than either Laurel Dentate or Plain sherds but consistently later than Laurel Oblique. Hence a early-to-middle Laurel placement is suggested for this type. This is in fact merely a slight modification of Stoltman's (1973:92) assertion that incising is most important in early Laurel.

Profiles 165-178 indicate that with only one possible exception the sides of these vessels are vertical. Again there is no apparent preference for rounded (72, 74, 79, 80, 83, 84) or flattened lips. Only one vessel (73) bears interior decoration. This consists of a series of faint oblique incisions approximately 5 mm. in length, 10 mm. below the lip. Lip decoration is consistently associated with flattened lips and this is invariably in the form of parallel incisions. Sherds with rounded lips bear no lip decoration whatsoever. Thickness ranges from 6 to 9 mm. with an average of 6.7 mm. thus rendering these vessels relatively thick in terms of the Bjorklund Laurel sample. A large basal sherd was recovered from the earliest ceramic level of S20E25. Incising was the only form of decoration of the associated body sherds. The sherd bears a conoidal 'point' which attains a maximum thickness of 14 mm.

Measurement of the exterior angle formed by the convergence of the vessel walls yielded a value of 110 degrees.

The final form Laurel type established by Stoltman (1973:74) is Laurel Oblique defined on the basis of the association between the two dependent modes, no Bosses or Punctates (F-4) and Short Oblique or Vertical Motif (I-1). Those sherds in which the latter motif is not produced in a push-pull fashion are placed within the undragged stamp subtype. Only 3 sherds from as many vessels (86-88) were recovered which are compatible with this latter sub-category.

Table 13

Laurel Oblique subtype Undragged Stamp

Laurel Vessel No.	Level	Unit	Count	Plate	Profile
86	5A	S45E0	1	17a	179
87	4B	N75E40	1	17b	180
88	2	N0E5	1	17c	181

There is considerably less doubt about the early position of these in the Laurel chronology. Vessels 86 and 87 are the earliest Laurel ceramics in their respective units, lying below Laurel Pseudo-scallop Shell, Plain and Dentate. Vessel 88 represents the only diagnostic ceramic material in its unit aside from two dragged stamp body sherds in the same level.

Internal decoration is absent and lip decoration is present on only vessel 86. This, as with the external treatment consists of parallel oblique dentate impressions.

The impressions on vessel 87 are also of the dentate variety, but vessel 88 bears pseudo-scallop shell impressions. Vessel 86 is 8 mm. in thickness while the latter are each 6 mm. thick.

Laurel Oblique subtype Dragged Stamp is better represented at the site. A total of 39 rims fragments of this subtype were recovered and these were grouped into 27 vessels designated Laurel Vessels 89–115. Reference data on these are presented in Table 14.

Table 14

Laurel Oblique subtype Dragged Stamp

Laurel Vessel No.	Level	Unit	Count	Plate	Profile
89	6B	D	4	17d	182
90	4A	N75E40	2	17e	183
91	5A	N55E25	1	17f	184
92	4A	S30E40	1	17g	185
93	4B surface	S20E25	2	17h	186
94	2B	N75E40	1	17i	187
95	3B	N55E20	1	17j	188
96	4A	S25E40	1	17k	189
97	4A	S35E20	1	17l	190
98	3A	S35E25	4	17m	191
99	5B	S55E30	4	17n	192
100	2A	N75E40	1	17o	193
101	surface		1	17p	194
102	4A	S35E20	1	17q	195
103	4A	S35E20	2	17r	196
104	5A	S35E30	1	17s	197
105	2B	S45E0	1	17t	198
106	surface		1	17u	199
107	3A	N55E25	1	17v	200
108	surface		1	17w	201
109	3A	S15E10	1	17x	202
110	3A	S10E50	1	17y	203
111	surface		1	17z	204
112	4B	S15E20	1	17aa	205
113	surface		1	17bb	206
114	surface		1	17cc	207
115	surface		1	17dd	208

The archaeological priority of this type is clearly evidenced by the stratigraphic data. Ten of the twenty vessels from sub-surface contexts occurred as the earliest ceramics material in that unit. Of the remaining ten, four occurred in the earliest ceramic level but were associated with other Laurel ceramics (undragged stamp, pseudo-scallop shell and plain) and six were in somewhat later levels. This may be considered confirmation of Stoltman's (1973:92) view that

> The popularity peak of Laurel Oblique and related types.... appears to be clearly an early Laurel phenomenon.

This type seems at least partially compatible with MacNeish's (1958:150) Nutimik Oblique type. MacNeish attributes the type primarily to Nutimik Focus (his later Laurel complex) but notes its extreme similarity to Vinette Complex Dentate of Upper New York State and southeast Ontario.

Profiles 182-208 indicate essentially vertical vessel walls for this subtype and in most cases the lips are the same thickness or thinner than the vessel walls. Lips are most frequently rounded and plain but where lip decoration is present (98, 100, 107, 113, 114) it consists of a continuation of the rim design. Thickness ranges from 4 to 7 mm. with a mean of 5.3 mm.

The defintion of the core-type is based upon the association of the two dependent modes, No Bosses or Punctates, (F-4) and Short Oblique or Vertical motif (I-1) (Stoltman, 1973:75). The dragged stamp subtype is essentially identical to Laurel Push-pull as in both cases the design is produced by the dragging of a dentate-like instrument diagonally to the vertical axis of the pot. The grouping of dragged and undragged subtypes clearly placed the emphasis upon motif rather than decorative instrument in the definition of this type (see Stoltman: 1973:76). Vessels 108, 114, and 115 are thus excluded from the core as they bear punctates. The latter two vessels along with Vessel 97 are also distinctive in that the stamped pattern has been dragged horizontally in contrast to the usual pattern produced by diagonal dragging. Vessels 114 and 115 are also unique for this subtype in another respect. Both bear cross-hatching on the upper rim and the former exhibits this design on the lip also (Plate 17, cc and dd). Cross-hatched rims were present on some of MacNeish's Nutimik Oblique specimens but was more common on Cemetery Point Incised (MacNeish, 1958:151) where the element was often associated with vertical rocker stamping. Aside from the method of producing the horizontal bands, these two vessels are compatible with this latter type. In Stoltman's sample, cross-hatched rims also occurred with incised rims. The Bjorklund evidence and Stoltman's seriational data tend to support the hypothesis that Laurel Oblique and Laurel Incised were contemporary for a relatively long period of time. Consequently, cross-hatching and, by association, rocker stamping appear to be a rare but consistently early characteristic of Laurel.

An additional 9 vessels of apparently early provenience were recovered from the Bjorklund Site. While these bear some similarities to Laurel Oblique they are not included with that type. The presence of punctates on 6 of the 9 vessels removes them from the core-type and the absence of the short obliques or verticals on 3 vessels precludes the possibility of these at least being variants of the type. The thickness of these sherds is in sharp contrast to Laurel Oblique. The mean thickness is 8.1 mm. and the range 7 to 11 mm. These are designated Laurel Vessels 116-124 and are referenced in Table 15. In the interest of parsimony they referred to by the term Lockport Linear (MacNeish, 1958:145), and following MacNeish's taxonomy these are subsumed within the Laurel Ware.

Table 15

Lockport Linear

Laurel Vessel No.	Level	Unit	Count	Plate	Profile
116	2B	S35E35	1	18a	209
117	4A-6	N5W20	4	18b	210
118	3A	S55E35	1	18c	211
119	2B	N5W20	1	18d	212
120	3B	S0W20	1	18e	213
121	6	C	1	18f	214
122	3A	S55E20	1	18g	215
123	surface		1	18h	216
124	surface		1	18i	217

Five of the seven excavated vessels represent the earliest ceramics in their respective units while the other two occur in much later (and presumably disturbed) contexts.

This group is felt to relate to Lockport Linear in that the following attributes are shared:

> Lines composed of overlapping or end-to-end punctates...vertical rims, and the upper portions of ellipsoid bodies. The surface of this type is smooth and the paste has heavy temper and a coarse texture (MacNeish, 1958:50).

Rims may be decorated by verticals, obliques or cross-hatching. Only vessels 116, 117, 118 and 124 bear lip decoration. The former two vessels exhibit a cross-hatched rim and the same design appears on the lip. The two remaining vessels bear oblique incisions on the lip. The profiles (209-217) suggest essentially vertical vessel walls.

An additional seven vessels warrant consideration although they cannot be placed conveniently within any regional typological construct. All, with the possible exception of Vessel 7, are clearly of Middle Woodland provenience. The usual reference data on these is provided in Table 16 below, and the vessels are illustrated in Plate 19

Vessels 1-3 exhibit typical Laurel profiles and lip treatment, but the method of surface finishing is not characteristic of this ware. Linear horizontal irregularties are present on Vessel 1, but these appear to have been smoothed over or otherwise obliterated such that their definition is impossible. The small circular punctates have produced marked internal bosses. The lip and interior are plain, but the rim bears short oblique, irregular incisions. Vessel 2 bears no decoration <u>per se</u>. The oblique punctates have produced a slight degree of internal bossing. The lip and interior are again plain and the exterior surface bears oblique linear irregularities. Whether these represent smoothing-over or some form of brushing is impossible to determine.

Table 16

Miscellaneous Vessels

Vessel No.	Level	Unit	Count	Plate	Profile
1	5B	S15W25	1	19a	218
2	3B	N5W20	1	19b	219
3	5A	N50E55	1	19c	220
4	4B-6	S20E35	6	19d	221
5	4A	N5W20	1	19e	222
6	3-5 surface	A	18	19f	223
7	4	C	1	19g	N/A

The exterior of Vessel 3 bears short parallel depressions which may have been formed by a relatively thick cord wrapped loosely around a stick of large diameter being impressed into the wet clay in a horizontal position. The interior is plain, but the lip bears several irregular impressions which appear to have been produced by the same instrument. The single shallow circular punctate has not caused internal bossing.

Sufficient sherds were recovered to indicate fairly accurately, the size and shape of Vessel 4. The total height of this vessel was approximately 65 mm. with the lip, neck and shoulder diameters measuring 47, 41 and 55 mm. respectively. Oblique rows (possibly dentates) occur on the lip and upper rim. Two horizontal rows of small punctates occur beneath these. The thinness (3 mm.) and diminutive size permits the speculation that this vessel served as a cup. The execution of the design elements is finer than would be expected of juvenile ceramics.

Vessel 5, represented by one rim, is entirely plain with the exception of a horizontal irregular line 15 mm. below the lip. This, however, is so indistinct as to preclude its identification as corded or dragged stamp. The profile (222), lip shape, thickness, finish and texture are, however, entirely compatible with Laurel Ware.

The shoulder portion of Vessel 6 has been almost entirely reconstructed and measures approximately 100 mm. in diameter. Precise measurement cannot be made as the vessel is markedly asymmetrical. The interior is plain, and the lip bears oblique incisions. Rows of oblique punctates spaced 3 mm. apart occur 2 mm. below the lip above an average of 6 horizontal rows of crude dragged stamp impressions. These extend to the shoulder whereupon the design shifts to diagonal rows of irregular dragged stamp impressions. The overall lack of skill associated with

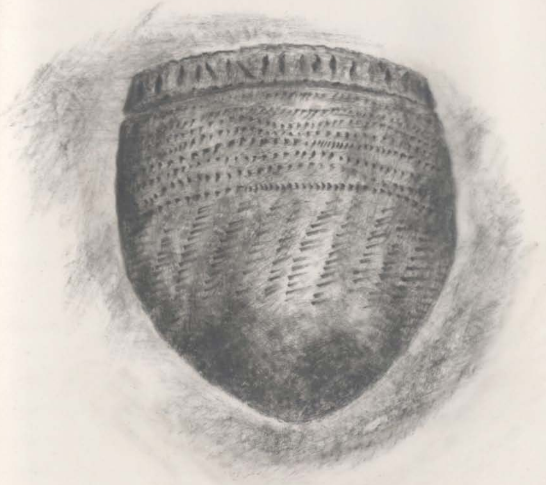


Figure 2. Artist's Reconstruction of Miscellaneous Vessel No. 6

the shape of the vessel and the execution of the design elements permit the speculation that this is the product of a young individual learning the potter's art. This hypothesis is partially supported by the absence of any evidence (such as carbon deposits) that the vessel was used for cooking. An artists reconstruction of the original vessel based upon the partially articulated sherds is presented as Figure 2.

Vessel 7 is represented by one body sherd. Its significance lies in the fact that the surface appears to have been 'basket' or 'mat' impressed. Superficially, this creates a surafce finish very similar to cord marking, but a closer examination reveals that each thin vertical element is 'woven' alternately above and below each of the larger horizontal elements. Unfortunately, the provenience of this sherd is unclear; the unit from which it was recovered shows considerable signs of disturbance. Both Middle and Late Woodland sherds occurred in the same two inch level as Vessel 7. When recovered in 1973, this sherd was termed Porth Basket-impressed, but additional confirming evidence since that time has been lacking, despite intensive excavation in the area. The thickness of this sherd is 8 mm.

Projectile Points

A total of 68 specimens classifiable as projectile points were recovered. This included a number of problematical specimens which were included in the initial analysis. Only 46 of the original sample were sufficiently complete such that measurement of length, width and thickness could be made or accurately inferred. A uniform system of attribute measurement within which an attribute could be described numerically or quantified as zero when absent was devised such that the metric data would be suitable for computer sorting. The six attributes chosen were total length, total thickness, shoulder width, basal width, notch width and blade length.

As notches were absent in the triangular and ovoid speciments, notch and shoulder width were quantified as zero and identical entries were made in the total length and blade length columns. The same situation obtained for the single complete lanceolate specimen, but as it was wider near the midpoint than at the base, this additional data was entered into the should width column. Only one other morphological class-the stemmed points--lacked notches. In this instance notch width was measured at the top of the stem, immediately below the shoulders. Blade length was defined as the distance from the tip of the blade to the midpoint of a line connecting the shoulders.

This information was punched onto computer cards and the points sorted by means of a Hierarchal Grouping Program.

The first step in the program was the standardization of all scores, accomplished by dividing each score by the standard deviation of each attribute class. This insured equal 'weighting' of all attributes. The first print-out consisted of 46 groups with one artifact in each group. The associated error of this grouping, defined as the sum of the squared differences between corresponding scores in the profiles, divided by the number of objects in the potential group, is zero. The second print-out combines the two most similar artifacts into a single group thus creating a typology with 45 classes with a small error value. The grouping process continued with the grouping error steadily increasing until all 46 artifacts were subsumed within 2 groups and the grouping error was highest.

Hierarchal grouping (Hgroup) is a form of cluster analysis closely related to mean linkage in that an aspirant is allowed to join an existing group only when it is judged sufficiently similar to the mean of that group. Both test to what extent 'natural' groups exist among a number of objects on the basis of a uniform set of variables. Only the expression of the degree of similarity between subjects differs between the two methods.

A dendrograph illustrating the relationship between the 46 subjects was constructed and is presented as Figure 3. It was decided to accept a large number of morpholological

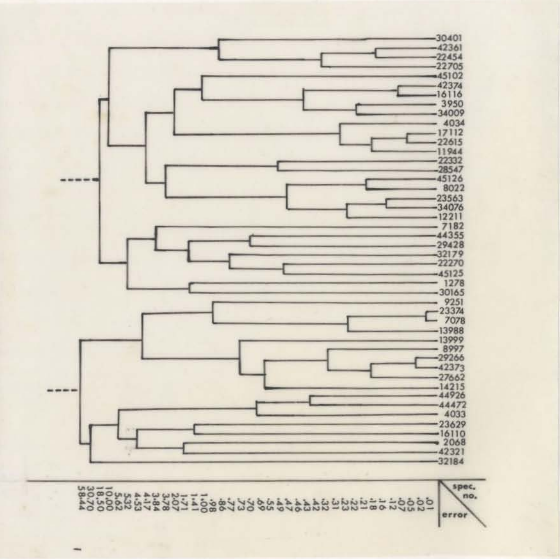


Figure 3. Dendrograph of Bjorklund Site
Projectile Points

types as this would be associated with a low grouping error. Further grouping would be made on the basis of associational information. In effect this would combine a large number of morphological types into a smaller number of culturally significant types. The former may be defined simply as "a demonstrable clustering of attributes observed among specimens of a given class of phenomena" (White, Binford and Papworth, 1963:194). Listed below are the observed attributes of the 46 projectile points arranged into 27 computer-generated types. The error at this level of grouping is 0.4728.

Group 1

n=4

A29-34,009

General shape:	Side-notched
Material:	Black, fine-grained rhyolite
Length:	18.4 mm.
Thickness:	4.4 mm.
Basal Width:	11.0 mm.
Shoulder Width:	11.8 mm.
Notch Width:	8.1 mm.
Blade Length:	14.0 mm.
Unit:	S20E35
Level:	2B
Association:	Cord-roughened body sherds (Blackduck

A29-42,374

General shape:	Side-notched
Material:	Grey quartzite
Length:	19.5 mm.
Thickness:	12.2 mm.
Shoulder Width:	11.8 mm.
Notch Width:	8.1 mm.
Blade Length:	14.0 mm.
Association:	Surface

A29-16116

General shape:	Side-notched or expanding stemmed
Material:	Grey quartzite
Length:	19.5 mm.
Thickness:	3.9 mm.
Basal Width:	12.2 mm.
Shoulder Width:	12.9 mm.
Notch Width:	10.4 mm.
Blade Length:	14.5 mm
Unit:	S5E20
Level:	3A
Association:	Mainly plain body sherds but also some dentate and a few cord-roughened sherds (Late Laurel-Early Blackduck)

A29-3950

General shape:	Straight stemmed
Material:	Mottled black and white quartzite
Length:	19.5 mm.
Thickness:	4.5 mm.
Basal Width:	10.2 mm.
Shoulder Width:	11.9 mm.
Width Below Shoulders:	10.2 mm.
Blade Length:	15.0 mm
Unit:	N55E20
Level:	3A
Association:	Cord roughened, cord impressed and plain sherds (Late Laurel-Early Blackduck)

Group 2

n=1
A29-22332

General Shape:	Contracting stemmed
Material:	White, fine-grained chert
Length:	25.3 mm.
Thickness:	4.0 mm.
Basal Width:	7.2 mm.
Shoulder Width:	12.6 mm.
Width Below Shoulders:	10.0 mm.
Blade Length:	12.9 mm.
Unit:	S50E20
Level:	1B
Association:	Pure Blackduck

Group 4

n=3
A29-2270

General Shape:	Side-notched
Material:	Black rhyolite

Length:	22.0 mm.
Thickness:	3.6 mm.
Basal Width:	18.0 mm.
Shoulder Width:	15.7 mm.
Notch Width:	13.3 mm.
Blade Length:	13.7 mm.
Association:	Unknown

A29-22,454

General Shape:	Side-notched
Material:	Brown chalcedony
Length:	21.0 mm.
Thickness:	2.9 mm.
Basal Width:	15.5 mm.
Shoulder Width:	14.0 mm.
Notch Width:	11.8 mm.
Blad Length:	15.5 mm.
Unit:	S50E20
Level:	3A
Association:	Cord roughened and cord-impressed sherds (Blackduck)

A29-42,361

General Shape:	Side-notched
Material:	Grey-brown quartzite
Length:	19.3 mm.
Thickness:	3.6 mm.
Basal Width:	15.9 mm.
Shoulder Width:	14.1 mm.
Notch Width:	12.4 mm.
Blade Length:	12.9 mm.
Association:	Surface

<u>Group 5</u>

n=4

A29-11944

General Shape:	Side-notched
Material:	Pale green quartz
Length:	23.9 mm.
Thickness:	3.1 mm.
Basal Width:	12.3 mm.
Shoulder Width:	13.9 mm.
Notch Width:	11.1 mm.
Blade Length:	18.1 mm.
Unit:	S25E40
Level:	2A
Association:	Cord roughened sherds (Blackduck)

A29-4034

General Shape:	Side-notched
Material:	Grey chert
Length:	24.9 mm.
Thickness:	3.6 mm.
Basal Width:	13.9 mm.
Shoulder Width:	12.8 mm.
Notch Width:	9.0 mm.
Blade Length:	17.5 mm.
Unit:	N55E20
Level:	3A
Association:	Cord roughened and cord-impressed sherds (Blackduck)

A29-22615

General Shape:	Side-notched
Material:	Dark Grey Banded chert
Length:	23.2 mm.
Thickness:	3.5 mm.
Basal Width:	12.2 mm.
Shoulder Width:	13.8 mm.
Notch Width:	9.0 mm.
Blade Length:	18.6 mm.
Unit:	S45E0
Level:	2A
Association:	Cord-impressed (Blackduck) sherds, and one (intrusive) Laurel Dentate sherd

A29-17112

General Shape:	Side-notched
Material:	Greyish-brown quartzite
Length:	24.3 mm.
Thickness:	3.5 mm.
Basal Width:	10.9 mm.
Shoulder Width:	14.0 mm.
Notch Width:	8.8 mm.
Blade Length:	18.9 mm.
Unit:	S10E50
Level:	3A
Association:	Cord roughened and cord-impressed (Blackduck) sherds, but also drag and jab and dragged stamp (Laurel)

<u>Group 11</u>

n=5

A29-8022

General Shape:	Side-removed flake point (unifacially worked)
Material:	Red quartzite

Length:	16.1 mm.
Thickness:	2.8 mm.
Basal Width:	9.2 mm.
Shoulder Width:	10.8 mm.
Notch Width:	7.8 mm.
Blade Length:	9.1 mm.
Unit:	S20E25
Level:	3A
Association:	One dragged stamp sherd and one Laurel Dentate sherd but primarily cord roughened and cord-impressed (Blackduck)

A29-45126

General Shape:	Side-notched
Material:	Brown chalcedony
Length:	19.0 mm.
Thickness:	3.2 mm.
Basal Width:	9.9 mm.
Shoulder Width:	11.4 mm.
Notch Width:	6.1 mm.
Blade Length:	7.7 mm.
Association:	Surface

A29-34076

General Shape:	Side-notched
Material:	Black, fine textured basalt
Length:	19.8 mm.
Thickness:	2.9 mm.
Basal Width:	10.7 mm.
Shoulder Width:	11.2 mm.
Notch Width:	7.0 mm.
Blade Length:	12.8 mm.
Unit:	S20E35
Level:	3A
Association:	Cord roughened (Blackduck) Ceramics

A29-1221

General Shape:	Side-notched
Material:	Black, fine textured basalt
Length:	17.6 mm.
Thickness:	2.3 mm.
Basal Width:	9.9 mm.
Shoulder Width:	9.8 mm.
Notch Width:	6.2 mm.
Blade Length:	12.5 mm.
Unit:	S25E40
Level:	3B
Association:	Primarily plain sherds but one incised and one cord roughened sherd (Late Laurel-Early Blackduck)

A29-23563

General Shape:	Side-notched flake point (unifacially worked)
Material:	Coarse-grained white chert
Length:	20.1 mm.
Thickness:	2.8 mm.
Basal Width:	9.0 mm.
Shoulder Width:	11.5 mm.
Notch Width:	8.0 mm.
Blade Length:	14.9 mm.
Unit:	S55E30
Level:	4A
Association:	Primarily plain sherds but some dentate sherds and one brushed sherd (Late Laurel-Early Blackduck)

Group 12

n=1
A29-30401

General Shape:	Side-notched
Material:	Orange quartzite
Length:	18.0 mm.
Thickness:	3.3 mm.
Basal Width:	20.0 mm.
Shoulder Width:	17.0 mm.
Notch Width:	15.0 mm.
Blade Length:	12.3 mm.
Unit:	S35E25
Level:	8-11
Association:	This point was found while shovelling the sterile clay levels below the occupation zone. It was situated in an obvious rodent burrow and seems intrusive from an upper level. It is impossible to determine its 'true' associations.

Group 15

n=1
A29-44355

General Shape:	Side-notched
Material:	Dark brown chalcedony
Length:	24.7 mm.
Thickness:	5.3 mm.
Basal Width:	12.3 mm.
Shoulder Width:	11.8 mm.
Notch Width:	7.9 mm.
Blade Length:	16.9 mm.
Unit:	D
Level:	5B
Association:	Cord roughened sherds and Laurel Dentate (Late Laurel-Early Manitoba)

Group 16

n=2
A29-22270

General Shape:	Side-notched
Material:	White quartzite
Length:	25.3 mm.
Thickness:	5.0 mm.
Basal Width:	13.8 mm.
Shoulder Width:	14.5 mm.
Notch Width:	12.7 mm.
Blade Length:	19.3 mm.
Unit:	S5E35
Level:	8
Association:	This point is probably intrusive at this Level. Levels 5A through 8 were otherwise sterile. Level 9 contained a few pottery fragments.

A29-45125

General Shape:	Side-notched
Material:	Dark grey chert
Length:	30.3 mm.
Thickness:	4.7 mm.
Basal Width:	15.2 mm.
Shoulder Width:	15.5 mm.
Notch Width:	9.8 mm.
Blade Length:	21.3 mm.
Association:	Surface

Group 17

n=1
A29-28547

General Shape:	Side-notched and stemmed
Material:	Brown chert
Length:	22.7 mm.
Thickness:	3.9 mm.
Basal Width:	4.5 mm.
Shoulder Width:	16.9 mm.
Notch Width:	11.3 mm.
Blade Length:	15.6 mm.
Unit:	S55E25
Level:	3B
Association:	This level contained ceramics attributable to both Laurel and Blackduck Wares.

Group 20

n=1
A29-7182

General Shape:	Side-removed (expanding Stemmed)
Material:	Grey chert

Length: 36.9 mm.
Thickness: 6.0 mm.
Basal Width: 16.9 mm.
Shoulder Width: 19.2 mm.
Notch Width: 15.2 mm.
Blade Length: 28.0 mm.
Unit: S5E35
Level: 4A
Association: Laurel Dentate and coil-fractured plain sherds

Group 24

n=1
A29-29428
General Shape: Corner-notched (barbed)
Material: White quartzite
Length: 24.0 mm.
Thickness: 6.6 mm.
Basal Width: 14.0 mm.
Shoulder Width: 15.9 mm.
Notch Width: 10.8 mm.
Blade Length: 17.2 mm.
Unit: S50E25
Level: S50E25
Association: Fabric impressed sherds and one Laurel rim occurred at this level. This unit, however, is within the circumference of the burial pit and inherent disturbance makes this association meaningless.

Group 25

n=1
A29-1278
General Shape: Corner-notched (barbed)
Material: Brown chalcedony
Length: 29.0 mm.
Thickness: 5.2 mm.
Basal Width: 9.2 mm.
Shoulder Width: 15.5 mm.
Notch Width: 6.2 mm.
Blade Length: 23.2 mm.
Unit: B
Level: 3
Association: Preceramic

Group 26

n=1
A29-32179
General Shape: Asymmetric: Corner-notched on one side and side-removed on the other

Material: Olivinated quartzite
Length: 26.2 mm.
Thickness: 5.0 mm.
Basal Width: 18.8 mm.
Shoulder Width: 17.1 mm.
Notch Width: 9.9 mm.
Blade Length: 21.0 mm.
Unit: S15E20
Level: 5A
Association: Pure Laurel

Group 27

n=1
A29-32184
General Shape: Lanceolate
Material: Medium textured, white chert
Length: 50.8 mm.
Maximum Width: 28.3 mm.
Basal Width: 16.2 mm.
Thickness: 11.4 mm.
Unit: S15E20
Level: 6
Association: Preceramic

Group 28

n=4
A29-27662
General Shape: Triangular White
Material: Quartzite
Length: 18.1 mm.
Width: 15.8 mm.
Thickness: 4.1 mm.
Unit: Burial Extension Unit
Level: 2
Association: Cord roughened ceramic (Blackduck)

A29-42,373
General Shape: Triangular
Material: Pink quartzite
Length: 18.9 mm.
Width: 15.1 mm.
Thickness: 3.5 mm.
Association: Surface

A29-8997
General Shape: Triangular
Material: Medium-coarse grey chert
Length: 22.0 mm.
Width: 13.8 mm.
Thickness: 3.4 mm.
Unit: S35E30
Level: 2B
Association: Cord-impressed (Blackduck) and possibly a fabric impressed sherd (Selkirk)

A29-29,266

General Shape:	Triangular
Material:	Blue-grey quartzite
Length:	19.0 mm.
Width:	14.2 mm.
Thickness:	3.3 mm.
Unit:	S35E20
Level:	4A
Association:	Laurel Dentate, Laurel Punctate some plain sherds and three cord roughened sherds (Blackduck)

Group 29

n=1
A29-2068

General Shape:	Ovoid
Material:	Fine textured, grey chert
Length:	33.6 mm.
Maximum Width:	25.4 mm.
Thickness:	6.0 mm.
Unit:	A
Level:	7
Association:	Lowest ceramic-bearing level. Correction of depth to account for surface slope places this specimen in a preceramic context.

Group 30

n=1
A29-9251

General Shape:	Small ovoid
Material:	Fine-grained white chert
Length:	22.9 mm.
Width:	14.1 mm.
Thickness:	4.0 mm.
Unit:	S35E20
Level:	3B
Association:	Purely Laurel ceramics-dentate and pseudo-scallop shell motifs

Group 31

n=2
A29-44,472

General Shape:	Triangular, convex base
Material:	Fine textured, white chert
Length:	32.2 mm.
Width:	17.7 mm.
Thickness:	7.0 mm.
Unit:	D
Level:	6B

Association:	Almost a pure Laurel level (Linear stamp, dentate and incised motifs, 1 cord roughened sherd)

A29-44,926

General Shape:	Ovoid
Length:	32.5 mm.
Width:	18.2 mm.
Thickness:	5.5. mm.
Unit:	N50E55
Level:	5A
Association:	A Pure Laurel level (Punctate motif)

Group 32

n=1
A29-23,629

General Shape:	Ovoid-triangular
Material:	Fine-textured black basalt
Length:	39.6 mm.
Width:	20.0 mm.
Thickness:	5.0 mm.
Unit:	S55E30
Level:	5B
Association:	Preceramic-ceramic interface

Group 33

n=1
A29-4033

General Shape:	Triangular
Material:	Mottled grey-white quartzite
Length:	27.0 mm.
Width:	18.9 mm.
Thickness:	6.9 mm.
Unit:	N55E20
Level:	3A
Association:	Laurel Pseudo-scallop shell and plain sherds in addition to cord roughened and cord-impressed (Blackduck)

Group 35

n=1
A29-42321

General Shape:	Triangular with convex sides, unifacially worked on basal portion, and bifacially at tip
Material:	Shale
Length:	33.6 mm.

Width:	24.1 mm.
Thickness:	3.0 mm.
Association:	Surface

Group 37

n=3

A29-7078

General Shape:	Triangular
Material:	Fine-textured, brownish-grey chert
Length:	20.8 mm.
Width:	18.9 mm.
Thickness:	2.9 mm.
Unit:	S5E35
Level:	3B
Association:	Fabric Impressed (Selkirk) and cord marked (Blackduck) sherds

A29-2374

General Shape:	Triangular
Material	Black rhyolite
Length:	20.4 mm.
Width:	18.5 mm.
Thickness:	3.1 mm.
Unit:	S55E20
Level:	2A
Association:	Primarily Blackduck

A29-13988

General Shape:	Triangular (unifacial flaking)
Material:	Black rhyolite
Length:	22.9 mm.
Width:	20[illegible] mm.
Thickness:	2.5 mm.
Unit:	S30E10
Level:	2A
Association:	Blackduck

Group 40

n=1

A29-13999

General Shape:	Triangular (concave base)
Material:	Black rhyolite
Length:	19.4 mm.
Width:	14.9 mm.
Thickness:	2.1 mm.
Unit:	S30E10
Level:	2A
Association:	Blackduck

Group 41

n=1
A29-14215

General Shape:	Triangular
Material:	Pink quartzite
Length:	14.7 mm.
Width:	14.7 mm.
Thickness:	3.8 mm.
Unit:	S30E10
Level:	3B
Association:	Laurel Incised sherds

Group 44

n=1
A29-45102

General Shape:	Eared and Side-notched
Material:	Fine-textured white chert
Length:	17.9 mm.
Thickness:	3.3 mm.
Basal Width:	14.8 mm.
Shoulder Width:	10.1 mm.
Notch Width: (above ears)	9.7 mm.
Blade Length:	8.9 mm.
Unit:	N50E55
Level:	7A
Association:	Laurel Punctate and Pseudo-Scallop shell

Group 46

n=1
A29-16110

General Shape:	Elongate-ovoid
Material:	Black rhyolite porphyry
Length:	46.7 mm.
Width: (maximum)	20.4 mm.
Thickness:	6.9 mm.
Unit:	S5E20
Level:	3A
Association:	Laurel Dentate and cord-impressed sherds

Considering associational as well as morphological data, several further stages of grouping appear justifiable. Groups 28, 37, 40 and 41 include 9 points all of which are small, triangular, with straight or slighly convex blade edges and straight or very slightly convex or concave bases (see Plate 20). Six of the 9 are associated with cord roughened and/or cord impressed ceramics believed to be of the Blackduck (or Manitoba) Phase. One of the remaining three points was a surface find whereas the other two were of Laurel provenience. Fabric-impressed ceramics were recorded as occurring at the same depth as the Blackduck ceramics in S5E35, the unit from which point number A29-7078 was excavated. The evidence for a Selkirk or Laurel association for this group, however, is slim, particularly when one considers the difficulty of detecting sub-surface disturbance due to frost heaving. Consequently, a purely Blackduck Phase assignment is proposed for these points.

It seems possible that A29-42,321 may be included in this group. This point was a surface recovery and is somewhat larger than the other points, but shares the characteristic of minimal bifacial chipping with two other points. All three are of coarse hard materials such as rhyolite or shale and this may be the cause of the absence of further refinement. Specimen A29-30395, a fragmentary triangular point recovered from the surface, is closely similar to other points of this group. It is made of a mottled black and orange quartzite and is 14.5 mm. and 5.3 mm. in width and thickness respectively.

This group is probably correlative with MacNeish's

(1958) Eastern Triangular type. He describes these as having average length, width and thickness measurements of 24 mm., 16 mm., and 3 mm. respectively and are for the most part "made from thin flakes fashioned into shape by pressure flaking along their edges. Only a few have pressure flaking on their surfaces" (MacNeish, 1958:103).

He associates Eastern Triangular with both the Manitoba and Selkirk foci. It seems likely that the scant evidence for a Selkirk association at the Bjorklund Site is due to the diminutive amount of Selkirk material present.

Webster (1973) reports similar points from northern Minnesota. They are described as follows:

> It would appear that they are somewhat casually made, perhaps from suitable, small, waste flakes. Though all have been bifacially retouched around the edges, one face is typically not fully worked, giving the points a plano-convex appearance (in Stoltman, 1973:95).

Metrical attributes of the Bjorklund specimens are essentially identical to those given by Webster for this class. He notes that such points are common in northern Minnesota and occur in Late Woodland associations. For the sake of simplicity, the designation 'Eastern Triangular' is retained in reference to the 11 specimens from the Bjorklund Site (Plate 20 a-k).

A29-22332 is the sole member of Group 2 and represents the only contracting stemmed point at the site. It shares the characteristics of formation by percussion flaking with fine edge retouch by pressure flaking, the contracting stem and poorly defined shoulders with the two Lockport Stemmed points of the MacNeish (1958:102) excavations. These, however, were approximately twice the length of the Bjorklund specimen. The Lockport points were associated with Laurel ceramics while the Bjorklund specimen was in an apparently later context. Little light has been shed on such points recently, but on the basis of present evidence it seems likely that stemmed points are a trait (although an extremely rare one) of both the Laurel and Blackduck assemblages. This assertion may be strengthened by reference to A29-3950 (Plate 20m). This straight-stemmed specimen was in Group 1, the prime characteristic of which is the incipient side notch which lends a stemmed appearance to at least one other member of this group. As this attribute is least notable on this specimen, the stem being perfectly parallel, it may be more appropriately combined with the previously discussed contracting stemmed point. The latter is associated with both corded and plain sherds thus suggesting a late Laurel or early Blackduck assignment (Plate 20 1 and m).

MacNeish (1958) described seven side and corner-notched projectile point varieties for southeastern Manitoba. Four of these occur in Late Woodland contexts and are extremely similar. An examination of Plain Side-notched, Prairie Side-notched, and Selkirk Side-nothced (MacNeish, 1958:97, 103-105) indicates that in some cases there is more within-group variation than between-group variation. This may be a result of the smallness of the points and associated difficulties in finishing them. There is a considerable overlap in the time-depth and geographical distribution of many of these types. Whether a cultural distinction is correlative with the established taxonomic groups, however, is a problem which can only be resolved by a consideration of associated materials. Critical and objective examination is required in order to determine to what extent natural groups exist.

The Heirarchal Grouping procedure linked A29-30401, 42361, 22454 and 22705 at an error value of .8630. This represents a combining of Groups 4 (n=3) and 12 (n-1). These four specimens share the attributes of a roughly equilateral blade with very slightly excurvate lateral edges, side notches of equal height and depth and being wider at the base than the shoulders. Furthermore, the 3 Group 4 specimens had concave bases. The base of the Group 12 points was straight. Specimen A29-27138, was omitted from the H Group analysis due to its fragmentary nature, but its similarity to these 4 points in terms of its straight base, angular basal edges and notch and blade shape seem to warrant its inclusion with them (Plate 21 a-e). Ceramic associations were indeterminable on 2 of these points as one was a surface find and the other was in an obviously disturbed context. Of the 3 remaining, 2 points occurred in levels which contained both Laurel and Blackduck ceramics, while the other was, associated with Blackduck only.

This group appears most closely related to the Plain Side-notched points described by MacNeish (1958: 103-104), who attributes them to both the Selkirk and Manitoba Foci. As the Bjorklund specimens are slightly larger than those described by MacNeish, and there is a general tendency toward a reduction in the size of side-notched points in the Woodland Period in this area, it may be that these are slightly earlier forms of a generalized Plain Side-notched type. Webster (in Stoltman, 1973:96) reports similar points from northern Minnesota (which he names 'Small Eared') and noted that they occur in both Middle and Late Woodland contexts.

A second style of side notched point at the Bjorklund Site is considered related to the Prairie Side-notched points of southeastern Manitoba (MacNeish, 1958:104). These differ from Plain Side-notched in that they have isosceles rather than equilateral shaped blades, exhibit convex or irregular-straight bases, and by the absence of 'ears'. This class is represented by Group 1, 11, A29-28926 (a fragmentary specimen), A29-30355, A29-30250 (two specimens which were not initially available for analysis), for a total of 11 points (Plate 21 f-p). In Minnesota, these appear similar to the "Small Corner-removed" specimens which Webster (in Stoltman, 1973:97) notes occurred in the Pike Bay and McKinstry I Mound--the purest Laurel components employed in his analysis. MacNeish

(1958:104), on the other hand, states that they occurred in the Manitoba and Selkirk Foci in equal proportion. Of the 9 Bjorklund points, 2 were surface finds, 3 were in levels which contained only Manitoba sherds, 1 was in a level which yielded Manitoba and plain sherds, 3 were in levels in which Laurel and Manitoba were both present in fairly equal proportions and 2 were in levels which again contained both wares, but in which the Laurel seemed intrusive.

From this it would seem that Prairie Side-notched may indeed be slightly earlier than Plain Side-notched as MacNeish claimed, but that both styles have somewhat earlier origins than he supposed. Based on the Bjorklund evidence, it would seem that both Plain and Prairie Side-notched are most strongly represented in the Blackduck Phase, their recurrent association with late Laurel material suggests that both styles may be derived from the indigenous Middle Woodland side notched styles. MacNeish (1958:104) seems to concur with this viewpoint.

The earlier side notched forms to which MacNeish (1958:104) referred are Whiteshell Side-notched and Nutimik Side-notched. This latter style is somehwat problematical as no description or illustrations are provided, nor are any references given to earlier workers who may have defined the type. It is possible that this was an error on MacNeish's part; his intention being Whiteshell Side-Notched in both passages. Whiteshell Side-notched is reported for the

Nutimik (Laurel) Focus and persists into the early stages of the Manitoba Focus (MacNeish, 1958:102-103). Eight specimens attributable to this type were recovered from the Bjorklund Site (Plate 22 a-h). This represents the combination of Groups 5, 15, 16 and the fragmentary specimen A29-12076. These are considerably larger than the preceding specimens, having a range in length of 23 to 31 mm. This size is considerably less than that suggested for the type by MacNeish. Non-metrically, however, the Bjorklund specimens are compatible with this typology. Blade shape is elongate isosceles-triangular with only a slight degree of convexity. Bases are convex and notches well defined in most cases. Ceramic associations indicated that these were representative of the Laurel culture. The evidence of southeastern Manitoba seems to confirm this.

One specimen, (A29-16110 occurred in a purely Manitoba Phase context. This item was an asymmetrical elongate ovoid blade with bifacial retouch on both edges with some slight indications of basal thinning. It was decided to include this with the projectile points for H Group sorting as it closely resembled one illustration of the Winnipeg Ovoid type (MacNeish, 1958:95 fig.13). The lack of verification of such a projectile point style in this period, the lack of general refinement of the base and the morphological similarity to the bifaces of this phase (MacNeish, 1958:122) suggests to me, that many of these are not projectile points.

It is interesting to note that it was H grouped with other specimens believed to represent knives and unfinished projectile points.

Two distinct projectile point styles occurred in an essentially pure Laurel context. The first class consists of the four projectile points in Groups 30, 31 and 33. A fifth fragmentary (A29-S-3) specimen recovered from a surface collection is provisionally included in this group (Plate 22 j-m). These are long isosceles-triangular points with moderately convex to almost rounded bases. The length of these specimens ranges from 23 to 33 mm. and all exhibit basal thinning. The mean size of these points clusters around the upper range for Eastern Triangular as reported by MacNeish (1958:103), but the distinct presence of two varieties on the basis of absolute size plus the clear difference in ceramic association of each variety at the Bjorklund Site leads me to believe that they are genetically related subtypes. The temporal precedence of the larger forms suggests that as was the case with the side-notched forms there is a tendency for a reduction in projectile point size from Laurel to the historic period. Webster (in Stoltman, 1973:96) reports two such specimens although he is uncertain as to their association or cultural relationships. The size distinction between Woodland triangular points is suggested by the term 'Large Isosceles' for these specimens. Such points may well serve as convenient time markers in the western Great Lakes due to their apparently restricted time depth. In this case, the term 'Laurel Triangular' seems appropriate for them. Laurel Triangular points are probably most abundant in the latter half of the Laurel Phase as the ceramic motifs with which they are associated (Laurel Dentate and Laurel Pseudo-Scallop Shell) have been seriated to late and middle Laurel times by Stoltman, (1973:92).

Four specimens are considered compatible with MacNeish's Anderson Corner-notched category. These points are relatively long (the mean length being about 40 mm.), exhibit an isosceles-triangular blade with straight or very slightly excurvate sides broad side notches which extend to the base (giving them an expanding-based appearance), and shoulders at nearly right angles to the long axis of the points. As barbs are never present, this type may be more aptly termed side-removed than corner-notched (Plate 22 n-q). Only 2 of the 4 Bjorklund specimens (Groups 20 and 26), were complete and one of the fragmentary points was a surface find. The 3 specimens from sub-surface contexts occurred in pure Laurel levels with the dentate, and dragged stamp motifs predominating. The larger of the complete points was associated with Feature 1-74 -- a circular hearth which will be discussed in a later section. MacNeish placed these in the Larter, Anderson and Nutimik Foci. The presence of Anderson points at the Larter Site, however, can no longer be considered supportive of their inclusion in the Larter Phase as this site is now generally believed to be multi-component (Syms, 1970:129; Hlady, 1970: 276). Webster suggests that similar Minnesota specimens are a variant of Ritchie's (1961) Snyders Point (in Stoltman, 1973:97). Both Webster and Ritchie agree that such points are a Middle Woodland manifestation, ultimately derived from Hopewellian forms. This is in opposition to MacNeish's hypothesis of derivation from the indigenous Archaic Larter Tanged type. MacNeish dated the Anderson Focus (500 B. C. to A. D. 500) partially on the basis of the similarity between Anderson points and Besant points of the Plains, although he perceives the similarity of ceramic styles with Hopewell (1958:54). Reeves (1970:171) considers the Besant Phase an intrusion onto the Plains proper by woodland edge-adapted peoples, while Byrne (pers. comm. 1974) makes a strong case for continuity in the grasslands but concedes the possibility of Besant as intrusive. While the relationship of the Laurel culture to contemporaneous plains adapted cultures is a debated point, it is significant to note that the Woodland assemblages of southeastern Manitoba bear resemblances to contemporaneous cultures both to the west and to the Hopewellian sphere to the east, Archaic components in this area seem related only to Archaic cultures of the Plains.

The Larter Tanged projectile point type is represented by only two specimens at the Bjorklund Site (Groups 24 and 25). A29-1278 occurred at a depth of 6 inches in Unit B. The ceramic deposits extended to a depth of 4 inches in this unit. The shallowness of the Archaic component in this unit is due to the removal of the majority of the Woodland levels by bulldozing activity in 1973. Radiocarbon assay on an associated bison longbone yielded a date of 800 B. C. ± 95 (Gak-4713). This is well within MacNeish's estimate of 1500 B. C. to 500 B. C. for this manifestation and in general accordance with radiometric determinations of the time depth of this complex on the Plains. Unfortunately, the second specimen, A29-29428, occurred in the fill of the burial pit (S50E35) and hence its true associations cannot be determined. However, it exhibits the metric and morphological attributes of Larter. This is a short and wide specimen with slightly convex sides, convex base, and oval corner-notches producing a barb at the shoulder (Plate 23 a and b).

The remainder of the specimens of preceramic provenience are most closely related to two existing classes, Sturgeon Triangular and Winnipeg Ovoid (MacNeish, 1958:99-100). MacNeish suggested that both of these types may, in fact, be quarry blanks. Great variation is evidenced in the specimens upon which he based these types and this was reflected in the H group analysis. A high error value is associated with the grouping of even the two most similar specimens. Basal thinning is clearly evident on only two specimens. As their function as projectile points is questioned, they will be discussed in a later section dealing with bifacially worked blades.

A number of specimens were recovered from the Woodland levels of the site which could not be attributed to a particular type because of either their fragmentary nature or the absence of similar and contemporaneous specimens having been reported from this area.

A small corner notched specimen, A29-2714 occurred in Level 1A of unit S25E40. While MacNeish (1958:104) notes that Selkirk points could be described as corner-notched, and stratigraphic provenience would indicate a late protohistoric time depth, the absence of diagnostic Selkirk Phase materials and the deviation from the typical Selkirk Side-notched type in observable attributes makes such an assignment tenuous (Plate 23c).

Two specimens occurred in levels containing Blackduck ceramics only. A29-14002 is a fragmentary ovate blade of fine-grained brownish-grey chert. Fine pressure retouch is evident on the side and basal thinning is present. The blade edges do not appear to be worn. A29-30,253 is the base of a triangular or lanceolate blade. Judging from the basal width (22 mm.) it would seem somewhat too large for Eastern Triangular and it exhibits a different technique of manufacture. Long thin flakes have been removed by pressure from both lateral edges, thus rendering the blade extremely thin for its size. Three long and relatively wide flakes were removed from the base on one face, the remainder of the basal thinning being accomplished by pressure retouching. No signs of wear or grinding were visible under 10 X magnification (Plate 23 c and d).

Three point fragments were recovered from levels which contained both Laurel and Blackduck ceramics. Two of these (A29-12982 and 27313) are tip fragments of Selkirk Chert and brownish-grey quartzite respectively. The third is of a coarse chert and exhibits fire-spalling. Although the base is missing, it seems probable that it is related to one of the small side-notched types of the Laurel and/or Blackduck Phases (Plate 23 f-h).

Five points occurred in pure Laurel levels. A29-28,859 and A29-7077 represent bifacially retouched tip fragments of brown chalcedony. A29-9307 is a basal fragment of brown quartzite. In this case it is again impossible to determine the shape of the original specimen. A29-9257 is the basal section of a parallel-sided, collaterally flaked blade. The apparent crudeness of the attempt at basal thinning by pressure flaking is probably due to the nature of the material --an impure greyish quartz. Once again, evidence of wear or grinding is absent. Only one complete specimen occurs in this group. A29-45102 was recovered from a depth of 13 inches in Unit N50E55, only one inch above the initial appearance of ceramics in this unit. This point, made of Selkirk chert, is straight-based and side removed. The exaggerated size of the base relative to the blade impart to it an 'eared' appearance. It may be that this was originally a longer specimen which was reworked after breakage (Plate 23 i-n).

Perhaps the most interesting specimen is A29-28,947, a notched and stemmed point of tan-coloured quartzite (Plate 23n). This occurred at a depth of 6 inches in unit S55E25. This entire unit appears badly disturbed. Vertebrae and perforated rib fragments of a human infant were encountered at a depth of 20 inches in the base of a circular pit in the adjacent unit the west. A clay lens appeared in Level 2B and hence if one assumes that a certain amount of mounding occurred in the backfilling of the pit, then it seems reasonable that the pit was excavated from a ground level only slightly below Level 2B (4 inches). The stratigraphic disruption which the creation of this feature caused, extended into the southeast corner of S55E25--the area from which the point was recovered. To further compound the issue, both units were seriously disturbed by extensive rodent tunnelling and dense root systems. Consequently, the temporal association of this point cannot be determined on the basis of the evidence of this site alone. Similar notched and stemmed specimens are, however, reported from sites in the Boreal Forest and adjacent areas although they are very rare. These include the Margaret Lake Site (10 miles east of the Bjorklund Site), the Whiteshell River

Site (17 miles east of Bjorklund) and the Houska Point Site near Renier, Minnesota. A fourth point is reported in association with Laurel ceramics at the Heron Bay Site on the northern shore of Lake Superior (Wright, 1967:149, Plate V, fig.5). This Ontario specimen seems most similar to the one from Houska Point. Grinding of the notches and stem was observed in the case of the Houska Point and Bjorklund points only. All of these sites have at least two components, but the presence of Laurel ceramics is the sole unifying element. It would seem premature to assert that these constitute a 'type' but their apparent geographical and temporal association with Laurel is suggestive that such may be the case when more evidence is available. The general morphological uniformity, however, is interesting considering how rare these artifacts appear to be. As the joint presence of two basal styles such as these do not seem to imply greater efficiency in the hafting process, it may develop that their function was not a strictly utilitarian one. It is not impossible that they are analogous to (or even descended from!) the 'turkey tail' blades of the Lake Forest Archaic (Papworth, 1967) which they vaguely resemble.

Five fragmentary projectile points occurred as surface finds on the bank immediately below the site. Two (A29-42,309 and A29-S-2) are tip fragments of white quartzite and grey chert respectively (Plate 23 o and p). The third, (A29-42,335) appears to represent the midsection of a straight-bladed point of grey chert (Plate 23q). Little more can be said of these.

A29-42,371 is a fragmentary asymmetric point of mottled pink and grey quartzite (Plate 23r). Perhaps the most interesting is A29-S-5, the tip of a ground slate blade. Both edges of each face have been bevelled such that it appears as a flattened hexagon in cross section. Daily surface surveys of the bank were made but failed to yield additional specimens. As ground slate was lacking among the excavated lithics, an estimate of the age of this specimen cannot be made with any accuracy.

Scrapers

A total of 127 fragmentary and complete stone scraping tools was recovered from both surface and excavated contexts at the Bjorklund Site. These were first sorted according to associated ceramic materials: surface (n=20), Manitoba (36), Laurel and Manitoba (17), Laurel (34), Laurel and preceramic (6), and preceramic (14). The Manitoba-Laurel and Laurel-preceramic categories were defined on the basis of the presence of surficient materials of both pases in a single level such that no definite assignment to a particular period could be made. No scrapers were recovered in association with Selkirk ceramics.

The scrapers were then further sorted in seven categories on the basis of size, morphology, and method of manufacture. The first category, 'Fragmentary' includes seven scrapers which are too fragmentary to permit justifiable speculation concerning original morphology. The large Ovoid Plano-Convex class includes 3 specimens exhibiting this characteristic shape and measuring 50 mm. or more in original length. The largest class (n=40) is termed Combination Side-End Scrapers. The primary qualification for inclusion in this group is the sharpening of at least one side and one end. Side scrapers (n=16) are defined on the basis of the absence of preparation on either end. Flake scrapers (n=34) consist of side, end or combination scrapers made of small and relatively thin (4 mm. or less) flakes. This class is at least partially compatible with 'thumbnail' scrapers as the term is generally used. End scrapers (22) and large prismatic end scrapers (5) are distinguished on a primarily technological basis. The latter are made on long prismatic or lamellar flakes, exhibit a longitudinal dorsal ridge and are worked on one end although one or both sides may be prepared also. Length ranges from 30 to 60 cm. and this is 1.5 to 3 times the maximum width measurement. The simple end scraper forms may be ovoid, triangular or asymmetrical, but the working is confined to one or both ends.

Plate 24 a-c illustrates the three members of the Large Ovoid Plano-Convex group. All are worked at the upper end and along the full length of both sides. With the exception of 24b, all are relatively complete. Manitoba ceramics were associated with 24a and b while 24c occurred in a Laurel context. MacNeish (1958:111) notes the occurrence of these in the Whiteshell, Larter and Nutimik Foci. Their absence in Archaic levels of the Bjorklund Site may be due to the relatively small size of the scraper sample of preceramic age.

Combination Side-End scrapers are presented in Plates 24 and 25 and are grouped by provenience as follows:

Plate 24 d-l - surface (n=9)
Plate 24 m-z - Manitoba Phase (n=14)
Plate 25 a - Laurel-Manitoba (n=1)
Plate 25 b-j - Laurel Phase (n=9)
Plate 25 k,l - Laurel-Preceramic (n=2)
Plate 25 m-q - Preceramic (n=5)

Considerable within-group formal variation is apparent in this group. Specimens 24 d-h are roughly discoidal in outline and bear flake scars on their ventral faces. As all are surface finds, it is impossible to attribute them to any culture-historical period although 25 g and l, occurred in preceramic ocntexts and exhibit similar outlines and ventral flaking.. Specimen 24l, another surface recovery is roughly square in shape and is worked on all four edges. No similar specimens occurred in subsurface contexts although similar forms are reported from the Pike Bay Mound by Webster (in Stoltman, 1973:99) and the Sand River Site (Wright, 1967:70)-- both components of the Laurel Phase. What are generally referred to as 'dome' or 'humped' scrapers are included in this group (Plate 24v, Plate 25j). Both are quite small, measuring 16 and 17 mm. in length. These were associated with Manitoba and Laurel ceramics respectively.

The group designated 'Flake Scrapers' is the second largest category at the Bjorklund Site, incorporating 34 specimens. Their ceramic associations are as follows:

Plate 25 r,s - surface (n=2)
Plate 25 t-dd - Manitoba (n=11)
Plate 25 ee-jj - Laurel-Manitoba (n=6)
Plate 25 kk-ss, Plate 26 a-f - Laurel (n=15)

It is interesting to note the total absence of such specimens in the Laurel-Preceramic and Preceramic time periods. This is in sharp contrast to their high frequency in the Laurel and Manitoba cells and is indicative of an innovation in scraper technology in the Middle Woodland period.

As mentioned earlier, the criteria for inclusion in this group, was the preparation of a small flake for the presumed purpose of scraping. Thickness ranges from 2-4 mm. and the mean is approximately 3 mm. These specimens are readily distinguished from those of other classes on this basis. The preparation of the scraping edge may be confined to an edge or a side although two sides generally exhibit fine pressure flaking. Two small prismatic flake scrapers have been included in this group (Plate 25ss, 26c) on the basis of their size. Both specimens exhibit sharpening along both lateral edges. The shape of the remaining specimens may be characterized, as 'roughly circular' or 'trianguloid' although their is a great amount of formal variation. This factor, combined with consideration of their size suggests that they were manufactured from any convenient flake, which may have included decortification and secondary flakes from the production of other tools. Over one-half (56 per cent) of these artifacts are made of a fine-grained brown chalcedony. The frequency of use of this imported and readily-worked material suggests that Laurel and Blackduck peoples 'wasted' less of this resource than the local quartzes and rhyolites.

Plate 25ii represents the only finished artifact of obsidian recovered from the Bjorklund Site. This specimen, measuring 16 by 11 by 4 mm. bears three thin flake scars which commence at the working edge and continue over the extent of the dorsal edge. The material is relatively translucent and greyish in hue. Although it cannot be attributed to either the Manitoba or Laurel Phases with confidence, a Laurel association is inferred from the presence of several minute flakes of the same material from Laurel levels.

The fourth scraper class, Side Scrapers, includes 16 specimens which bear flaking one or both of the lateral edges only. As with the preceding Flake Scraper category, there is some ambiguity concerning function and the problem of distinguishing between some scraper forms and flake knives has been noted in the literature. For purposes of convenience, scraping tools are defined as exhibiting a unifacially chipped working edge and a considerably greater angle (generally over 45 degrees) at the worked edge than flake knives.

The components from which the Bjorklund Site side scrapers were recovered are listed below:

Plate 26 g,h	-	surface (n=2)
Plate 26 i-l	-	Manitoba (n=4)
Plate 26 m-p	-	Laurel-Mantioba (n=4)
Plate 26 q-s	-	Laurel (n=3)
-	-	Laurel-Preceramic (n=0)
Plate 26 t-v	-	Preceramic (n=3)

This fairly evenly distributed class includes a variety of forms, most of which are characterized by a general crudeness of manufacture. Source material utilization differs sharply from the flake scraper class as no specimens are of chalcedony. The dominant material is quartzite, with a few specimens made of cherts and black rhyolite. Little can be said of the characteristics of such an amorphous group. The closest approximation to a duplication of form is between 26 h and r. Both are made on thick ovoid flakes with a high dorsal ridge. No strict temporal association can be attributed to these, however, as the former is a surface recovery and the latter occurred in a mixed Laurel and Manitoba level. It seems possible that in this case, diversity of form may be due to the different chipping characteristics of the materials employed.

The End Scraper class includes 22 specimens in which only one end has been prepared for use as a scraper. Their associations are as follows:

Plate 26 w-bb	-	Surface (n=6)
Plate 26 cc,dd	-	Manitoba (n=2)

Plate 26 ee-gg
Plate 27 a - Laurel-Manitoba (n=4)
Plate 27 b-d - Laurel (n=3)
Plate 27 e-h - Laurel-Preceramic (n=4)
Plate 27 i-k - Preceramic (n=3)

Two major forms predominate among scrapers of this class which exhibit symmetrical outlines. Five specimens (26w,x, 27c,d,i) have roughly straight working edges at their widest point, gradually contracting lateral edges to a slightly convex base. These occurred in surface, Laurel and Preceramic contexts, but the Woodland specimens lack the refinement of the earlier forms. The latter (27i) bears fine collateral flaking on its dorsal surface which has rendered it considerably thinner than the others. Less care was taken in the preparation of the scrapers of Woodland provenience. Some show no dorsal working aside from the scraping edge and two still retain their cortex. Ovoid-triangular scrapers may be considered a variation on the rectanguloid form in which the contracting lateral edges are allowed to continue to a point rather than being truncated. The two relatively complete examples of this shape (26ff,gg) occurred in mixed Laurel and Manitoba levels. Specimen 27b is somewhat problematical in that it exhibits only a minimal amount of end preparation. The concavity at the upper edge, however, bears signs of wear which is suggestive of use as a spokeshave.

Only five specimens are included in the Large Prismatic End Scraper category. These are made on large flakes, approximately twice as long as they are wide, with a mean length of 39.8 mm. All bear a longitudinal dorsal ridge or 'keel' which is indicative of manufacture from a prepared core. This typological unit differs from MacNeish's (1958:116) Prismatic End Scraper class in terms of the absolute size of the specimens. All scrapers of this type were grouped into the same class regardless of size by MacNeish. In describing their temporal associations he noted that they appeared in most southeastern Manitoba horizons but were most numerous in Nutimik times (c. A. D. 500-1000). Two small prismatic scrapers from the Bjorklund Site (25ss and 26c) were associated with Laurel ceramics, but were classed as Flake Scrapers because of their thinness and overall diminuitive size. The considerably larger and thicker specimens exhibit a slight tendency toward an earlier temporal association:

Plate 27l - surface (n=1)
Plate 27m - Laurel-Manitoba (n=1)
Plate 27n - Laurel (n=1)
Plate 27o,p- Preceramic (n=2)

With the exception of the asymmetrical 27m, these specimens exhibit a modal tendency toward a steep working angle (70-90 degrees).

The seven remaining scrapers are grouped together as all are too fragmentary to permit speculation concerning original morphology. These are referenced below:

Plate 27q-s - Manitoba (n=3)

Plate 27t - Laurel-Mantioba (n=1)
Plate 27u,v - Laurel (N=2)
Plate 27w - Preceramic (n=1)

As all that remains of these is the prepared edge, their description is of little utility. As with the former class, a variety of materials have been used--chert, rhyolite, quartzite, and chalcedony. With the exception of the latter, all are readily available locally.

Biface Blades

Twenty-four complete and fragmentary bifaces were recovered from both surface and subsurface contexts at the Bjorklund Site. For the purpose of this discussion, a biface blade is defined as an elongated chipped stone artifact with flakes removed from both surfaces. A sharp edge need not be produced and they are designated blades only to distinguish them from bifacial discs. This definition is broad enough to incorporate projectile points, although these are excluded as they have been previously described.

The function of such specimens is not entirely clear but in all probability it was variable. Some bifaces are symmetrical, have sharp lateral edges and hence may have served as knives. Many of the Bjorklund specimens, however, do not exhibit these attributes and may be blanks--rough preforms intended for later refinement into finished artifacts. The 24 Bjorklund bifaces were distributed according to ceramic association as follows:

Plate 28 a-h - surface (n=8)
Plate 28 i-n - Laurel-Manitoba (n=6)
Plate 28 o-q - Laurel (n=3)
Plate 28 r - Laurel-Preceramic (n=1)
Plate 28 s-x - Preceramic (n=6)

With the exception of 28c and d, all of the surface derived bifaces are too fragmentary to warrant speculation as to their original shape. Both of the relatively complete specimens, however, exhibit fine pressure retouching along both lateral edges which has produced a sharp and relatively straight cutting edge. In addition, 28d bears basal thinning which would have facilitated hafting.

It seems unusual that no bifaces occurred in levels which contained Manitoba ceramics only. This, however, may be due to the relatively small sample size. Specimens 28j and l seem very similar to MacNeish's (1958:122) Small Half-moon-shaped Bifaces which he reported as occurring in components of the Nutimik, Manitoba and Selkirk Foci. Both of the Bjorklund specimens occurred in mixed Laurel-Manitoba contexts.

On purely morphological grounds, it is not impossible that some of these specimens served as projectile points. In the description of points, 28j was tentatively included as it resembled some of MacNeish's (1958:99) Winnipeg Ovoid specimens. It is now considered a simple biface as it has not been basally thinned, and was recovered from a Late-

Woodland level. Winnipeg Ovoid was defined on the basis of 11 specimens excavated from the predominantly preceramic Larter Site.

The 4 remaining ovoid bifaces from Bjorklund (28r, v,w,x) were recovered from preceramic or at least early ceramic levels. Only one of these (28r) indicates any attempt at basal thinning. The lengths of Winnipeg Ovoid ranged from 35 to 78 mm., widths from 12 to 40 mm., and maximum thicknesses from 5 to 60 mm. (MacNeish, 1958:99). All four of the Bjorklund specimens are too small to permit an identification as Winnipeg Ovoid, the longest measuring 34 mm. The extreme thickness noted on such bifaces by MacNeish is somewhat unusual for a projectile point and that they may in fact be quarry blanks. In view of their thickness and frequent lack of preparation for hafting, it is felt that these specimens did not serve as projectile points.

Two specimens (28s and u) are metrically and morphologically compatible with MacNeish's (1958:99) Sturgeon Triangular projectile point type. These were described as ranging from 36 to 70 mm. in length, and having straight or slightly convex bases with roughly parallel lateral edges. Again, the comparable Bjorklund specimens show no significant attempt at basal thinning or straightening and thinning of the edges. Both are rather thick for their overall size--

11 mm. and 8 mm. respectively. On the basis of these attributes, 28s and u, and by inference the Sturgeon Triangular type did not serve as projectile points. MacNeish approximated this position when he stated:

> There is considerable range in size of these points or blades, and, I believe, also a wide range in function (MacNeish, 1958:99).

Specimen 28t can be reliably identified as a knife. The base has been bifacially thinned to facilitate hafting and both faces bear fine retouching which has produced an extremely sharp and straight cutting edge.

Utilized and Worked Flakes

With the exception of pottery, worked and utilized flakes represent the most numerous artifacts at the site, occurring in all four recognized components. Most of these were irregular in shape and bore nicks and flake scars along one or more edges. These are believed to have been waste flakes from the manufacturing of other tools which were selected for use simply on the basis of their availability. As would be expected many more of the chalcedony flakes show evidence of use than those of other materials as chalcedony flakes are characteristically extremely sharp.

Despite the wide diversity in form, long thin prismatic flakes appear to be more frequently utilized and/or reworked than other varieties of flakes. Presumably this is because they have long, straight and sharp cutting edges and hence need little-or-no prior modification. MacNeish (1958: 110) noted the difficulty in describing these due to great size and shape variaiton, but observes that in one form or another they appear in every horizon known in southeast Manitoba.

Spokeshaves

Only two specimens from the Bjorklund Site could be identified as spokeshaves. The first (Plate 29a) was recovered from a preceramic level. The concave irregularities on opposite edges have had minute flakes removed from them which may be a product of use-wear rather than intentional chipping. The second specimeh (Plate 29b) occurred in an adjacent unit in a level which contained only Manitoba Phase materials. As with the previous artifact, the concavity (at the top of the photograph) yields evidence of use.

Chopping Tools

Three artifacts from the Bjorklund Site are included in this class and are illustrated in Plate 29g-i. Specimen 29g is a fragmentary partially ground celt from a surface context. The grinding is concentrated toward the working edge which was later broken--probably through use. The crudely fashioned bifacially prepared chopper (29h) is of a coarse grey chert. The working edge is irregular, and bears evidence of battering. The only chopping tool from a subsurface context is a unifacially prepared adze bit of rhyolite porphyry. The entirety of the distal and lateral edges have been pressure flaked and the opposite face of the proximal end is thinned to facilitate hafting. This specimen occurred several levels below the inital appearance of ceramics in Unit S10E5.

Drills and/or Perforators

The Bjorklund Site yielded the two members of this class from preceramic levels. Specimen 29j is a bifacially pressure flaked perforator of mottled black and grey quartzite. A pair of basal 'ears' have been added to facilitate hafting and several flakes have been removed from the base to permit insertion into a handle. The symmetry of the second specimen, 29k, has been spoiled by, the breakage of the basal 'ear' on the right in the photograph. This object is somewhat problematical in that it bears no close ressemblance to any drill type known in this area. The lateral convexities may have served to make the drill bit more secure on a shaft by means of binding it both above and below these irregularities with sinew. Both specimens bear evidence of use in the form of wear at their tips.

Copper Artifacts

Only one aboriginal artifact made of copper was recovered from the site. This copper strip (Plate 291) measures approximately 52 mm. x 4 mm. x 0.5 mm. Microscopic inspection of this object revealed hammering facets on both faces. Its fragility is suggestive of an ornamental function. As it was recovered from a level which contained primarily Laurel Pseudo-scallop Shell Body sherds, it is considered to be of middle Laurel age.

Gaming Pieces

Two artifacts from subsurface contexts at the Bjorklund Site are interpreted as gaming pieces. Specimen 29m is a fragment of a cord-roughened sherd, which has been ground around its circumference. Several indistinct striations are present on the corded side. The corded surface finish and its association with Manitoba ceramics indicate a Late Woodland age for this specimen. A discoidal piece of fired untempered clay was recovered from a level containing only Laurel ceramics (Plate 29n). MacNeish (1958:175) reports similar objects of comparable size (28 mm. in diameter) from the Selkirk component at the Cemetery Point Site and suggest that they may have served as gaming discs. These were considerably more numerous at the Whitemouth Falls Site directly across the Whitemouth River from Bjorklund, where they occurred in association with Laurel, Manitoba and Selkirk ceramics.

Bone Artifacts

Only three bone objects from the Bjorklund Site can be positively identified as being artifactual. Specimen 29o is the distal portion of a long bone defleshing tool. The nicks on the sharpened end, characteristic of these implements are present and have caused the breakage at the distal end giving it a 'toothed' appearance. Despite its fragmentary condition, grinding is present on the opposite face and it is inferred that this served to sharpen the tip. MacNeish (1958:136) assigns these to the Manitoba and Selkirk Foci on the basis of his excavations at the Lockport Site. The Bjorklund specimen occurred in the upper level of S5E5 in association with both Selkirk and Manitoba ceramics. Skinner (1912) reports such artifacts among the Cree.

Specimen 29p is a polished, tapered bird bone fragment which is believed to represent the distal fragment of a needle or awl. This object occurred in an early ceramic (Laurel) level in Unit C. MacNeish (1958:137) reports a similar specimen from the Selkirk component of the Lockport Site.

Although badly decomposed, 29q appears to represent the shaft of a unilaterally barbed harpoon head. Two of the barbs are visible as are the knife marks below them. No estimate can be made of its original size and no evidence of a line hole remains. This specimen was recovered from a Laurel context. MacNeish reports similar specimens of antler (1958:129) for the Whiteshell Focus and in bone

(1958:136) for the Manitoba Focus. Webster (in Stoltman, 1973:106) attributes the four unilaterally barbed harpoon heads from the Pike Bay and McKinstry II Mounds to the Blackduck Phase, noting that Laurel forms are conical.

Pipes

Eight fragments representative of seven pipes were recovered from the pottery-bearing levels of the Bjorklund Site. The three most similar specimens (Plate 30 a-c) occurred in Laurel, mixed Laurel-Manitoba, and Manitoba levels respectively. These range in thickness from 6 to 7 mm. and their estimated external diameters are 40, 36 and 31 mm. All are ceramic in composition with the temper consisting of extremely fine grains of quartz. The sole decorative elements are the horizontal bands of incised lines which encircle the upper portion of the pipe bowl. Specimens 30 a, b and c bear 4, 6 and 5 of these lines respectively.

The remaining specimens (30 f and g) of ceramic composition are surface recoveries. The former is quite small, with a bowl thickness of 3 mm. and the projected external diameter measuring 17 mm. No surface irregularties are present on either the interior or exterior. Specimen 29g is by far the thickest (9 mm.) of the seven pipes and is among the largest. The estimated external diameter is approximately 38 mm. The interior and flattened lip are smooth but the exterior bears random circular depressions of varying radii. The nature of the tool(s) which produced these cannot be determined.

Plate 30d and e illustrate two ground and polished pipe fragments of greenish-grey steatite. The former has a thickness of 4 mm. and a diameter of 25 mm. The lip is flattened and faint horizontal and vertical striations were detected on the exterior and interior surfaces respectively. This was recovered from a level which contained both Laurel and Manitoba ceramics. Specimen 29e also occurred in a mixed Laurel-Manitoba context but is considerably smaller than the previous pipe. Bowl thickness is 2.5 mm. and the projected external diameter is 16 mm. The lip is rounded and once again horizontal striations were noted on the exterior while those on the inteior displayed a vertical orientation.

Hammerstones

No polished or grooved hammerstones were recovered in excavation of the Bjorklund Site. However, a number of water-rounded granitic cobbles exhibiting 'pecking facets' occurred in subsurface contexts. Although these were excavated from preceramic, Laurel and Manitoba levels, the great majority were associated with the Middle Woodland component.

Red Ochre

Small nodules and lenses of ochre were encountered throughout the excavations. The largest concentration occurred in Feature 6-75, the burial unit. Otherwise, the largest single fragment measured approximately 7 mm. in diameter. At the Bjorklund Site, red ochre was consistently associated with Laurel ceramics although Manitoba Ware occasionally occurred in these levels also.

Historic Artifacts

No material relating to the Historic Period was found in excavations or on the surface. The only post-contact artifacts recovered from a subsurface context were three .22 calibre casings. These occurred in Level 1B and 1A of Units N55E25 and S10W55 respectively.

Features

Eight features were defined on the basis of the 1974 and 1975 excavations. These are described below:

Feature 1-74

Definition:	Hearth
Unit:	S5E35
Level:	3B-4B
Dimensions:	31 inches East to West 25 inches North to South 3 inches in depth.
Condition:	Fair
Description:	A roughly circular-ovoid concentration of brown ash containing fragments of burned bone. Fauna include moose, beaver and fish.
Associations:	Laurel and Blackduck pottery, Eastern Triangular projectile point.

Feature 2-74

Definition:	Possible hearth
Unit:	S20E25
Level:	4A and 4B
Dimensions:	Fills 4 foot square unit 2 inches in depth.
Condition:	Disturbed
Description:	Concentration of burned and non-burned bone, pottery fragments and granitic

	cobbles. Identificable species include moose, bison, beaver and sturgeon.
Associations:	Earliest ceramic level in unit-- pure Laurel.

Feature 3-74

This feature was later determined to be a series of rodent tunnels which had been filled with artifactual debris, humus and bones due to erosive agents.

Feature 4-74

Definition:	Excavated hearth with rock fill.
Unit:	S25E40
Level:	7A - 8A
Dimensions:	16 inches North to South 12 inches East to West 3 inches in depth.
Condition:	Good.
Description:	Small pit containing yellow ash, bone fragments, charcoal, and cobbles. Encircled by a ring of cobbles. Most of the faunal material consists of large unidentifiable mammals, but sturgeon and beaver were also present.
Associations:	The only artifact in association with this feature was a chalcedony flake. The depth indicates a late preceramic age. Below the feature, occupying levels 10, 11 and 12, the distal half of a bison right tibia had been vertically placed in the ground with the broken end upwards. A bulb of percussion was visible posteriorly and medially, perhaps indicating intentional breakage. The bone, once securely driven into the ground may have served as an anvil for flint knapping. A complete human middle phalanx, third digit, left hand also occurred in level 10 of this unit.

Feature 5-74

Definition:	Hearth
Unit:	S55E30
Level:	9-11
Dimensions:	27 inches East to West 11 inches from North Wall 3 inches thick
Condition:	Fair
Description:	The complete shape of this feature is indeterminate as it extends into the North Wall. It would appear to be the southern portion of a large ash concentration.

Faunal remains include fish, beaver, numerous unidentified mammal bones, Crenodonta (Ablooma) and Mullosca.

Association: One small, plain (Laurel?) sherd. The location of Feature 6-74, directly below Feature 5-74, called into question the latter's function as a hearth.

Feature 6-74

Definition: Flexed human burial

Unit: S55E30 and adjoining units

Level: 15

Dimensions: Approximately 4 feet by 3 feet

Condition: Good.

Description: Continued excavation beneath the ash level (Feature 5-74) in Levels 9-11 of Unit S55E30 revealed a portion of a flexed burial at a depth of 30 inches below surface. Additional units were initiated to the north, west and east of this feature such that the entire skeleton was eventually exposed. The individual was lying on the right side in a tightly flexed position with the feet drawn up nearly to the pelvis and the hands placed together below the cranium (see Figure 4). The orientation of the vertebral column was roughly east west with the cranium tilted slightly back.

This feature was studied by Dr. C. Meiklejohn of the University of Winnipeg, and his observations are the basis for the physical anthropological statements below. The individual was a robust female with a stature of approximately five feet. Suture closure and dental wear permit an estimation of biological age of about forty years. An anomaly in the form of accessory carpals was noted. Extensive osteoarthritic lipping of the vertebrae is believed to have caused a somewhat 'hunched' posture. Both left upper incisors are missing and breakage of the alveolar process is suggestive of exvulsion. The cephalic index was calculated at 71.0. Relatively extensive chemical tests of the stomach contents were conducted by the University of Winnipeg, Chemistry Department. Aside from proteins, carbohydrate, phosphate silicate and polysaccharide, large amounts

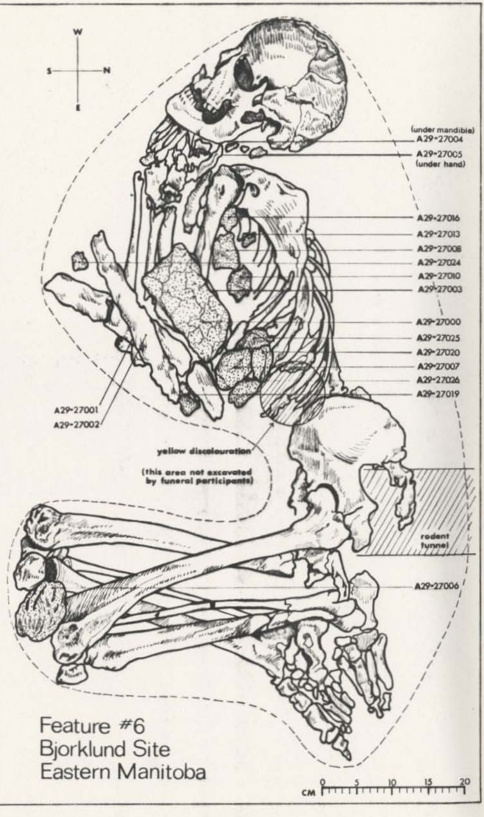


Figure 4. Feature 6, Bjorklund Site.

of another substance were detected. It could not be determined whether this was lignin or some unidentified inorganic material. The presence of lignin, one of the major constituents of tree bark, may indicate the ingestion of large amounts of 'medicinal tea'. This is admittedly highly speculative, but the observed amount of material (if lignin) would be sufficient to be the cause of death.

Associations: A total of 32 objects appear to have been placed with the individual at the time of interment. The faunal grave goods, numbering seven, were examined by Dr. Howard Savage of the University of Toronto and J. DuBois and S. Snortlund of the Manitoba Museum of Man and Nature. Two rib shafts (A29-27001, 27002) had been crossed and placed above the elbows and a scapula body (A29-27003) placed over the right humerus. These could not be identified to the species, but appear to be from a large bovid or cervid judging from their size. Two bivalves (Pelecypoda sp.) were recovered from below the mandible and above the chest respectively. Both specimens (A29-27004, 27005) had been drilled longitudinal, the holes displyaing a uniform diameter of 4 mm. It is inferred that these were part of a necklace worn by the deceased at the time of burial. The final faunal specimen is the left valve of Amblema plicata which had been placed such that it cupped the left distal femur. The faunal specimens and the lithics described below are illustrated in Plates 31 and 32 a-k, and are referenced by catalogue number, as in Fig. 4.

None of the lithics are immedaitely assignable to any known assemblage. With the exception of A29-27000, a large knife or chopper of black rhyolite, and A29-27007, a small basalt hammerstone with pecking facets on either end, the lithic accompaniments are classifiable as flakes, bifaces, scrapers and chipping detritus. The large chopper or knife (Plate 31a) bears signs of extensive wear on its most angular corner, perhaps indicative of battering. Specimens A29-27008, 27009, 27010, 27011, 27017, 27018 and 27019 (Plate 31 f-i, Plate 32 b, c and d) are secondary flakes of greyish, coarse textured Selkirk Chert.

Minimal unifacial pressure retouch is evident along one side of all the specimens. These may have served as either flake knives or scraping tools. A29-27012 consists of two bifacially worked fragments of blue-grey chert. These were found to articulate as illustrated in Plate 31j. Examination of the fracture did not indicate recent breakage, thus raising the possibility that the biface had been ritually 'killed' before placement in the grave. Specimens A29-27013 to 27015 are three battered fragments of bluish vein quartz. No retouching was noted on any of these objects but the crushing noted on opposite ends of A29-27014 may indicate that these are exhausted cores.

A29-27016, 27025 and 27026 may be defined as scraping tools. Two of these (Plate 32 a, k) bear retouching along their longest sides. As with many of the Bjorklund scrapers, the former does not exhibit a flat ventral surface. Whether the relatively large ventral flakes were removed after the retouching of the side for some purpose or if this simply represents a scraper made from a large waste flake is indeterminable. The large end scraper illustrated as Plate 32j is closely analogous in form to specimen 27b which occurred in a pure Laurel context. The material from which it is manufactured however, is a fairly fine-grained olivinated quartzite as opposed to the chert of the former specimen. A29-27021 to 27024 are four flakes (three of chert and one of quartz) with minute retouching along one edge. The shallowness of the prepared edge renders it improbable that these served as scrapers. Hence they are defined as worked flakes. No signs of use are evident and it is therefore possible that they were specially prepared for inclusion in the burial. Despite their fragmentary nature, it is impossible to ascertain whether they were broken before placement with the deceased (Plate 32 f-i).

The final specimen, A29-27020 is a finely made sub-triangular biface of grey and white banded chert. No wear patterns were noted on any of the edges. Such artifacts are fairly common as burial furniture throughout the northeast in late Archaic to Middle Woodland times (Plate 32e). A considerable quantity of red ochre had been placed in the grave as most of the bones had a faint red colour and numerous flecks of the substance were detected in the surrounding soil. The articulated nature of the skeleton permit the speculation that this ochre was sprinkled over the individual while the flesh still adhered to the bones, and upon decomposition, it filtered downward due to the effects of rainwater, thus forming a fine patina over the skeleton. Two radiocarbon dates are available for this feature. The first (GX-3603) was a charcoal sample taken from the base of the pit. The second (Gak-5447) is a collagen date derived from the ribs. These assayed to:

A.D. 720 ± 155 (GX-3603)
A.D. 690 ∓ 80 (Gak-5447)

While some controversy yet exists over the age of this feature, and fluorine tests are currently being conducted, these dates are provisionally accepted pending further evidence and it is subsequently assigned to the Middle Woodland Period.

Feature 1-75

Definition:	Pit containing fragmentary remains of human infant.
Unit:	S50E25
Level:	2-10
Dimensions:	Approximately 2 feet in diameter and 17 inches deep.
Condition:	Fair
Description:	A clay lens first became apparent in level 2 and continued downward intermittently to level 10. The bottom six inches of the pit contained eight vertebral bodies, nine complete and two fragmentary neural arches, one proximal right radius, one proximal right ulna, two metacarpals, one phalanx and two complete and three fragmentary ribs. These were identified by Dr. C. Meiklejohn as being the remains of a human infant. As all halves of the neural arches have fused, but these have not fused to the vertebral bodies an age of approximately five years is attributed to this individual (Anderson, 1962:130). Two of the ribs have holes approximately

2 mm. in diameter drilled into their ends suggesting that the ribs were strung on a cord (Plate 321).

Association: The bottom of the pit also contained a number of fish bones, cobbles, four pot sherds, three flakes, three bone fragments from a large unidentified mammal, and four rodent bones of apparently recent age. Although charcoal was recovered from around the cobbles only one of the bones is charred. Two sherds bear cord marking while the other two are plain (Laurel?). The level from which the unit appears to have been dug (Level 2) contains both Laurel and Blackduck ceramics as do all the levels to at least Level 5. This mixing is believed to be the result of backfilling the pit. Level 2 in adjacent and undisturbed units also contain ceramics of both wares, however, and hence a late Middle Woodland or early Late Woodland age is assigned to this feature.

Feature 2-75
Definition: Cooking area
Unit. N70E45
Level: 4B-6
Dimensions: Feature fills the unit
Condition: Poor
Description: Concentration of charred bones, cobbles, flakes and charcoal.
Association: No diagnostic artifacts were associated with this feature. A bison pelvic fragment resting on the floor of Level 6 was radiocarbon dated at 1175 B.C. $\pm$ 135 (GX-4145). This early date is considered acceptable as ceramics initially appeared in Level 4A of this unit.

Fauna

Unfortunately, the fauna from the 1975 excavations was not available at the time of writing. Consequently, this analysis is based upon material from the 1973 and 1974 excavations.

These two years of fieldwork yielded 10,203 fragments of bone of which 7 per cent was identifiable specifically to Genus species and 13 per cent was identifiable more specifically than to Class. Table 17 lists the percentage breakdown by Class of this material.

Table 17

Relative Class Frequency of Bjorklund Fauna

	Number	Per cent
Mammalia	8780	86
Osteichthyes	1167	11
Aves	8	.07
Amphibian	12	0.1
Mollusca	168	1.6
Indeterminate	68	0.6

Of the identified Bjorklund faunal species, beaver (Castor Canadensis) is by far the best represented. The 19 units from which this sample is drawn yielded 298 pieces representing a mimimum of 7 individuals. The minimum count was based upon 7 left distal tibiae fragments. Table 18 contains the total number of pieces, a minimum number of individuals and percentages of the total faunal inventory which these figures represent for the most specifically identifiable material.

Table 18

Relative Frequency of Bjorklund Fauna

	No. of Pieces	Percentage of Pieces	Minimum Individuals	Percentage Individuals
Snowshoe Hare	13	2.1	2	5.0
Eastern Chipmunk	2	0.3	1	2.5
Woodchuck	1	0.2	1	2.5
Plains Pocket Gopher	7	1.1	1	2.5
Beaver	298	49.0	7	17.5
Muskrat	5	0.8	2	5.0
Porcupine	4	0.7	1	2.5
Coyote	1	0.2	1	2.5

	No. Of Pieces	Percentage of Pieces	Minimum Individuals	Percentage Individuals
Grey Wolf	1	0.2	1	2.5
Black Bear	5	0.8	1	2.5
Marten	4	0.7	1	2.5
Fisher	3	0.5	1	2.5
Wolverine	2	0.3	1	2.5
River Otter	6	1.0	1	2.5
Turtle	8	1.3	1	2.5
Lynx	2	0.3	1	2.5
Moose	58	9.5	2	5.0
Bison	27	4.1	2	5.0
Lake Sturgeon	141	23.2	4	10.0
Northern Pike	14	2.3	3	7.5
Sucker	2	0.3	1	2.5
Crenodonta (Ablooma) costata	3	0.5	2	5.0
Lampsilis sp.	3	0.5	2	5.0
TOTALS	610	99.9%	40	100%

This table illustrates that despite the overall high number of bones of small animals such as beaver, a major proportion of food was supplied by the larger mammals such as moose and bison. Actual subsistence at a particular time, however, would be at least partially dependent upon the availability of variously adapted game species. In order to determine differences in food preferences over time at the Bjorklund Site, the fauna are tabled by their numbers in the three major components (Preceramic, Laurel, Manitoba) or the 'transitional' periods.

Table 19

Temporal Distribution of Bjorklund Fauna

	Prec.	L-P	L	L-M	M
Bison	8	3	7	4	5
Plains Pocket Gopher	7				
Flying Squirrel				1	
Lynx			1	1	

	Prec.	L-P	L	L-M	M
Beaver	24	7	137	49	81
Marten			1	2	1
Fisher					3
River Otter	1		3	2	
Muskrat			4		1
Wolverine		1		1	
Snowshoe Hare		1	6	3	3
Woodchuck		1			
Turtle	1	2	2	2	1
Porcupine	4				
Eastern Chipmunk	1			1	
Moose	8	1	19	18	12
Black Bear			2	1	2
Coyote				1	
Wolf	1		1		
Canis			4		
Avian			2	1	2
Northern Pike	3	2	6	3	
Lake Sturgeon	39	15	36	23	28
~~Sucker~~					2
Crenodonta (Ablooma) costata			1		2
TOTALS	97	32	233	113	143

Two of these species, the bison and the Plains Pocket gopher are considered to exhibit an essentially grassland, or at least non-boreal adaptation. The latter is restricted to the preceramic portion of the sequence, whereas bison appears fairly uniformly distributed with a slightly higher concentration in the earlier half of the sequence. It would, however, be fallacious to attribute bison to three culture-historical periods when only two individuals may be represented. The problem of the presence of bison at the Bjorklund Site may be clarified by reference to six radiocarbon dates on bison. Six samples of bison bone were collected from various areas of the site and yielded the following dates:

775 B. C. $\pm$ 120 (GX-4144)
800 B. C. $\pm$ 95 (Gak-4713)

890 B. C. ± 130 (GX-4149)
995 B. C. ± 160 (GX-4150)
1155 B. C. ± 150 (GX-4147)
1175 B. C. ± 135 (GX-4145)

These dates clearly support the early presence of bison at the site, and with the exception of beaver bones (included in sample (GX-4150) this is the sole radiometrically dated faunal species of preceramic age at the site.

Four other radiocarbon dates on faunal material are available form this site.

A.D. 1330 ± 75 (Gak-4712):	moose
A.D. 1215 ± 120 (GX-4146):	beaver, moose
A.D. 1050 ± 105 (GX-4143):	red fox
A.D. 1027 ± 80 (GX-4142):	beaver, river otter, black bear moose, snowshoe hare muskrat

Considered separately, the radiometric data would indicate a heavy dependence on bison with minor dietary supplementation by beaver throughout the duration of the preceramic occupation. By the Late Woodland period, a considerably greater number of species are being exploited most of which exhibt a boreal or marginally boreal adaptation. The data in Table 19 supports this contention although less strongly. The forest-oriented mammals (Lynx, moose, black bear, marten, fisher, snowshoe hare, wolverine, and flying squirrel) reach their highest frequency in the ceramic-bearing levels of the site. A similar tendency is noted among riverine species (Beaver, river otter, turtle, muskrat) as well as avians despite the low frequency of the latter.

Thus, radiometric and stratigraphic data indicate a shift from a subsistence mode centering around the exploitation of bison with secondary dependence upon fish and beaver to a more diffuse economy dominated by moose, wild fowl, fish and a diversity of smaller mammals with boreal or riverine adaptations. It is asserted that this represents more than a change in dietary preferences of the site's occupants. As delineated in Chapter I, there is a considerable body of evidence indicative of the onset of a major climatic change (the Sub-Atlantic) commencing a few centuries prior to the Christian Era. Estimates of the onset of the Sub-Atlantic vary but it would appear that it was well established by Laurel times as typically boreal fauna predominate in components of this period. While not present at Bjorklund, woodland caribou (Rangifer tarandus) remains were recovered from the single component (Laurel) Astwood Site, located 25 miles northeast of Bjorklund. This tends to support Ritchie's (1969) assertion that the southwesterly expansion of the Boreal Forest which Bryson and Wendland (1967) associate with the middle to late Sub-Boreal is more nearly correlative with the Sub-Atlantic Climatic Episode. This was a time of wetter, cloudier cooler summers and stormier winters than the preceding Sub-Boreal when vegetational zones shifted to their approximate historical positions. Bryson and Wendland (1967:280) further contend that climatic fluctuations after the Sub-Atlantic were relatively minor. Inasfar as faunal species are sensitive to environment, this would appear to be true. No abrupt shifts in faunal frequencies are evident throughout the Woodland portion of the Bjorklund sequence.

Sequence of Occupations

This section delineates the occupational history of the Bjorklund Site and considers the relationships between each successive phase as these are locally manifested.

The earliest occupants of the site are Larter Phase peoples. Material recovered from this component includes corner-notched, convex-based projectile points, a variety of biface forms including ovoid, lanceolate, square and elongated triangular, relatively large reworked and/or utilized flakes (often of chalcedony), spokeshaves, drills and perforators, a small unifacially chipped adze, cobble hammerstones and fragments of red ochre. Scraper types include ovoid end, linear side, combination side end and large prismatic end-scraper forms. The only hearth defined at Bjorklund was a shallow excavated basin with a rock fill.

The dominant faunal species of Larter age are bison, beaver and sturgeon. The presence of bison in this presently boreal environment may indicate a winter occupation of the site. Bison are known to divide into small groups and winter in the more sheltered parklands. Paleoenvironmental evidence would suggest that during Larter times, the Bjorklund Site was more heavily influenced by parkland vegetation.

The radiocarbon dates indicate that this area was occupied by Larter populations for a fairly long period of time. The paucity of materials from this component, however, argue strongly that these occupants were few in number and relatively transient. The dates are:

755 B. C. ± 120 (GX-4144)
800 B. C. ± 95 (Gak-4713)
890 B. C. ± 130 (GX-4149)
995 B. C. ± 160 (GX-4150)
1000 B. C. ± 130 (GX-4148)
1155 B. C. ± 150 (GX-4147)
1175 B. C. ± 135 (GX-4145)

Little or no continuity is seen between Larter and the subsequent Laurel Phase. The most obvious change in the assemblage is the addition of ceramics. Laurel vessels are generally ellipsoid in outline with vertical or slightly incurvate or excurvate rims, conoidal or sub-conoidal bases, and rounded, pointed or flattened but non-thickened lips. Temper consists of grit and vessels are manufactured by the coiling method although regional variations occur in the latter. Decoration is confined to the interior rim, lip and upper half of the exterior surface. Decorative elements include punctates and bosses, square, triangular, circular and semicircular dentates, incised and trailed lines and pseudo-scallop shell impressions and push-pull bands. The most common projectile point styles are small to medium-sized specimens which have been designated Whiteshell Side-notched and Anderson Corner-notched. Less commonly represented styles include Lockport Stemmed and the large isosceles triangular forms designated Laurel Triangular. One notched and stemmed point was recovered from a Laurel level. Scraper types include one large ovoid plano-convex specimen, small 'humped' or 'dome' varieties, simple end and side scrapers, a prismatic end scraper square-shaped forms with preparation on all four edges. The great majority of Laurel scrapers, however, are those made on small 'waste' flakes. These include prismatic flake side scrapers and small discoidal or irregular end scrapers. Bjorklund Site bifaces are few and fragmentary but include square, linear and ovoid forms. The remainder of the Bjorklund Site Laurel inventory consists of a great number of worked and/or utilized flakes, a copper bar, numerous fragments of ochre, a bird bone needle or awl, a unilaterally barbed bone harpoon head, a horizontally incised ceramic pipe bowl and possibly a ground stone pipe, cobble hammerstones and a discoidal fragment of fired clay which is interpreted as a gaming piece. Features include a circular hearth enclosed by a ring of cobbles and a flexed human burial in a shallow pit accompanied by a considerable quantity of red ochre, a variety of bifaces and scrapers, a columella shell bead and some non-human faunal material. The area directly above the pit had been burned extensively. A sample of the ribs and a charcoal sample in direct association with the skelton yielded dates of:

A.D. 690 + 80 (Gak-5447) and
A.D. 720 ± 155 (GX-3603) respectively.

Laurel-associated fauna includes moose, black bear, Northern Pike, Lake Sturgeon, beaver, marten, river otter, turtle, muskrat, snowshoe hare, wolf, woodchuck, lynx,

ans

avians, and possibly wolverine.

Unfortunately, the only dates from this period are from the burial which was not directly associated with ceramics. Stratigraphic evidence, however, suggests that Laurel commences considerably after the most recent Archaic date (755 B.C.) and terminates only slightly before the earliest Late Woodland date (A.D. 1027).

The density of this component is indicative of an intensive occupation, and it seems likely that the area was exploited during the spring, summer and fall. There is no evidence, however, to support occupation of the site during the winter months.

Artifacts diagnostic of the Blackduck Phase occur immediately above Laurel Phase materials where no post-depositional disturbance is evident. Blackduck ceramics bear cord marking over the entire external surface and varying combinations of oblique, horizontal and herringbone impressions on the upper rim. Herringbone and oblique cord-wrapped stick impressions may also be present on the lip and interior. Punctates are relatively common and when present occur on or below the horizontals or immediately below the herringbone or oblique impressions. External bosses are considerably rarer and seem restricted to early Blackduck vessels. Temper is almost exclusively grit, and vessels are most frequently manufactured by the paddle and anvil techique although there is some evidence to indicate that some rims may have been coiled and added to a paddled body. Rims are generally outflaring terminating in flattened, thickened and occasionally outsloping rims. Maximum constriction occurs at the neck below which the vessel walls expand to a globular shape with a rounded base.

Little similarity is superficially apparent between Laurel and Blackduck ceramics at the Bjorklund Site. However, those Blackduck styles which appear to be the earliest at the Bjorklund Site are those which bear the greatest similarity to Laurel. These vessels incorporate the vertical profiles, vessel shape, rounded lips, external bosses and non-thickened lips characteristic of Laurel with the cord-wrapped stick impressions of the later Blackduck Ware. It was on the basis of the coincidence of such modes that Evans (1961) asserts that Osufsen Boss and Cord represents a mid-point on the Laurel to Blackduck continuum. The highest frequencies of such transitional ceramics occur to the south and east of the Bjorklund Site. Consequently, it is posited that Blackduck Ware develops from Laurel Ware beyond the borders of Manitoba with additional external influence (see Evans, 1962:54) and reaches southeastern Manitoba by means of diffusion. Continuities between the Laurel and Manitoba Phases in the remainder of the assemblage argue strongly for cultural continuity in southeastern Manitoba from the Middle to Late Woodland periods.

Projectile point styles include small triangular points with a straight base (Eastern Triangular), slender parallel or contracting stemmed points (Lockport Stemmed) and at least two side-notched varieties with equilateral blades and wide straight bases (Plain Side-notched) or isosceles blades with convex bases and relatively narrower basal edges (Prairie Side-notched). It has been suggested that these side-notched forms may, in part, derive from the Laurel-associated Whiteshell Side-notched form which is present in both phases.

Flake scrapers are prominent in this phase as they were in the preceding Laurel period. Combination side-end scrapers, incorporating the 'dome' or 'humped' varieties also retain strong representation. Large ovoid plano-convex forms occur only in the Laurel and Blackduck components. Other scraper types include simple side and end forms.

Although no biface blades were recovered from purely Manitoba contexts, it seems likely that some of the ovoid forms from mixed Laurel-Blackduck contexts are of Blackduck provenience.

The remainder of the Bjorklund Site Blackduck Phase assemblage consists of a great number of worked and/or utilized flakes (including small prismatic forms), a spokeshave, a gaming piece, horizontally incised ceramic pipes and possibly ground stone forms, cobble hammerstones, fragments of red ochre and possibly a long bone deflesher.

It seems likely that Feature 1-75 can be assigned to the Blackduck Phase and hence the perforation of human infant ribs, possibly for use as ornamentation is a Late Woodland practice. The lack of comparative data, however, does not support this as a common occurrence.

The fauna of the Blackduck component are essentially identical to the Laurel fauna. Dominant species include moose, black bear, Lake Sturgeon, sucker, beaver, marten, fisher, turtle, muskrat, snowshoe hare, avians, and possibly lynx, flying squirrel and Eastern Chipmunk.

Four acceptable radiocarbon dates on bone collagen indicate the age of this component. These are

A.D. 1027 ± 125 (GX-4142)
A.D. 1050 ± 105 (GX-4143)
A.D. 1215 ± 120 (GX-4146)
A.D. 1330 ± 75 (Gak-4712).

The two earlier samples date levels which contained some Laurel ceramics, but no more than would be expected from post-depositional disturbance. All dates were from levels which lay 6 to 10 inches below the surface and which also bore Blackduck ceramics. Consequently, it would seem that Blackduck persists at Bjorklund beyond the most recent radiocarbon date (A.D. 1330) but the absence of artifacts of the early historic period render estimations of the termination of Blackduck at this site open to question.

Little may be said of the Selkirk Phase on the basis of the Bjorklund Site materials. Only three vessels were defined. All bore fabric impressions on their exterior surfaces and were otherwise plain except for single rows of encircling punctates on two vessels. Vessel shape is somewhat variable, but it would seem that a globular body with a cylindrical or slightly outflaring neck is the most common form. All lips are flattened; that of vessel 3 is also thickened. Medial lamination and the absence of coil fractures indicate a paddle and anvil method of manufacture. In terms of the Bjorklund sample, these Selkirk vessels seem most similar to the late Blackduck vessels which incorporate the same vessel shape, method of manufacture, lip treatment, general absence of decoration and time-depth as the Selkirk vessels. The presence of oblique over horizontal cord-wrapped stick impressions on fabric-impressed bodies is known locally, and tends to support of continuity of ceramic development. Such vessels were not, however, recovered from this site.

One projectile point (Plate 23c) may be attributed to the Selkirk Phase. This was a small, fragmentary corner-notched specimen from Level 1A of S25E40. The thinness and low artifactual density of the Selkirk component at the Bjorklund Site make any other association extremely tenuous.

CHAPTER III

REGIONAL INTERRELATIONSHIPS AND CULTURAL DYNAMICS: 1000 B.C. TO A.D. 1000

Introduction

This chapter discusses the cultures represented at the Bjorklund Site between 1000 B. C. and A. D. 1000 throughout their total distributional ranges, their relationships to one another, and the influence which some of the adjacent and contemporaneous cultures may have had upon them.

Evidence of three late Archaic cultures is present in southeastern Manitoba after 1000 B. C. The Pelican Lake Phase, locally known as Larter, appears to be a plains-adapted configuration and represents the earliest recognized component of the Bjorklund Site. The Shield Archaic tradition is roughly coincident with the Boreal Forest and is of immediate importance because of Wright's (1972a, 1972b, 1972c) hypothesis of cultural continuity in the Shield from a late Paleo-Indian (Plano) base to historically identified Algonkian speaking peoples. The incidence of Old Copper artifacts along the Winnipeg River System bears witness to the influence of the Lake Forest Archaic (Papworth, 1967) and this manifestation may have had a considerable role to play in subsequent Middle Woodland developments. It has been noted (Fitting, 1970:130) that the distribution of Lake Forest Archaic and Laurel sites are quite similar.

The material culture, time-depth and economy of the Laurel culture is subsequently discussed with reference to the question of cultural continuity from the three aforementioned Archaic complexes. The Blackduck Phase commences at approximately A.D. 1000 and as this is the terminal date of the period under study, this late Woodland manifestation is considered only inasfar as it may represent a later development from a Laurel cultural base.

The Pelican Lake Phase

Reeves (1970a) has proposed a grouping of the late Archaic Mortlach and Larter assemblages into the Pelican Lake Phase, assigning subphase status to each. The Mortlach Subphase, named after Wettlaufer's (1955) excavations at the Mortlach Site in southern Saskatchewan, is largely restricted to the grasslands of the three prairie provinces and the adjacent United States. Larter Subphase material (after MacNeish's 1958 investigations of the Larter Site) occurs in the Aspen Parkland region of southeastern Manitoba.

The most common projectile point style, Pelican Lake Corner-notched, is characterized by a slightly convex base and blade edge and a lenticular cross section. The notches commonly form a barb at the shoulder and occasionally a tang at the basal edge. The southeastern Manitoba forms (Larter Tanged) tend to be shorter and wider than their

Mortlach counterparts. It is difficult to determine if this is due to geographical and/or temporal factors. Unnotched projectile point styles are rare on the plains, but at Larter they were as frequent as the notched forms. MacNeish (1958:99) suggested that these types (Winnipeg Ovoid and Sturgeon Triangular) may have not, in fact, served as projectile points.

Scrapers form a major part of material culture of both the Mortlach and Larter Subphases. MacNeish (1958:58) notes that 47 per cent of all artifacts at the Larter Site were scraping tools. These included flake end and side scrapers, large ovoid plano-convex and pointed flake side scraper forms. End scrapers made on large prismatic flakes are fairly rare although consistently represented. Most of these types occur in the grasslands also, although the most common types here are rectangular or triangular end scrapers with a well worked dorsal surface which occasionally exhibits a longitudinal ridge.

A variety of bifaces occur in this phase. Larter forms were most frequently ovoid and rectangular in outline, and may have been hafted. Other styles included semi-lunate, circular and oval bifaces. Modified haft elements are more common in Mortlach subphase components and these may be corner or side-notched or stemmed. Ovate forms, however, are again the most frequent style.

Drills include 'T', oval and asymmetrical based forms.

Notched and tit gravers also occur and some of the pointed scrapers at Larter may have performed the secondary function of perforating or graving tools. Wettlaufer (1960:45) reports a few chipped artifacts with a 'chisel-like edge' opposite a flat surface. These were recovered from Level 4 of the Long Creek Site and Wettlaufer suggests that they may have served as chisels.

Ground and pecked stone implements from Larter included pebble and three-quarter grooved hammerstones and sinew stones. Ground stone is absent in the Mortlach Subphase.

Two bone artifacts occurred at Mortlach (Wettlaufer, 1955:58). Their function is somewhat equivocal although Wettlaufer suggests that they were used to scrape hides.

Cache pits are rare, but hearth types include rock or earth-filled excavated basin and bucket-shaped varieties. A rock-filled surface hearth and a bone-filled cache pit occurred at Larter.

Subsistence was centred around the exploitation of bison and this is reflected in the near exclusivity of bison bones in Pelican Lake componenets. MacNeish (1958:176) reports that 94 per cent of the identifiable bones in Larter Phase components are bison. The remainder consists of molluscs, deer, muskrat, bear, birds, turtles and fish. The Long Creek faunal assemblage (Wettlaufer, 1960:47) consisted of duck, frog and *Canis familiaris* in addition to bison.

Many sites on the plains show evidence of communal bison hunting in the form of jumps and pounds. The use of one of these methods is suggested for the Larter Site also as the high proportion of bison bones and the absence of crania and vertebrae is indicative of a large-scale slaughter away from the site.

A seasonal round is implicit to a way of life focused upon the hunting of seasonally migrant big game and this has been characterized as:

> Winter camps in sheltered valleys adjacent to water and firewood. The major bison drives were probably undertaken twice a year in the spring when the bulls were prime and in the fall when the cows were prime. The latter was the major drive. Camps at other times during the summer seem to have been on the prairie level (Reeves, 1969: 34).

For MacNeish (1958:57) the shallowness and limited horizontal distribution of materials at the Lockport (Floors 1 and 2) and Larter (Floor 1) Sites suggested "a short occupancy by a small group--some sort of small nomadic band". The deeper refuse layer in the upper levels of Larter indicated the occasional large gathering of a number of smaller bands or repeated occupation by a single band over a long period of time. He explains the predominance of bison at these sites in primarily ecological terms, favouring the hypothesis that the site was grassland at the time of occupation rather than suggesting that the sole reason for the nature of the faunal assemblage lay in the food preferences of Larter Phase peoples (MacNeish, 1958:38). The Larter Site is presently in the Aspen-Oak region (Rowe, 1972) and recent research on post-glacial vegetational sequences lend weight to MacNeish's assertion (Bryson, Baerreis and Wendland, 1970). Areas near the present margins of the Boreal Forest and Aspen Parkland, however, would have been dominated by the vegetation of the latter during the late Archaic period. Consequently, Larter components in these regions would represent winter occupations. These would be small thin components due to the diffuse distribution of bison in the Parkland during winter and their subsequent inability to support the large populations known in the grasslands in the spring and fall. It is possible that Larter peoples were also more transient in the winter.

Tipi rings sometimes occur in Pelican Lake sites in the grasslands and these suggest the use of hide covered habitations. Whether similar dwellings were used in the Parklands during winter is indeterminable although it seems likely that they were.

Evidence of ceremonialism is generally lacking for Pelican Lake Phase peoples. Indications of this sort of activity comes primarily from the Colorado area where burials may be primary, single or multiple pit interments with a few grave goods of both utilitarian and ornamental varieties (Reeves, 1970a). The Bracken Cairn (King, 1961) in southern

Saskatchewan was found to overlay a secondary multiple bundle burial. Grave goods were again sparse but included a Pelican Lake point.

Reeves (1970b:158) suggests an initial date of 1000 B. C. for Pelican Lake in the grasslands of southwest Manitoba and a terminal date which is roughly coincident with the commencement of the Besant Phase (c. A.D. 1-100). MacNeish dated his Larter Focus at 1500 B.C. to 500 B. C. on the basis of geological data and radiocarbon determinations from sites in the United States which contained points similar to Larter and were associated with earlier styles of the McKean Complex. These were:

Signal Butle I, Nebraska (Kulp, 1952)
-1495 B.C. + 120 (L-104A)
48CK204, Wyoming (Libby, 1955)
-1000 B.C. + 200 (L-104B)
48CK204, Wyoming (Libby, 1955)
- 840 B.C. + 350 (C-668)
McKean Site, Wyoming (Libby, 1955)
-1330 B. C. + 600 (C-715)
Muddy Creek, Wyoming (Libby, 1955)
-1590 B. C. + 220 (C-702)
Upper Muddy Creed, Wyoming (Libby, 1955)
-1400 B. C. + 250 (C-711)
Poison Creek, Wyoming (Libby, 1955)
-1610 B. C. + 220 (C-712)

In Saskatchewan, the Pelican Lake Culture was dated at 293 B. C. ± 100 (S-49A) at Long Creek and 480 B. C. ± 90 (S-279) at the Walter Felt Site. Seven samples were recovered from the lower levels of the Bjorklund Site in southeast Manitoba which yielded the following dates:

775 B. C. ± 120 (GX-4144)
800 B. C. ± 95 (Gak-4713)

890 B. C. ± 130 (GX-4149)
995 B. C. ± 160 (GX-4150)
1000 B. C. ± 130 (GX-4148)
1155 B. C. ± 150 (GX-4147)
1175 B. C. ± 135 (GX-4145)

Some indication of the origin of Pelican Lake Culture may be obtained from these dates. The Saskatchewan determinations are clearly late in the sequence while dates in excess of 1000 B. C. occur in a crescent across Wyoming Nebraska and southeast Manitoba. The Wyoming and Nebraska assemblages included a variety of projectile point styles including those of the McKean Complex (McKean Lanceolate, Hanna Corner Notched and Duncan). Reeves (1970a,b) and others have suggested that the Pelican Lake Culture derives from the somewhat earlier McKean Culture. While there was no firm evidence of the latter the Bjorklund Site, McKean lanceolate occurred at the Larter Site. Suspicion has been raised over the validity of this association, however, and it is currently felt that Larter is multi-component (Reeves, 1970b: 161; Syms, 1970: 129). Reeves notes that

> Types exhibiting similar non-metric formal configurations (to Pelican Lake) are found at earlier and equivalent time levels in the Southern Plains, Cordilleran West and Eastern Woodlands. Consequently, the form could have been introduced from one or several of these areas (Reeves, 1970b: 167).

Griffin (1964:233) identifies some of the corner-notched projectile points associated with Old Copper artifacts as Larter Tanged. Two similar points occurred in association with a variety of Old Copper implements at the McCollum Site to the south of Lake Nipigon (Griffin and Quimby, 1961). Some of the scrapers, flakes and one of the knives were made of Knife River Flint which may have originated in the Dakotas or southwest Manitoba. Wright (1972b:xx) includes this site in his Shield Archaic tradition and tentatively dates it at 1500 B. C., presumably on the basis of the Old Copper association (Wright, 1972a:20). Griffin has stated

> Some of the Old Copper flint projectile points are identified as Larter Tanged of the preceramic Anderson focus of Manitoba. They are one form of Brewerton Side-Notched (Griffin, 1964:233).

A number of problems are inherent in his statement. Larter Tanged appears to be temporally restricted to the Larter Phase in southeastern Manitoba (MacNeish, 1958:101) although the possiblity that this form may be ancestral to Anderson Corner-notched has been mentioned. The Anderson Phase is definitely not preceramic as it is associated with the earliest ceramics (Laurel) in the area. The relationship between Larter and Brewerton has never been demonstrated successfully but statements regarding the relationship of the former to various late Archaic and Middle Woodland projectile point styles in the east are fairly common in the literature. In view of the plains-adapted nature of the Pelican Lake assemblage and the distribution and dating of the complex it seems likely that this culture is indigenous to the grasslands and marginal grassland areas and that there was some interaction with Boreal Forest and Lake Forest peoples to the east. The extent of this interaction, however, cannot at present be determined.

The Shield Archaic

The formulation of the concept of the Shield Archaic tradition is primarily the work of J. V. Wright (1970, 1972b, 1972c). Originally used as a catch-all category for the preceramic artifacts of northern Ontario and northern Quebec, the Shield Archaic, as a hypothetical configuration was refined through comparison with other Archaic assemblages and finally given tradition status (Wright, 1972b:2).

Sites containing Shield Archaic components are distributed throughout the Boreal Forest-Canadian Shield region of Canada, from the northern shores of the Great Lakes in the south, northwest, across northern Manitoba and Saskatchewan to the District of Keewatin and eastward into most of inland Quebec, New Brunswick and Nova Scotia.

Projectile point styles include corner-notched and corner-removed specimens which occasionally appear stemmed, lanceolate forms with straight, convex or concave bases, trianguloid points and side-notched or side-removed specimens which are by far the most numerous. Side-notches vary in shape considerably, from long and shallow to short and deep. The basal corners of the side-notched points may be straight and vertical, but more often they are rounded or not present.

The Lanceolate specimens generally exhibit straight or slightly convex bases, are lenticular in cross-section and range in length from approximately 50 to 85 mm.

Large and small end-scraper forms are the more numerous representatives of this artifact class, although random and side scrapers also occur.

Other items in the Shield Archaic inventory are biface blades, uniface blades, wedges or pièces esquillées, flake knives, hammerstones, core scrapers, preforms, a drill bit, linear flakes, abraders, pebble knives, manos, paintstones, spokeshaves, anvil stones, adzes, metates and copper objects--most frequently fish-hooks, barbs and trim bits. Ground stone artifacts are rare.

(Wright, 1972b) perceives a number of morphological changes in relative frequencies of artifact classes occurring through time. Lanceolate and stemmed points decrease in frequency over time with corresponding increase in triangu-loid and side-nothced specimens. Bipointed pointed increase also, but more erratically. In terms of specific attributes of the lanceolate points, length, weight and the frequency of lateral, and/or basal grinding increase over time (Wright, 1972b:40). Similarily an increase in the length, weight and shoulder width of side-notched specimens was noted.

Regional as well as temporal variation was noted for scrapers. The Keewatin and Manitoba sites contained a considerably greater number of large scrapers than those in Ontario and Quebec. In general, large scrapers were most frequent in the early states and are gradually replaced by the smaller varieties. Biface blades were the only other artifact class which exhibited a temporal trend and this was a generalized decrease in freqency. Core scrapers, ground slate items, and drills were poorly represented and regionally restricted. Flake knives were reported from all stations except those in the District of Keewatin. Copper objects were relatively numerous but restricted to Ontario. Wright (1972b: 49) feels that the frequency and distribution of linear flakes argue that a core-blade technology cannot be associated with thie tradition. The presence of burin facets on the edges of fractured lanceolate points was noted on a Shield Archaic Site in Keewatin and another in southern Quebec. A potentially significant trait of this tradition is the presence of uniface blades. Wright feels that these tend to unite

> the Shield Archaic as a concept and differentiate if from adjacent and contemporaneous traditions or assemblages (Wright, 1972b:49).

Wright has formulated five hypotheses regarding this tradition the first of which states:

> The Shield Archaic evolved from a late Palaeo-Indian (Plano tradition) cultural base in the eastern North-west Territories and probably the western portions of the Boreal Forest-Canadian Shield (Wright, 1972b:85).

In his archaeological investigations of the Keewatin

District, Elmer Harp (1961) defined 'Complex B', the earliest assemblage of the Lower and Middle Thelon River area, which he felt was related to Plano cultures of the High Plains. More specifically, the lanceolate blades which were the primary diagnostic element of this complex were seen to relate to some of the specimens from the Agate Basin Site in Wyoming on the basis of size, form, flaking technique and the presence and extent of basal grinding (Harp, 1961:52-53). Harp named this northern varian Keewatin lanceolate. Other items in the Complex B assemblage were: burins, asymmetric side blades, discoidal bifaces (tci-thos), plano-convex end scrapers, amorphous end scrapers, spall scrapers and semilunar knives.

Sometime after the termination of Complex B, a second inland tradition appear which Harp felt represented a

> movement into the Central Barren Grounds of a caribou hunting culture that was in some ways distinct and separate from Complex B (Harp, 1961:57).

This assemblage termed 'Complex C', includes straight-sided convex-based lanceolate blades, pear-shaped end scrapers with convex sides, round-based biface knives, triangular side scrapers, large prismatic blades, amorphous flake scrapers and corner-removed and side-notched projectile point forms.

Wright concurs with Harp's identification of Complex B as Plano, and equates Complex C with the Shield Archaic. The proof of the derivation of the Shield Archaic from a

Plano base which Wright asserts rests partly on the demonstration that Keewatin lanceolate is, in fact, related to Agate Basin. One major difference, however, is that on the latter the greatest width occurs above the mid-point of the blade (Wormington, 1957:269). This trait is lacking among Wright's sample. Lanceolate blades per se, are nearly pan-North American in distribution and occur in a variety of time periods. In keeping with his hypothesis of a northwestern origin for the Shield Archaic and Hypothesis 2 which states:

> Plant and animal reoccupation of land freed by the retreating ice permitted northwestern Plano-Shield Archaic hunters to expand, particularly in an easterly direction (Wright, 1972b: 86)

Wright believes the most eastern sites to be the most recent. While the Shield Archaic is fairly poorly radiometrically dated, Wright notes Plano manifestations in the North West Territories date to 5020 B.C. ± 360 (I-3957) (Forbis, 1961). The dating of the Shield Archaic in the east is again somewhat open to question but Wright states:

> The whole matter of a late survival of the Shield Archaic tradition in eastern Quebec is also tantalizingly suggested by radiocarbon date of A.D. 727 ± 45 (P-686) from the Blanc Sablon-4 Site on the north shore of the Gulf of St. Lawrence (Wright, 1972b:64).

Lanceolate points did not occur at this site, but they are reported from the Dead Man's Pool and McEvoy Sites in New

Brunswick and Nova Scotia respectively. If the Blanc Sablon-4 date is considered at all indicative of the terminus of the Shield Archaic in the east, then lanceolate points persist in time for between 4000 and 5000 years. The persistence of a stylistic attribute over a period of time of this magnitude borders on the inconceivable. The problem is further compounded by the observation that the frequency of lateral and/or basal grinding increases over time (Wright, 1972b:40). While basal grinding is rare on Agate Basin points, lateral grinding is almost always present (Wormington, 1957:269). It is difficult to envision an increase in frequency of an artifact trait which is derived from an artifact type on which that trait is nearly universal. Thus the technological, temporal and previously noted morphological data on Agate Basin and Shield Archaic lanceolate points suggest two alternatives. Either the Archaic specimens do not derive from Agate Basin or that a temporal gradient from west to east is not demonstrable. Correlative with these alternatives (or hypotheses at least suggested by them) are that early lanceolate forms in the Northwest are not Agate Basin and the Shield Archaic does not originate in that area.

> The Shield Archaic populations of the Keewatin District abandoned the area some time about 1000 B.C. (Wright, 1972b:87)

Hypothesis 4 is provisionally acceptable. That the duration of occupation by peoples of this tradition extends to Plano times, however, is questioned. A peat sample from House Structure I at the Aberdeen Site provided a date of 1075 B.C. ± 90 (S-506) and a sample which overlay House Structure II assayed to 368 B.C. ± 40 (BGS-33) (Wright, 1972c:34-35). Wright accepts the former date as representing the termination of the Shield Archaic occupation in that area and rejects the latter. The KjNb-6 Site at the headwaters of the Thelon River (Gordon, 1971) contained material which Wright considered transitional between Plano and early Shield Archaic (Wright, 1972c:78). This component, however, dated to 2564 B.C. ± 140 (I-5976), a reading which Wright also rejects.

The homogeneity of the Shield Archaic as an archaeological complex is question which underlies many of Wright's hypotheses and speculations concerning the ethnic identity of Archaic populations of the Shield, the degree of interaction between the Shield Archaic and adjacent Archaic manifestations, changes in artifact styles over time, and its credibility as a tradition.

The late Archaic is for the most part correlative with the Sub-Boreal Climatic Episode--the amelioration of the hot, dry Altithermal. The Sub-Boreal witnessed increasing precipitation culminating in the Sub-Atlantic Episode at the beginning of the Woodland Period. Until this time, however, the Boreal Forest was considerably north of its present position. Bryson and Wendland (1967) have suggested a southwesterly expansion of both the northern and southern margins of the Boreal Forest on the order of two degrees of latitude in late Sub-Boreal times. There is general agreement that vegetational zones attained their modern distributions in early Sub-Atlantic times (Ritchie, 1969).

Consequently, the Shield Archaic components at the present southern limit of the Boreal Forest-Canadian Shield were not in a strictly Boreal vegetational zone at their times of occupation. It is suspected that the sites in northwestern Ontario were more heavily dominated by a grassland type climate while those to the east were influenced by the Great Lakes-St. Lawrence (deciduous) forests of the Canadian Biotic Province (Dice, 1943; Bryson and Wendland, 1967).

The EaKa, and McCollum Sites are located near the modern southwestern edge of the Boreal Forest. These are believed to be late Shield Archaic manifestations as they contain corner-notched points (Wright, 1972b:62). Elsewhere Wright (1972a:20) has stated that McCollum is relatively late (c. 1500 B.C.) -- presumably on the basis of the Old Copper association. The corner-notched points at McCollum and EaKa are morphologically indistinguishable from 'classic' Pelican Lake forms which occur on the Grasslands in roughly the same period. Furthermore, some of the scrapers and one of the knives from McCollum are "manufactured from a distinctive flint found in North Dakota" (Wright, 1972a:20). Judging from the illustrations, the material in question appears to be Knife River Flint (see Wright, 1972b:60) -- the same material from which Pelican Lake points are most commonly made. Precisely to what extent the Grassland environment was represented at McCollum and EaKa in the late Archaic is presently indeterminable. Archaic prairie-associated artifacts (Oxbow), however, have been reported from as far east as Kenora (Wright, 1972b:81). While McCollum and EaKa projectile points may not represent the actual presence of Pelican Lake peoples they are strongly suggestive of a Plains influence in the western margins of the Shield at this time. The presence of cognate projectile points types, the utilization of similar lithic materials, general contemporanity and the eastern penetration of a Grassland climate (with associated flora and fauna) speak strongly in favour of this assertion.

The Boyes Site is located at the mouth of the Kashabowie River in western Ontario. The Shield Archaic artifact inventory from this site consists of a biface tip fragment, a flake knife, three linear flakes and six small end and side scrapers. It would seem that this is insufficient evidence upon which to posit an occupation by any particular prehistoric group. The Heron Bay Site sample, however, contains seven projectile points and one side-notched lance or knife in addition to other types of artifacts. Unfortunately, three of these are the same as those illustrated in

Wright's (1967:149) publication on the Laurel Tradition in which they are attributed to the Middle Woodland Period. As no comment is made in either the Laurel or Shield Archaic monographs explaining this, no comment can be made with certainty. The five remaining projectile points, however, appear quite similar to Laurel and Blackduck-associated styles in the Upper Great Lakes region.

Moving yet further east, the Fretz Site in eastern Ontario displays an incredible diversity of projectile point styles. Wright (1972b:17) admits that "a substantial time span is represented at the site" as the presence of gun flints and kaolin pipes would suggest. Nonetheless "the site has been analyzed as a single component since most of the artifacts are assignable to the Archaic period". While this would seem to be true, in the absence of stratigraphy at a site located near a swamp and with no radiometric control, it may prove difficult to separate components accurately. Wright assigns most of the points to the Archaic, but at least one to the Late Woodland Period on the basis of its morphology (Wright, 1972b:17). With components thus isolated, the preceramic occupation is seen as representative of the Shield Archaic and used as a basis for defining the diagnostic attributes of that tradition. This is clearly a case of circular reasoning. Even the absence of ceramics is not a clear indication of an Archaic Period component for as Wright (1968:24) has stated, the various bands of the Late Woodland

Cree could have been non-users of ceramics depending upon their geographical location.

The Drunken Point Site is located on the western shore of Mattagami Lake to the northeast of Georgian Bay. Lanceolate, side-notched and stemmed projectile points are represented by nine complete specimens, five basal fragments and four tips. At least three of the side-notched specimens appear to demonstrate affinities to late Archaic specimens south of the Great Lakes. Attributes such as bold side-notching and square basal edges in three of these points may relate them to the Osceola points of Wisconsin. Certainly, no clear cognates occur north or west of this location. The most comparable local points occur at the Allumette Island site. This component has been attributed to the Vergennes Phase of the Laurentian Archaic (see Wright, 1972b:155).

On the basis of the aforementioned sites, it would appear that closer typological relationships are found with Archaic sites outside of the Shield than between most sites of the Shield Archaic tradition. Many of the artifacts which appear in various Shield Archaic components exhibit an extremely limited geographical distribution. Copper gaffs, barbs and fish-hooks, metates, flaked adzes, backed flake knives, ground slate knives, points and celts, anvil stones, net sinkers, gorgets, gravers, spoke-shaves and an abrader hammer are reported from single sites. Biface celts, paintstones, manos, pebble knives, abraders, linear flakes and drills, occur at only two sites. Ground slate artifacts are reported from the Fretz and Drunken Points Sites at the southern limit of the Boreal Forest in southern Ontario, near the northern limit of the range of the Lauretian Archaic. Copper artifacts occurred at Eaka, McCollum and Boyes Sites to the northwest of Lake Superior. These are the Shield Archaic components nearest the 'heartland' of Old Copper (Griffin and Quimby, 1961). It would appear that the influence of at least three late Archaic cultures is evident among Shield Archaic components in the southern Boreal Forest: the Pelican Lake Phase in the west, Old Copper in northwestern Ontario and Laurentian in southern Ontario. This has bearing upon Wright's fifth hypothesis:

> The relationship between the Shield Archaic and adjacent contemporaneous populations appears to have been both relatively limited and insignificant in terms of cultural innovation (Wright, 1972b:88).

Wright interprets the presence of 'foreign' objects as evidence of trade but denies that trade was ever a significant influence to Shield Archaic culture. If such objects as copper artifacts, corner-notched points, Knife River Flint and ground slate artifacts do in fact represent trade items and not intrusions of neighboring peoples, it would be expected that they would be associated with a common, unifying artifact complex, diagnostic of the Shield Archaic.

Wright (1972b:73) notes that the practice of burinating broken projectile points is distinctive of the Shield Archaic and persists from early to late Archaic times. This phenomenon, however, appears to have a very restricted geographical range. Of the four sites that contain evidence of this practice, three occur in the North West Territories while the other is located in southern Quebec.

In reference to uniface blades, Wright (1972b:47-48) states:

> This distribution of a distinctive artifact class that apparently possesses a substantial time depth adds to the body of data that unites the Shield Archaic as a concept and differentiates it from adjacent and contemporaneous traditions or assemblages.

These may be ovoid, triangular, rectangular, bipointed or asymmetrical. While they do appear to be distributed throughout the Shield (albeit in very low frequencies) they are not suitable for the purposes of defining a tradition as defined by Willey and Phillips (1967:37):

> An archaeological tradition is a (primarily) temporal continuity represented by persistent configurations in single technologies or other systems of related forms.

Wright (1972b:47) has noted that "it is not possible to suggest any temporal or spatial trends for the uniface blades". As has been emphasized earlier, the remainder of the assemblage exhibits extreme morphological variability and restricted geographical distributions. There appears to be no significant trait or cluster of traits, common to Archaic sites throughout the Shield which can be traced through time. Hence the evidence presented by Wright falls short of warranting tradition status. Wright's (1972b:1) sense of the concept places emphasis upon the spatial as well as temporal aspects of continuity and subsequently his evidence is even less suitable as a tradition by this definition.

Three artifact classes dominate Shield Archaic assemblages and these constitute at least half of the artifact inventory for any site. Wright considers the mean relative frequency of these classes (projectile points: 16.3 per cent, scrapers: 41.6 per cent, and biface blades: 25.8 per cent) diagnostic of Shield Archaic Sites.

In his discussion of the relationship of the Shield and Plains Archaic Wright (1972b:80) compares these frequencies with the Oxbow and Thunder Creek components of the Long Creek and Mortlach Sites. He notes that

> MacNeish's Larter Site (MacNeish, 1958) which represents a logical comparative unit, could not be used, as the criteria for artifact classification used by MacNeish could not be equated with the system used in this report, and time did not permit a re-analysis.

The tables presented by MacNeish as appendices, however, lend themselves to such a comparison inasfar as these three artifact classes are concerned. A comparison of the Shield

Archaic, Oxbow, Thunder Creek and Larter assemblages follows.

	Shield Archaic	Oxbow	Thunder Creek	Larter
Projectile Points	16.3	15.7	21.1	19.9
Scrapers	41.6	56.2	42.2	35.4
Biface Blades	25.8	24.7	26.3	42.2

While the Oxbow and Thunder Creek frequencies compare more favourably with the Shield Archaic, the Larter data are almost as comparable, as noted earlier this phase also contains artifactual material which is, in some respects cognate with that of the western Shield.

Rather than positing a relationship between these four cultural manifestations on the basis of the relative frequency of artifact classes, it seems more logically satisfying to assert that the comparison of relative frequencies of artifact classes is of little or no utility in distinguishing and/or defining broad cultural traditions. Inasfar as these functional classes are task-specific, their frequencies would be more heavily influenced by the type of activity conducted at a site than by the cultural affinities of that group occupying it. The high degree of variation in these frequencies at various Shield Archaic Sites bears witness to this fact.

The Lake Forest Archaic

The concept of a Lake Forest Archaic was developed primarily by Papworth (1967) who posited that the Great Lakes-

St. Lawrence forest region (or Canadian Biotic Province) constituted an important culture area during the late Archaic Period (c. 3000 B. C. to 1000 B. C.). He sees the Old Copper, Glacial Kame, Red Ochre and Laurentian assemblages as "culturally distinct centres participating in a broader cultural milieu", yet all yield evidence of an adaptation to a "shared environment which encompasses the remains of these culturally related peoples" (Papworth, 1967). Evidence of a certain degree of interaction among these peoples is reflected in the presence of the use of copper for both ornamental and utilitarian purposes, common burial practices, and the manufacture of small sub-triangular cache blades in components of all complexes. This concept has attained general acceptance by the archaeological community although this is occasionally with some qualifications. Fitting (1970:89) supports the suggestion of a Lake Forest Archaic, but does not accept the inclusion of those sites which occur within the modern boundaries of the Carolinian Biotic Province.

Old Copper artifacts have been reported from a large geographical area encompassing the Great Lakes; from southern Manitoba in the west to Upper New York State in the east, and from the northern shores of Lake Superior; southwards to Illinois. The area of densest concentration, however, occurs in the State of Wisconsin along the western shores of Lake Michigan (see Griffin, 1961:90).

Despite this wide geographical distribution and the large number of Old Copper forms, Archaic copper implements evidence only a slight degree of morphological variation with respect to established types. The Wittry (1957) typology of Old Copper artifacts has undergone little or no significant modification in the twenty years since its formulation. Old Copper forms include socketed, "rat-tail", lanceolate, conical and stemmed projectile points, knife blades, crescentic shaped objects with a variety of haft elements, awls, punches, needles, pikes, drills, spuds, adzes, celts, chisels, wedges, gouges, axes, fish-hooks, gorges, spatulas, bracelets and beads. Despite the latter categories, the preponderance of Old Copper forms are utilitarian (Steinbring, 1970:49).

Much of the information on associated materials comes from burial sites, notably Osceola (Ritzenthaler, 1946), Oconto (Ritzenthaler and Wittry, 1952) and Reigh (Baerreis, Daifuku and Lunstad, 1954) in Wisconsin. The most distinctive projectile point style was characterized by slightly concave or straight base, square basal edge, bold side-notches parallel blade edges and a range in length from one to five inches. Other items included triangular, snub-nose and side-notched scrapers, expanding or triangular-based drills, unworked galena cubes, clay wads, ochre fragments, a conical antler point, elk antler axes, notched swan bones, shell disc beads, and a bone awl. The recovery of a sandal sole gorget from the Reigh Site of marine conch shell indicated either that the burial with which it was associated was attributed to the Glacial Kame Culture or at lesat that the burial was contemporaneous with that complex. A dog burial was also discovered at the Reigh Site while Oconto yielded some evidence of an oval house structure.

The burial pattern of the Osceola Site was predominately of the bundle variety (both single and multiple) with no attempt at orientation. In three instances a layer of small stones had been placed over the burials. At the Oconto Site, both primary and secondary interments in rectangular or oval pits were noted. Evidence of cremation is also reported from this station. Thirteen of the twenty-one pits were oriented in a north-south direction. Both Oconto and Reigh contained face-down extended burials. Ritzenthaler (1957) concludes that the Reigh Site yields evidence of ceremonial burning over graves.

More recently, excavation of the Riverside Cemetery enlarged the trait list of the Old Copper assemblage. Feature 6 was an adult flexed burial in a pit four feet deep and roughly five feet in diameter at the top. The individual lay on its right side with the head north. The arms were flexed with the hands at shoulder level and the legs were flexed tightly at the knees and pelvis. A considerable amount of red ochre covered the remains. Grave goods included three copper projectile points with evidence of shafts (one of which was split to go over a tang), the mandible of a large dog and some animal long bone fragments, a tightly packed bundle of artifacts (indicative of placement within a bag), a number of split beaver incisor knives or chisels, wood fragments, an antler shaft wrench and five copper projectile or knife points. All of the latter were bevelled, two were socketed and three were stemmed. Three corner-notched projectile points were included in the bag, two of which are identified as Brewerton Side-notched by Papworth (1967: 194). The antler shaft wrench was identified as Rangifer arcticus or Barren Ground caribou. Other fauna included the remains of two Husky-like dogs and the perforated scapula of a lynx. Evidence of white-tailed deer and moose was also recovered. The Oconto fauna included turtle and duck.

The clear definition of the ochre lens enveloping the skeleton and its accompaniments suggested to Spaulding (in Papworth, 1967:163) that all had been wrapped in a bark or skin container before placement in the ground. This feature is associated with a radiocarbon date of 1090 B.C. (M-658, Papworth, 1967:159).

A three-quarter grooved axe and a large obsidian block were also recovered from Riverside, but could not be associated with a feature of known age. These, plus a radiocarbon date of A.D. 650 $\pm$ 200 raised questions concerning the number of components represented at the site. Artifacts from other loci of Riverside included 'burned' hornstone blades, 'turkey-tail' blades, bannerstones and small sub-triangular cache blades.

Other Riverside dates were (Hruska, 1967:255):

A.D. 1 ± 130 (M-1715)
100 B.C. ± 140 (M-1716)
140 B.C. ± 140 (M-1717)
130 B.C. ± 140 (M-1718)
510 B.C. ± 140 (M-1719)

These dates were somewhat later than anticipated, but Hruska accepts them noting that the 1090 B.C. date was a bone sample while the above five were on wood and bark samples. The Oconto Site yielded dates of 5560 B.C. ± 340, 3650 B.C. ± 400 and 2590 B.C. ± 400 (Ritzenthaler, 1970:77). The two earlier dates are not generally accepted (see Fitting, 1970:88-89). The Osceola, Reigh and Morrison's Island-6 Sites dated to 1500 B.C. (M-643), 1710 B.C. (M-644) and 2750 B.C. ± 150 (G.S.C.-162) respectively.

Evidence of the Red Ochre Culture occurs primarily in southeastern Wisconsin, northern Illinois, northern Indiana and the southern half of the lower Peninsula of Michigan (Ritzenthaler and Quimby, 1962:251). A study of forty-four sites revealed the following traits for this culture: large ceremonial flint knives, 'turkey-tail' blades, hornstone flared-stemmed blades, ovate-trianguloid cache blades, three-holed rectangular gorgets, a variety of birdstone forms, stone beads, tubular pipes, grooved axes, celts, bar amulets, thick rolled-copper beads, copper awls, celts, knives and unilaterally-barbed harpoons, socket-tang projectile points, galina cubes, marginella beads, disc marine shell beads, circular or ovate shell gorgets, cylindrical and globular marine shell beads, Early Woodland pottery, side-notched, small corner-notched or stemmed projectile points, large end scrapers, granitic choppers, bannerstones, straight shanked or side-notched drills, deer metacarpal awls and large corner-notched blades (after Papworth, 1967:212-233). Burials may be of the primary flexed, bundle or cremation varieties in low artificial mounds or excavated into sand or gravel. Common burial furniture included caches of ovate-trianguloid blades, ritually 'killed' artifacts and red ochre.

A fair amount of effort has been expended in an attempt to isolate what may be termed the 'nuclear traits' of the Red Ochre Culture (Ritzenthaler and Quimby, 1962; Papworth, 1967). Presumably this reflects some difficulty in distinguishing Red Ochre manifestations from those of adjacent cultures--notably Glacial Kame, at sites where a number of elements associated with different complexes occur together. The most sophisticated such study thus far is by Papworth (1967: 224) who utilizes the Guttman Scaling method (Guttman, 1944, 1950). Guttman Scaling emphasizes the reproducibility or number of components of a given complex at which a trait is represented rather than being weighted towards the total frequency of a trait. Seven 'nuclear' traits were thus isolated: 'turkey-tail' blades, caches with burials, artifacts with burials, use of red ochre, thick rolled-copper beads, copper awls and copper knives. The large number of traits related to mortuary ceremonialism reflect the fact that most of the information on this configuration comes from burial sites.

The relationship of Red Ochre to Glacial Kame and 'Early Point Peninsula' (Meadowwood) has been recognized for some time (Faulkner, 1960:48). Radiocarbon assay of a cremation burial at the Andrews Site yielded a date of 1210 B.C. ± 300 (M-659, Crane and Griffin, 1960:34). For the most part Red Ochre is contemporaneous with Glacial Kame.

The Glacial Kame culture encompasses southern Michigan, northern Ohio and Indiana, southern Ontario and Vermont. Wilbur Cunningham (1948) originally defined this manifestation as a distinct burial complex, partly on the basis of excavation of the Burch Site in Michigan. This station is now considered the type site for Glacial Kame.

Glacial Kame burial sites are generally situated on glacial features, knolls or other places of relatively high elevation. Copper artifacts, including awls, beads, celts, gouges, bar gorgets and repousse plate are common burial accompaniments as are tubular pipes, birdstones, pestles, ground stone celts and red ochre (Griffin, 1965). Most important, however, are the discoidal three-hole rectangular and 'sandal-sole' gorgets as these are now accepted as the diagnostic element of the complex. These are made of marine shell originating in the Gulf of Mexico.

Occasionally, fragmentary gorgets show signs of repair in the form of holes drilled beside the line of fracture to permit lacing.

Despite the absence of the sandal-sole gorget the Feeheley Site has been classed as a potential Glacial Kame component (Ritchie, 1965:199). If this is the case, the short, broad-bladed corner or side-notched projectile points present there may be attributed to this complex. Floral remains included walnut, butternut, hickory nut, acorn and a grape seed. The only identified mammal from Feeheley was muskrat. It would seem that fish (fresh-water drum, brown bullhead and yellow perch) which comprised 60 per cent of the faunal assemblage provided the bulk of the meat of the Glacial Kame diet--at least at the time of year when Feeheley was occupied. Features included small fire pits, small shallow cooking pits and large basin-shaped storage pits.

The practice of placing the dead in hide bags or wrapping them in leather shrouds is reported from Feeheley and Isle La Motte in Vermont. Burials are most frequently tightly flexed and lying on the side although 'standing' and 'sitting' interments are reported from the Zimmerman Site in Hardin County, Ohio (Cunningham, 1948:11). The decayed remnants of a bow were also recovered from this site.

The Feeheley Site was radiocarbon dated at 1980 B.C. ± 150 (M-1139, Fitting, 1970:74).

The Laurentian Archaic represents the most easterly member of the Lake Forest Archaic configuration. Due to the geographical distances involved, Laurentian is perhaps of little direct concern to the present discussion, but as an important member of a late Archaic 'tradition' in the Lake Forest ecological zone, its potential influence on later Woodland developments in this region cannot be discounted. It has been described as:

> an extensive cultural continuum, widely spread throughout north-eastern North America, with its major area of development and diffusion within southeastern Ontario, southern Quebec, northern New England, and northern New York. Its most diagnostic traits, occuring in consdierable morphological variety, comprise the gouge; adze; plummet; ground slate points and knives, including the semilunar form or ulu, which occurs also in chipped stone; simple forms of the bannerstone, a variety of chipped-stone projectile points, mainly broad-bladed and side-notched forms, and the barbed bone point (Ritchie, 1965:79-80).

Three phases within the Laurentian Archaic are identified by Ritchie, and while some degree of temporal overlap is evidenced, chronological priority is generally assigned to the Vergennes Phase. This assemblage which Ritchie regards as the 'classic' Laurentian manifestation, is perhaps best described in terms of the KI Site in Vermont as this represents the only 'pure' fully reported component. The 'core complex' incorporates the ground slate semilunar knife and double-edged knife or point, the gouge, adze, a broad-bladed and boldly side-notched chipped projectile point style (the Otter Creek type) and the winged atlatl weight (Ritchie, 1965:85). Other chipped stone points include eared and triangular forms. Simple end scrapers, a winged drill with a stemmed base, plummets, a copper gorge, various forms of abrading stones, choppers and a number of rod-shaped objects also occurred at KI. The Allumette Island Site in southern Quebec has been attributed to the Vergennes Phase and this permits the addition of the use of socketed, tanged, spurred and toggling copper points, copper fish-hooks, awls and knives, unilaterally barbed bone points, eyed needles of bone and worked beaver incisors to the Vergennes assemblage. Evidence of an earth-covered structure, fifteen feet in diameter was recovered from the KI Site. Beneath the lodge floor a badly decayed human skeleton, lightly sprinkled with red ochre was unearthed (Ritchie, 1965:85).

A time depth of 3000 to 2500 B.C. has been suggested for the Vergennes Phase.

The subsequent Brewerton Phase is most strongly represented in New York State. Projectile point styles of chipped stone include broad side-notched types (Brewerton Side-notched) (the oldest style) and Brewerton Corner-notched, Brewerton Eared-notched, Brewerton Eared-triangle and stemmed forms. Fishing would appear to remain an important occupation, a fact to which the presence of notched netsinkers, plummets, copper gores, single and multiple-barbed bone harpoons with line holes, and bone leister points attest. Other bone and antler implements include the corner-notched bone spearhead, conical antler, flat bone projectile points and bone and antler flaking tools. Atlatl weight varieties comprise rectangular, ovate and trapezoidal forms. Grinding tools include cylindrical and conical pestles, mullers and mortars with a shallow, single grinding surface. Among the remainder of the Brewerton inventory are numbered the ulu, a variety of chopper types including the 'hoe-shaped' form (which may have also served as scrapers), triangular and 'T'- based drills, hammerstones, anvilstones, retouched prismatic flakes, ovate or triangular and side-notched biface blades, large retouched flakes, curved bone needles, the bone knife, bone and copper awls, the deer scapula scraper, small side and end scrapers, a copper chisel, antler punches, sickle-shaped blades and a variety of split and ground beaver incisor tools. Ornamental objects are by no means numerous, but include grooved bear canines, bone beads, bird-bone tubes (possibly beads) and hematite paintstones.

The physical type may be characterized as robust and of medium stature.

> Their heads, of good cranial capacity, were broad, round, and of only medium height in the vault, with medium to heavy eyebrow and temporal ridges. The relatively short and wide

at around 2000 B.C.

The Vosburg Phase is a somewhat hypothetical construct which appears quite similar, in terms of artifact styles and classes, to the Vergennes and Brewerton Phases. The aspects which distinguish Vosburg from Brewerton are the former's lack of copper tools and ground slate doubled-edged knives or points and increased frequencies of the slate ulu, the grooved shaft-rubber and the simple sinewstone (Ritchie, 1965: 83-84). Perhaps diagnostic of this phase is the Vosburg point--a well-made, basally ground, corner-notched form. Ritchie regards the Vosburg Phase as the base from which many later Laurentian manifestations in upper eastern New York, western Vermont and southern Quebec develop. However, a 'pure' component of the Vosburg Phase containing materials which would serve to clearly distinguish this phase from Brewerton and Vergennes manifestations is yet to be discovered. The Vosburg Phase may be associated with a radiocarbon date of 2524 B.C. ± 300 (M-287) from the Bannerman Site in Dutchess County, New York (Ritchie, 1965:84).

Papworth (1967) has stated that the subsistence base of Lake Forest Archaic peoples is a mystery. This does not seem an entirely tenable position in the light of present evidence. Faunal remains of these complexes include turtles, duck, swan, beaver, white-tailed deer, moose and muskrat. The Barren Ground caribou, Husky-like dogs and lynx material recovered from the Riverside cemetery would appear to be intrusive. Where soil preservation is good, fish remains have been found including the freshweater drum, brown bullhead and yellow perch (Feeheley Site). Fishing, as a significant activity, is evidenced also by such artifacts as notched netsinkers, plumments, gorges, leister points and copper antler and bone harpoon heads in components of this pattern. Floral recoveries at the Feeheley Site indicated the use of walnuts, butternuts, hickory nuts, acorns and grapes. Even where such evidence is not preserved, the presence of pestles, mortars and mullers suggest some use of plant foods. Recently, carbonized grains of wild rice (Zizania aquatica) were discovered in a burial pit at the Dunn Farm Site in Leelanau County, Michigan (Ford and Brose, 1975). The individual had been cremated and interred with three round-based, stemmed ovate blades, a blocked-end pipe of Portsmouth fire-clay, six disc shell beads and a hematite plummet. Although this feature is not yet dated radiometrically, the burial assemblage suggests to Brose a late Archaic or Early Woodland temporal placement. While this evidence does not prove wild rice exploitation by Lake Forest Archaic populations, it indicates the availability of this important food source in the Lake Forest region at a time roughly comparable to their occupation of it.

While the above listed floral and faunal resources would not in all likelihood be utilized by all Lake Forest peoples and the availability of some species is restricted to a particular season, the subsistence base of these people appears to be fairly diversified. Implicit to such a dependence on seasonally available food sources is a round of activity, involving the exploitation of the local flora and fauna at the time and place of their greatest abundance and maturity. This would seem to have involved fishing in the spring, summer and early fall, the trapping and snaring of small fur-bearing animals throughout the year, the harvesting of nuts acorns and perhaps wild rice in the fall, the hunting of wild fowl in the spring and fall and the occasional killingof a larger animal such as a moose or deer.

Laurel Culture and the Middle Woodland Period

Sometime after 500 B.C., the initial appearance of pottery in southeastern Manitoba marks the beginning of the Middle Woodland Period. Wright (1972a:40) has proposed that the terms 'Initial' and 'Terminal' replace the Early, Middle and Late, as Early Woodland materials are generally uncommon in Canada and some confusion exists in the literature over the usage of the original terms. It is felt that the location of modern political boundaries has little relevance to the study of prehistoric cultures and that the introduction of a new taxonomy is liable to create more confusion than it would resolve. Hence the terms Early, Middle and Late Woodland are retained in the present discussion. Throughout most of its geographical range the Laurel Ware is clearly the earliest ceramic manifestation and is often the only major pottery style in Middle Woodland times (c. 500 B.C. to A.D. 1000).

Laurel ceramics have been recovered from sites in east-central Saskatchewan (Brown, 1962), northern Manitoba, (MacNeish, 1958; Mayer-Oakes, 1970), most of Ontario and portions of southern Quebec (Wright, 1967), northern Minnesota (Stoltman, 1973) and northern Michigan (Bettarel and Harrison, 1962; McPherron, 1967; Brose, 1970). Despite the fact that Wright (1967) has demonstrated that Laurel Sites occur in the Boreal Forest, Fitting feels that as most Laurel material occurs in the Lake Forest region, this area is more characteristic of the environment to which Laurel peoples were adapted. Fitting states:

> More Laurel ceramics were found in a single excavation unit at the Naomikong Point site than were reported from all of the sites Wright worked with combined. His most productive site was Heron Bay which, located only a mile up the Pic River from Lake Superior, is in the Lake Forest formation in spite of the dotted line for the southern limits of the boreal forests that Wright includes on his distribution map (Wright, 1967: xvi). I suspect that the sites located up the rivers and around the inland lakes in the boreal forests are either located at specialized fishing locations or are transient camps (Fitting, 1970:130).

While this situation may have obtained in the Upper Great Lakes area, it is difficult to envisage the Laurel components at South Indian Lake in northern Manitoba representing the 'specialized fishing stations' or 'transient camps' of a group who inhabited any area within the Lake Forest region most of the year. The components, which occur such great distances from the Lake Forest formation, however, are felt to be quite late in the Laurel chronology. This will be discussed in considerably greater detail below.

Despite the widespread distribution of sites and indications that it persists for a relatively long period of time, Laurel assemblages exhibit a suprising degree of homogeneity. As would be expected, however, some regionalism is evidenced which may be attributed to a number of factors.

Projectile points are predominantly of two styles: triangular forms termed Large Isoceles by Webster or Laurel Triangular as discussed in Chapter II, and a variety of side-notched forms. Among the latter are numbered Anderson Corner-notched and Whiteshell Side-notched (MacNeish, 1958: 101-103) and the Large Side-notched, Small Side-notched and Small Eared types of Webster's study (in Stoltman, 1973:96-97). The Anderson point is for the purpose of this study considered side-notched rather than corner-notched as neither tangs nor barbs are present and the shoulders are usually rounded. A number of clearly corner-notched points however, were recovered from the Naomikong Point Site (Janzen, 1968). Minority styles include small stemmed and the rare notched and stemmed forms. Late Laurel components may also contain the small triangular and small side-notched forms which reach highest frequency in the Late Woodland Period.

A great variety of scraper styles occur, but by far the most common are the small forms made on waste flakes and the small triangular 'thumbnail' types. The scraping edge of the latter is at the base of the triangle which exhibits a steep retouch angle. Other forms include end scrapers made on long prismatic flakes, large ovoid plano-convex end scrapers, combination side-end scrapers and simple side and end scraper types. Square scrapers with edge preparation on all four sides are rare. Drills and/or perforators are virtually absent from the Laurel assemblage, but the handful of specimens which have been reported are made on pointed prismatic flakes, or are ovate or asymmetrical in outline. Laurel biface blade forms are generally parallel-sided or ovate-triangular: althouth some of the cruder specimens are asymmetrical. The large number of prismatic flakes in Laurel components and the wide distribution of the sites at which such specimens occur, argue strongly for the presence of a core-blade technology. Retouched and/or utilized flakes are very common. As a rule they constitute one of the most frequent classes of chipped stone in Laurel assemblages. A number of <u>pièces esquillées</u> were reported from the Naomikong Point Site (Janzen, 1968:61). Whether the fact that this is the only site at which such items have been reported reflects a common difficulty in recognizing them as artifacts, or whether there is a spatio-temporal factor at work cannot be determined. Notched netsinkers and pitted hammerstones and anvils occur with a fair degree of frequency. The remainder of the chipped stone inventory consists of the cleavers and choppers which are a highly infrequent occurrence (see Webster, in Stoltman, 1973:94). The low number of ground celts, adzes and gauges reported, suggest that these objects are intrusive to Laurel.

Ground stone of any kind is extremely rare. In this class ground stone stemmed pipes, ground and notched pottery markers and ground slate points are included. The presence of mortars, pestles, abraders and manos are indicative of the utilization of plant foods. Paintstones are quite numerous, particularly in the more easterly components.

Where soil preservation is favourable, a fair number of bone, antler shell and claw have been found. The most common harpoon style is the conical form with socketed bases. A unilaterally barbed harpoon was recovered from the Laurel component of the Bjorklund Site and toggling varieties are known from Summer Island (Brose, 1970:27). One of the most numerous artifacts of organic material is the split, cut or ground beaver incisor knife or chisel. Wilford (1941) considered these diagnostic of Laurel culture although they are now known also from Blackduck and late Archaic assemblages in the Upper Great Lakes. Other modified faunal material includes lenticular or round cross-sectioned awls--often of moose carpals, bird bone tubes and needles, antler flakers, perforated moose and caribou phalanges, netting needles, mat-sewing shuttles, discoidal shell bead necklaces, bone pendants, beads and pottery markers, tooth ornaments and pendants made from Bald Eagle talon, moose incisors and columella shell beads.

Copper artifacts are often present, particularly in the Lake Superior region. As a rule, these are smaller and more frequently of an ornamental nature compared with Archaic copper artifacts. These include rods, gorges, disc beads, bars, awls, barbs, bangles, chisels, scrapers, pendants, flakes, nuggets, fish-hooks, rolled copper tubular beads and knives. The presence of such objects to the west of the natural occurrence of copper ore is indicative of trade as are the objects of obsidian. Probably the most extensive trading of Laurel peoples in the Upper Great Lakes was with the Hopewell people to the south who obtained obsidian from Wyoming and must have received much of their copper from the north. The recovery of a typical, Hopewell platform pipe from an Laurel Mound in Ontario is additional confirmation of at least indirect contact between these two groups (Wright,1972a:62).

It seems unusual that pipes are as rare as they appear to be in Laurel Sites. The Bjorklund Site yielded a horizontally incised ceramic pipe bowl fragment from a pure Laurel level. The two ground stone pipe fragments could not, with certainty, be attributed to either the Laurel or Manitoba components. Webster (in Stoltman, 1973:111) suggests that ground stone stemmed pipes may be associated with Laurel in Minnesota. This specimen was wedge-shaped with a deep groove cut into the base. It was manufactured of a soft steatite and a hole was drilled into the side for insertion of a stem.

Despite the numerous artifact classes present in Laurel, the ceramics are generally recognized as the diagnostic marker of the culture. As Laurel pottery has been described in detail in Chapter II, and inasfar as Laurel in southeastern Manitoba is fairly representative of the total range in variation of the ware, it would be redundant to do so again. The primary differences in Laurel ceramic assemblages throughout their distributional ranges are in terms of varying frequencies of design motifs. As these are considered to be strongly influenced by temporal factors, they will be considered in the discussion of the dating and origins of the Laurel culture to follow.

The remains of house structures are reported from a few Laurel sites, although these are for the most part confined to the eastern area. Such a feature was defined at the Heron Bay Site (Wright, 1967:8) although its size and shape are tentative. A number of post moulds, between two and seven inches in diameter oriented vertically in the ground in a roughly circular arrangment were believed to represent a dwelling with a diameter of approximately ten feet. Four house structures were defined at the Summer Island Site.

These are described as being

> oval to elliptical with a length to width ratio of about 3 to 2 for the smaller structures and about 5 to 2 for the larger structures. The houses all seem to have had some sort of covered or screened entry extending three to four feet to the SSE (Brose, 1970:39).

All structures exhibited widths between twelve and sixteen feet.

Other features include refuse pits, storage pits, drying racks and hearths. Pits are circular or oval with a range in diameter and depth of one to three feet with rounded bottoms. Evidence of drying racks occured at Summer Island and are described as follows:

> These structures were five to six feet in length by two and a half to three feet in width. They were constructed of two roughly parallel rows of from three to five posts each along the long side. These structures are virtually identical to the ethnographic descriptions of cache racks, and smoking racks of the seventeenth-century Chippewa and from the Upper Mississippi Valley in the nineteenth century (Brose, 1970:37).

Laurel hearths are circular or oval and may be surficial or in a shallow basin. A ring of cobbles often surrounds these features. The large amounts of angular cobbles in and around the hearths is suggestive of the practice of placing heated stones into water to bring it to a boil.

The pit burial at the Bjorklund Site does not appear to represent the modal Laurel mortuary pattern. The bulk of relevent data on this subject comes from the mounds along the Rainy River system in northeastern Minnesota and northwestern Ontario. The Smith Mounds, constitute the Laurel type site, and the largest of these was measured to be 45 feet high, 117 feet long and 90 feet wide by Bryce in 1884.

The majority of Laurel interments are bundled reburials although, primary, torso and cremation burials have also been reported. Many of the skeletons showed signs of post-mortem modification in the form of dismemberment, tapped and/or broken long bones (most commonly the femora, tibiae and humeri) and enlargment of the foramen magni. From this evidence the Laurel burial practices at the Smith Site have been reconstructed as follows:

1. Shortly after an individual's death, the skull, arms, and legs were severed from the corpse and the flesh was probably at least partly stripped from these latter bones in preparation for the removal of brains and marrow.
2. The base of the skull was broken open and the brain removed, while the long bones were tapped and heated to extract the marrow.
3. Presumably a ritual utilizing these substances, and likely of a cannibalistic nature, was then conducted.
4. The torso may then have been buried in the mound, although most of the time it seems to have received a different and unknown disposition.
5. The long bones and skull were retained, possibly exposed (in a tree? with the torso?), for later interment.

6. After a sufficient number of bundles had accumulated, or perhaps when climatic or cultural conditions were deemed appropriate, a group of bundles was placed on the mound, sprinkled with red ochre, and covered with a mantle of earth (Stoltman, 1973: 12).

The insertion of fired clay plugs into the eye orbits may be associated with some of the Laurel burials (Stoltman, 1973:117).

Aside from red ochre, burial accompaniments are conspicuously infrequent in Laurel interments. Only one vessel could be associated with any of the Laurel mound burials in Minnesota and the size and morphology of this vessel did not suggest the manufacture of special mortuary vessels as burial furniture. Kenyon's (1970:72) excavations at the Armstrong Mound also yielded evidence of dismemberment. Most of the interments were multiple secondary, although a child burial was tightly flexed. The scattered bones of two young children were recovered around the remains of four bundled adult burials. Both red ochre and crystalline particules of hematite had been springled over the latter. All Laurel artifactual material from the Armstrong Mound, as in the case of the Minnesota mounds was scattered throughout the fill and could not be directly associated with the individuals. It appears that grave goods are a rare Laurel trait and restricted to objects of a utilitarian function. The remains of a number of dogs including one complete dog burial were recovered from the Smith Mound 4.

The Laurel Faunal assemblage varies only slightly throughout the distributional range of the complex. Most components bear a considerable diversity of such material including Snowshoe Hare, Eastern Cottontail, rabbit, Woodchuck, Eastern Chipmunk, Least Chipmunk, Eastern Tree Squirrel, Beaver, Muskrat, Porcupine, Gray Wolf, domestic dog, Black Bear, Marten, Fisher, Striped Skunk, River Otter, Lynx, Bobcat, White-tailed Deer, Moose, Woodland Caribou and Elk. Avian species include the Common Loon, Whistling Swan, Mallard, Diving Duck, Bafflehead, Passenger Pigeon, Common Crow and Goose. Under favourable conditions of soil preservation, fish bones are extremely numerous. Identifiable species are Northern Pike, Sturgeon, Sucker, Walleye, Bass, Gar and Drum. The remainder of the assemblage consists of a variety of molluscs and turtle although the latter is not common.

The floral aspect of the Laurel diet is poorly known. Evidence of hazelnuts and chokecherries were recovered from the Summer Island Site (Brose, 1970:29).

The array of resources which Laurel peoples exploited in the food quest are clearly indicative of a diffuse economic base. Furthermore, the variety of environmental zones which these species favour, is suggestive of a seasonal round of activity in which the resources of different areas are utilized as they become available. The preponderance of fish bone in large sites on lakes and rivers indicate that fishing supported large groups of people during the spring, summer and perhaps the early fall. It is not unlikely such sites represent summer aggregates of people (a band?). Such groupings are commonly known ethnographically. Communal ceremonial activities, marriage arranging and other types of social behaviour occur primarily at the time of such gatherings. Subsistence activities in the fall may have included the collecting of various species of nuts, the taking of fall-spawning fish (whitefish and lake trout) and possibly the harvesting of wild rice. The onset of winter may have seen a shift to the hunting of large mammals although the trapping of small riverine-adapted mammals for fur and food could have served to supplement the diet. Winter groups probably consisted of a smaller number of people than the summer aggregates. It seems likely that this involved the fission of the large group into nuclear families who travelled inland from the major watercourses in search of food.

At this point, consideration of the dating and origin of Laurel culture seems in order. Three dates from the Summer Island Site (Brose, 1970) in northern Michigan are available:

A.D. 70 $\pm$ 280 (M-2073)
A.D. 160 $\pm$ 130 (M-2074)
A.D. 250 $\pm$ 100 (M-1985)

The Arrowhead Drive Site (Bettarel and Harrison, 1962) and Naomikong Point Site (Janzen, 1968), also in Michigan yielded the following dates:

A.D. 50 ± 120 (M-1392)
A.D. 430 ± 400 (M-2055).

A series of five acceptable dates were recovered from the Heron Bay Site (Wright, 1967) on the northern shore of Lake Superior:

A.D. 140 ± 150 (GSC-686)
A.D. 410 ± 160 (GSC-445)
A.D. 619 ± 170 (GSC-208)
A.D. 700 ± 60 (S-171)
A.D. 790 ± 130 (GSC-449)

The Sand River Site (Wright, 1967) on the northeastern shore of Lake Superior yielded one radiocarbon assay:

A.D. 320 ± 100 (M-1507)

Recent investigations in the South Indian Lake region of northern Manitoba (Wiersum and Tisdale, pers.comm.) yielded a date of A.D. 30 ± 85 (S-956) on a pre-Laurel component and the following readings on Laurel associated materials:

Notigi:	A.D.	750 ± 130 (S-746)
	A.D.	1030 ± 150 (S-744)
	A.D.	1485 ± 165 (S-745)
Wapisu:	A.D.	305 ± 195 (S-959)
	A.D.	1155 ± 180 (S=957)

These dates point clearly to a Laurel origin in the eastern portions of the Laurel distributional range. An eastern origin for Laurel may be further confirmed by consideration of ceramic variation.

Stoltman's (1973) study of Laurel Culture ceramics included a seriation of his pottery types and a comparison of the frequencies of each type with those from other areas. Stoltman's seriation was for the most part confirmed by the

Bjorklund Site data and the typology thus shown to be applicable to southeastern Manitoba.

The type Laurel Oblique was considered to be the earliest Laurel ceramic manifestation and this was confirmed by the excavations at the Bjorklund Site although Lockport Linear appeared to exhibit an equivalent time-depth. Over eighty per cent of the Middle Woodland ceramics at Summer Island are attributable to this type. At Naomikong Point, over half of the sherds were classifiable as Laurel Oblique, while in southern Ontario, Wright's sample contains frequencies of this type ranging from 20 to 30 per cent. Stoltman's (1973:74) Minnesota sample consisted of 34.9 per cent Laurel Oblique, and this frequency dropped to 24.2 per cent at the Bjorklund Site. The component most abundant in similar ceramic types in the MacNeish (1958) excavations in southeastern Manitoba was Level 3 of the Cemetery Point Site (18 per cent). At the Tailrace Bay Site in central Manitoba (Mayer-Oakes, 1970:231) it is under 10 per cent. The clear trend in relative frequency of this early type seems in general agreement with the radiocarbon determinations. The highest frequencies of Laurel Oblique occur in the east and it declines in popularity to the north and west in accordance with progressively later radiocarbon determinations.

The opposite situation obtains for the type Laurel Dentate, which is considered a fairly reliable late Laurel marker. At the Hungry Hall Site in northwestern Ontario

(Wright, 1967:100) Laurel Dentate constituted 29.7 per cent. At the Anderson and Bjorklund Sites in southeastern Manitoba frequencies of this type were 14.0 and 32.0 per cent respectively. These are significantly greater than in Minnesota where the frequency of Laurel Dentate is less than 10 per cent.

A less obvious geographical trend in the relative frequency of types is noted in the case of Laurel Pseudo-scallop Shell. Seriational and stratigraphic evidence indicate that this type reaches a peak in popularity in mid-Laurel times (Stoltman, 1973:92). The type was absent from the Summer Island Site, attained a frequency of 26.5 per cent in northern Minnesota, and 7.5 per cent at the Bjorklund Site. Sufficiently few sherds of this type were encountered in the MacNeish (1958:170) excavations (2 sherds) such that they were relegated to the 'Aberrant Sherds' category. The pseudo-scallop shell motif occurred on only 10.5 per cent of the Heron Bay Site sherds from northwestern Ontario. This would indicate that the Laurel Sites in Manitoba and northwestern Ontario are on the whole, later than those to the south. The sole anomaly is the Tailrace Bay Site (Mayer-Oakes, 1970) where Laurel Pseudo-scallop shell constituted over one-half of the Middle Woodland ceramics. Frequency trends were observed in other Laurel types but perhaps these are of less conviction than those of the aforementioned three types. As Stoltman (1973:93) notes:

> Because both the seriation and

> radiocarbon evidence independently indicate that the oldest Laurel Sites are at the same time the most southerly Laurel sites, an expansion of the Laurel culture from south to north is indicated. This directly contradicts Wright's hypothesis (1967:132) that "The Laurel Tradition is of Asiatic origin".

Wright (1972a:59) has since denied his thesis of an Asiatic origin for Laurel and his earlier statements would not have been mentioned were it not for the fact that they have been reasserted by Dragoo (1976:19). Lack of evidence of Laurel ceramics between the Chukchi Peninsula and Manitoba, and demonstration that the pseudo-scallop shell decorative mode on sherds from the Kamchatka Peninsula is not the earliest Laurel decorative technique have served to lay this theory undeniably to rest.

A number of isolated attributes relate Laurel ceramics to the Point Peninsula and Saugeen ceramics of southern Ontario and adjacent areas, and these have received considerable discussion in the archaeological literature. MacNeish's (1958) excavations in southeastern Manitoba followed closely his research in the Northeast. He saw Laurel Dentate and Nutimik Oblique as cognate with Vinette Dentate and Vinette Complex Dentate of southeast Ontario and Upper New York State on the basis of the correspondence of "design motifs, dentate technique of design, the paste and the exterior finish" (MacNeish, 1958:145). Vessel form and finish were, however, different. Lockport Corded was related to Point Peninsula

Corded. Stratification at the Cemetery Point Site indicated that Cemetery Point Incised was a late Laurel type confined to the Nutimik Focus. These vessels were decorated with parallel lines encircling their upper halves. MacNeish observes that rocker stamping is the second most common decorative motif in this type (MacNeish, 1958:151). Rims may be smoothed above a row of circular exterior punctates on the neck, decorated with wide cross-hatching, or more rarely, with oblique incised lines. Vessel are conoidal-bases with vertical profiles and squared lips. The type has been confirmed since MacNeish's time by the recovery of an almost complete vessel from Site C3-UN-39 and sherds from the Whitemouth Falls Site (Hlady, 1970:277).

Hlady has expressed doubt as to the reliability of the stratigraphy at the Cemetery Point Site as bases for the determination of early and late types as many specimens from both strata appear to be contemporaneous. Excavation of the Bjorklund Site yield rims which were quite similar to MacNeish's Cemetery Point Incised, although these were classed as Laurel Oblique in accordance with Stoltman's (1973) typology. Four rims bore cross-hatching on the upper rim, but the rocker stamping mentioned by MacNeish was absent. The chronological placement of Laurel Oblique as the earliest Laurel type strengthen the suggestion of a Point Peninsula relationship.

The prevalence of the pseudo-scallop shell design on Manitoba Laurel has been previously noted, and it may have MacNeish's recovery a two such sherds and the general correspondence in other ceramic attributes which led Ritchie (1969:208) to postulate that Point Peninsula extends as far west as Minnesota and Manitoba. The ware has not, however, been reported from the intervening area. It should be noted that interior channelling, a diagnostic trait of Point Peninsula Ware is restricted to area east of the primary range of Laurel.

Strong ceramic relationships throughout the Lake Forest area in the Middle Woodland Period have nonetheless been noted by most archaeologists and a genetic relationship is often suggested. As Griffin (1964:244) has noted:

> There is a remarkable similarity in the dentate stamp techniques and designs over this whole area, and it is a wise archaeologist who can now tell where the Rainy River aspect of Minnesota-Manitoba fades out to the east and where Point Peninsula of New York-Ontario fades out to the west. This east-west cultural continuum represents another example of the effect of the Great Lakes on the transmission of cultural practices and ideas over a considerable area, which first became clearly recognizable in the Late Archaic.

Fitting (1970:98) has proposed the term Lake Forest Middle Woodland to include the Laurel, North Bay, Point Peninsula and Saugeen configurations which bear witness to a common exploitation pattern of the same environmental zone. Fitting suggests that the Lake Forest Middle Woodland adaptive pattern is characterized by "large summer villages primarily dependent on fishing; and smaller winter camps, consisting of extended family units, that were primarily dependent on hunting" (Fitting, 1970:99). Fitting's use of this concept is reminiscent of Papworth's (1967) Lake Forest Archaic, and to a lesser extent Mason's (1967:342) Northern Tier Middle Woodland and Ritchie's (1965:206) Early Point Peninsula Culture. Both Mason and Fitting consider this construct to represent a group of cultures (as did Papworth for the Archaic) rather than a single culture exhibiting regional variations.

Seriational and radiocarbon evidence independently indicated that the earliest Laurel sites were located near the centre of the Lake Forest formation. This, plus their divergent distributional ranges, would appear sufficient grounds upon which to show that the Larter or Pelican Lake Phase is not ancestral to Laurel. The area of geographical overlap of these two cultures is for the most part restricted to the Aspen Parkland transitional zone between the eastern woodlands and western grasslands of Manitoba. Excavations at the Bjorklund Site in southeastern Manitoba revealed little, if any, evidence for continuity between the two phases. A consideration of the total assemblage of both cultures manifested throughout the geographic range of each indicates even less similarity. The corner-notched and barbed projectile points, unnotched point forms, prismatic end scrapers, notched bifaces, notched and tit gravers, three-quarter grooved hammerstones, sinew stones, drills, rock-filled hearths, tipi rings and burials with rock cairn superstructures of Larter are rare or totally lacking in Laurel. Disregarding ceramics, the large isosceles-triangular and small side-notched, eared, notched and stemmed and simple stemmed, projectile points forms, flake and large ovoid plano-convex scrapers, copper objects, obsidian, the extensive array of bone antler and tooth artifacts, including the characteristic conical harpoons and beaver incisor tools, pipes, mortars, pestles, abraders, manos, mound burials and oval house structures associated with the Laurel culture cannot be considered integral to the Larter inventory.

The subsistence pattern of the two groups also appears radically different. While the type of game available would be at least partially determined by the ecological zone inhabitied, both grassland and woodland-adapted species are present in southeastern Manitoba. Hence a comparison of the faunal assemblages of both cultures in this region may be meaningful. MacNeish (1958:176-177) recovered 547 identifiable bones from the Larter components of the Lockport and Larter Sites and 574 from components of the Anderson and Nutimik Foci. In the Larter Focus 6 per cent of the identified fauna consisted of fish, turtle, bear, birds, muskrat, deer and molluscs. The remaining 94 per cent were exclusively bison bones. By Laurel times (combining MacNeish's Anderson and Nutimik fauna), the frequency of bison had dropped to 21.8 per cent. The dominant genus was now fish which represented 58.7 per cent compared with 2 per cent in Larter. Beaver and hare initially appeared in components of Laurel age. More recent research has expanded the faunal associations of both cultures but the vast array of riverine mammals (notably beaver), small fur-bearing land mammals, birds, fish and shellfish in Laurel, and the predominance of these relative to large mammals, remains in sharp contrast to the heavy dependence on bison by Larter-Pelican Lake peoples.

Although a few isolated Old Copper artifacts, indicative of Lake Forest influence, have been recovered along the Winnipeg River, the only well represented Late Archaic complex in southeastern Manitoba is the Larter Phase. Consequently, the lack of relationship between Larter and Laurel indicates a radical discontinuity in southeastern Manitoba with the commencement of the Middle Woodland Period.

In the discussion of Archaic developments in the Canadian Shield, it was concluded that Wright's (1972b) Shield Archaic did not constitute a tradition as the components described did not share a trait or cluster of traits which persisted through time. Whether some other integrative unit is applicable to these components is presently indeterminable. Despite the difficulties involved in comparing two archaeological units of potentially different levels of abstraction, the apparently preceramic material of Wright's study is compared with the Laurel assemblage in order to determine if any relationships exist.

The heterogeneity of projectile point styles of the Shield Archaic makes specific comparisons difficult. Lanceolate, corner-notched and bipointed forms such as Wright describes appear to be absent from Laurel. Stemmed forms are common to both, although in Laurel these are restricted to latest Laurel times and hence they are probably not related to the Archaic forms. The large isosceles-triangular, small eared and the notched and stemmed Laurel types are rare if not totally absent in the Shield Archaic. Generalized side-notched projectile points are numerous in both assemblages. The most common Laurel varieties are the relatively large forms with convex bases, rounded or pointed basal edges, and the smaller forms with wide shallow side-notches. These forms do not appear to be represented in the Shield Archaic. The nearest cognates to Laurel forms are those from Heron Bay. As noted earlier, however, these were attributed to the Middle Woodland Period in an earlier publication (Wright, 1967) and hence no definitive statement can be made.

The method employed by Wright in the description of scrapers does not readily lend itself to a comparative study. Small flake scrapers, the dominant Laurel form, appear to be present in some of Wright's components although in small numbers. Large plano-convex end scrapers may also be a shared trait but this is similarly difficult to determine. The Laurel associated triangular 'thumbnail' types do not appear to be represented, nor do the square forms with edge preparation on all four sides.

Biface blades were a prominent Shield Archaic artifact (25.8 per cent of the assemblage) and these were ovoid, triangular or asymmetrical. Bifaces are rare in Laurel but exhibit the same general morphology.

The drills, spokeshaves, celts, adzes, tci-thos, and gravers which Wright describes cannot be associated with Laurel. In fact, a fairly reliable negative trait of Laurel is the absence of large chopping and woodworking tools (see Stoltman, 1973: 114). Wright reports ground stone artifacts from his components, but these are also rare in Laurel with the exception of manos which are shared by both assemblages.

One of the more distinctive traits of the Shield Archaic are the uniface blades (Wright, 1972b: 48-49) and the practice of burinating broken projectile points. Neither of these are known in the Laurel complex. Pièces esquillées are reported from four provincial and district site sequences in the Shiels but are reported from only one Laurel Site (Naomikong). Wright (1972b: 49) notes that the Shield Archaic people did not possess a core-blade technology. Current evidence supports the association of this trait with the Laurel culture. Wright (1972b: 143) illustrates one notched net-sinker from the problematical Heron Bay Site. These would not seem to be numerous in the Shield Archaic--in contrast to their abundance at the Naómikong Point Site. Copper artifacts occur in both assemblages but their frequency appears to be a function of distance from the sources of the ore (see Wright, 1972b: 49). Evidence of house structures is extremely limited but the shape and method of construction of these features at the Aberdeen and Summer Island Sites seem quite different.

Further comparison is restricted by the absence of bone, antler, tooth and claw artifacts, and the lack of information concerning mortuary customs and exploited fauna for the Shield Archaic. Each of these figured prominently in the description of the Laurel culture. The available information, however, suggests that there is no reliable basis for positing a close relationship between the Laurel and Shield Archaic assemblages.

Wright (1972a: 59) has asserted that Laurel ceramics "evolved independently in the northern forest of Canada after the idea of pottery was introduced from the south." If pottery had appeared in the Shield by this process, a continuation of the lithic industry would be visible in the archaeological record. This does not seem to be the case. The Middle Woodland Period is marked by a change in the types and styles of stone tools used as well as in the manner in which they were produced, (core-blade). As noted earlier, the problem of continuity in the Shield would be more readily resolved if bone and antler tools were known from the Archaic Period. As such evidence is lacking, it is necessary to rely entirely upon the lithics. The heterogeneity of Shield Archaic lithics and the apparent discontinuity in styles and artifact classes represented render a thesis of cultural continuity between the Shield Archaic and the subsequent Laurel culture untenable at the present time.

A significantly greater degree of similarity is seen between the Laurel assemblage and that of Papworth's (1967) Lake Forest Archaic. Shared traits include: copper awls, fish-hooks, rolled tubular beads, gorges and chisels, conical and unilaterally barbed bone and antler harpoons with line-holes, bone awls and needles, bone and antler flaking tools, bone and tooth beads and pendants, marine shell beads, bird bone tubes, mullers, mortars, pestles, abrading stones, pitted hammerstones, anvil stones, notched net-sinkers, split beaver incisor tools, retouched prismatic flakes, ovate-triangular biface blades, small shallow cooking pits with large amounts of fire-broken rocks nearby, storage pits, paintstones, mound burials, a preponderance of bundle burials (although cremations and extended burials are also known), utilitarian grave goods, dog burials and oval house structures. The Bjorklund Site burial exhibits common features with some Lake Forest Archaic burials, particularly feature 6 of the Riverside Cemetery, in terms of placement of a tightly flexed individual in a shallow pit, liberal use of red ochre, the inclusion of animal longbones, the concentration of grave goods (indicative of placement within a bag) near the shoulder and ritually killed artifacts. Ceremonial burning over graves is known among Lake Forest Archaic burials and this feature was also noted at Bjorklund.

Pipes are found in both complexes although they are of different forms. Duplication in scraper styles is seen in the sharing of triangular, small side and end, and large end scraper forms. Eastern derivations and relationships were suggested by Webster (in Stoltman, 1973: 96) for several of the Laurel associated projectile point styles in northern Minnesota. Some degree of similarity is seen between the small side-notched, large triangular, small eared, and stemmed forms of Laurel and those of the Lake Forest Archaic. Perhaps of significance are the rare notched and stemmed Laurel points. If these are not related to the Archaic 'turkey-tail' forms, their widespread geographical distribution and rigidity of stylistic variation, combined with their general infrequency is suggestive of a common function.

Celts, both of copper and stone are a common item in the Lake Forest Archaic inventory, but are rare or absent in the Laurel assemblage. Three stone celts, however, were recovered from the Naomikong Point Site (Janzen, 1968: 68). Based upon both radiocarbon and seriational evidence, this site appears to be relatively early in the Laurel sequence and hence a higher frequency of Archaic traits is to be expected.

Similarities are also seen in terms of resource exploitation. Turtles, ducks, swans, beaver, deer, moose, muskrat, lynx and caribou appear to have been utilized by both peoples. Of particular importance is the heavy reliance upon fish by Lake Forest Archaic and Laurel peoples as evidenced by the faunal record and by the amount of fishing equipment in the assemblages. A way of life characterized by population dispersion into small hunting groups for the winter with larger summer aggregates has been suggested for both groups (Wright, 1972a: 59, Ritchie, 1965: 98) and this situation seems likely in view of the present evidence. The collection and utilization of plant foods is indicated for both groups by the presence of grinding implements and the nature of the floral evidence, although the paucity of the latter renders a comparison of utilized species meaningless.

Finally, it should be noted that as it is now believed that the origin of Laurel lies within the Lake Forest location, and as the greatest density of Laurel sites occurs in and around this environmental zone, the Lake Forest is the most likely home of the ancestors of the Laurel people. The Lake Forest may be considered a transitional zone between the northern coniferous forests and the broad-leafed forests of the Carolinean Biotic Province to the south. Consequently, the Lake Forest constitutes an ecotone and species adapted to both major neighbouring ecological zones may be present. This seems to have been an important factor in the economies of

Late Archaic and Middle Woodland polulations in the area as both groups utilized a great diversity of resources. This type of diffuse subsistence base stands in sharp contrast to that of the Larter-Pelican Lake Phase peoples' focal dependence upon bison.

It would seem that such diversification also implies an adaptive advantage in times of environmental change or the depletion of a particular resource. The disappearance of a species would have considerably less effect on a group which exploited a number of species than it would on a group who relied almost entirely upon that species for food. This provides an explanatory mechanism for the expansion of Lake Forest culture in the Middle Woodland Period.

The earliest intensive occupation of southeastern Manitoba occurs in late Archaic times. Identified complexes in the area at this time include the plains-oriented McKean-Duncan-Hanna and Larter-Pelican Lake Phases, Mac Neish's (1958: 55-57) somewhat problematical Whiteshell Focus, and the Old Copper Culture. The time-depths of these complexes are, for the most part, correlative with the Sub-Boreal Climatic Episode. As delineated in Chapter I, The Sub-Boreal commenced about 4,000 years ago and is associated with a transition from oak savanna to a closed forest characterized by paper birch, oak, elm, basswood, ash, sugar maple, and ironwood in the southern Agassiz basin. The presence of sugar maple, ash, basswood, elm, oak and birch is indicative of a westerly expansion of the Great Lakes-St. Lawrence (Lake

Forest) zone with the amelioration of the arid Altithermal or Atlantic Climatic Episode. Throughout the late Archaic in most of southeastern Manitoba, however, faunal evidence indicates an easterly penetration of the Grasslands and the Aspen Parklands which separate the former from the Boreal Forest. The seasonal cycle of the bison from the Grasslands in the summer to the Parklands in the winter must have induced Larter peoples to adopt a similar cycle as these people seem to have depended almost exclusively upon bison for food at all times of the year.

With the onset of the Sub-Atlantic Climatic Episode (c. 500 B.C.), cooler and wetter conditions caused a southerly and westerly movement of the northern and southern margins of the Boreal Forest by as much as two degrees of latitude, thus depressing the Parkland edge and causing the Grasslands to retreat to the west. If we accept Bryson, Baerreis and Wendland's (1970) thesis that climatic changes occur abruptly, and that environmental changes have the greatest impact at the margins of biotic zones, then the Sub-Atlantic must have had a rather dramatic effect upon the lives of the people inhabiting southeastern Manitoba and the Boreal Forest-Lake Forest edge at this time.

A westerly expansion of the Lake Forest zone would have readily permitted a westerly expansion of Lake Forest adapted peoples. Perhaps crucial to this movement, were those areas in which wild rice grew, for as noted in Chapter I, this plant provided a large portion of the diet of both people and migratory wildfowl in the historic period. McAndrews (1969) noted that wild rice is most prevalent in the pine-hardwood forests of southeastern Manitoba, northeastern Minnesota, northern Wisconsin and northwestern Ontario. A western expansion of the pine-hardwood area would permit a similar expansion of the range of wild rice. This species is known in an archaeological context dating to about 500 B.C. in northern Michigan (Ford and Brose, 1975) and in lake sediments in northern Minnesota at about A.D. 1 (McAndrews, 1969).

By A.D. 1 early Laurel ceramic types had appeared near the centre of the Lake Forest zone (Summer Island and the Arrowhead Drive component of the Juntunen Site). Seriational and radiocarbon evidence indicate a fairly rapid western movement of this ware and this probably occured by both diffusive mechanisms and the actual movement of people. Slightly later, the Laurel assemblage appears in Ontario at sites located around the northern shores of Lake Superior and on the banks of major river systems. Fitting's (1970:130) statement that these sites and those further to the north in the Boreal Forest area represent specialized fishing locations or are transient hunting camps seems acceptable for the earliest Laurel sites in these areas. Sufficient disparity exists between the Laurel and Shield Archaic assemblages upon which to posit the arrival of a new population. Reason dictates that this occured gradually, with people utilizing the resources of the area initially as part of a seasonal round. Unfortunately, the heterogeneity and paucity of

Shield Archaic material render it difficult to determine to what extent the differences in the archaeological assemblages reflect cultural differences.

More reliable information exists in the archaeological record of southeastern Manitoba. The Laurel complex was seen as distinct from the preceeding Larter-Pelican Lake assemblage at the Bjorklund and neighbouring sites. Further contrasts were apparent in the environmental adaptations of these two groups. The southwesterly movement of the margin of the Boreal Forest into southeastern Manitoba and the movement of the Parklands and Grasslands to the west, would have reduced the number of bison in the area as the Parklands, being the wintering area for bison represent the most easterly range of large herds in this region. Certainly bison were still present and are known to have inhabited portions of the Boreal Forest further east, but it is unlikely that these would be sufficient to support as large a population as was previously known in the area. The seasonal cycle of Larter-Pelican Lake Phase peoples, tied closely to the movements of the bison would thus have been shifted westward also. The subsequent occupation of southeastern Manitoba by Laurel peoples has been characterized as follows:

> Based on the above, one may suggest that Larter and Anderson-Nutimik represent separate cultural traditions

> and that the Larter Phase population was displaced into Southwestern Manitoba by the depression of the Parkland edge which occured during the onset of the Sub-Atlantic. The Parkland area was subsequently re-occupied by generalized hunter-gatherer-fishers belonging to the Laurel ceramic tradition who moved in from the north and/or east. Their effect if any, on the Larter population is not determinable at this time (Reeves,1970:168).

In light of present evidence concerning the origins and patterns of dispersion of Laurel Culture a movement into southeastern Manitoba from the south and/or east seems more probable than a northern route.

As noted earlier, Lake Forest peoples could exploit the resources of the northern coniferous forests and the broad-leafed forests of the Carolinean Biotic Province to the south. A movement into southeastern Manitoba of Lake Forest adapted peoples would have required little if any alteration in their subsistence modes, as Lake Forest and Boreal Forest resources would still have been available. The Aspen Parklands of the area would have allowed utilization of the resources of the Grasslands at certain times of the year. The resources of three major environmental were available in southeastern Manitoba at this time and these must have been considerable inducement to neighbouring peoples--particularly those with a diversified economic base. Bison bones appear in early

Laurel components although the predominant fauna are fish and beaver.

It seems likely that Laurel peoples initially expanded northwards as part of a seasonal cycle--to exploit the abundant fish and riverine mammals in the numerous lakes and streams. If this is the case, interraction between Laurel and Larter peoples must have been minimal as the latter inhabited the region primarily in the winter. It is possible that neither the indigenous Larter peoples or the new Laurel peoples were particularly aware of the gradual geographical shifting of their respective seasonal cycles. The Laurel assemblage appears in northern Manitoba slightly later than in the south and also persists until a later date. This is in accord with a thesis of a gradual Laurel expansion into more northerly regions.

Once firmly established in southeastern Manitoba, the life-ways of this group seem to have undergone little significant change until the Historic Period.

The Late Woodland Period

MacNeish (1958:55) estimates the duration of the Manitoba Phase in southeastern Manitoba to be from A.D. 1,000 to A.D. 1350. While Hlady (1970:280) has extended this time-depth to A.D. 1,000 to A.D. 1750, the four Bjorklund radiocarbon dates ranging from A.D. 1027 to A.D. 1330 seem to confirm these authors' approximations of the initial appearance of Blackduck ceramics in this area.

The significance of Late Woodland developments in southeastern Manitoba lies in the fact that continuities between the Manitoba and Selkirk Phase from the earlier Laurel Phase may provide evidence of the ethnic identity or linguistic affiliation of this people. As the Late Woodland Period is beyond the range of the period of present consideration, this discussion will be brief and restricted to the archaeological evidence.

As noted in Chapter II, the projectile point styles of the Blackduck component at the Bjorklund Site appear to derive from the somewhat larger forms of the Laurel component. The Laurel and Manitoba Phases each contain two styles of side-notched points (Anderson and Whiteshell in the former and Plain and Prairie in the latter) and a triangular form (Laurel Triangular or Large Isosceles in Laurel and Eastern Triangular in Blackduck). Small stemmed varieties occur in both late Laurel and early Manitoba contents.

Common to both phases are large ovoid plano-convex end scrapers, combination side-end scrapers, and simple side and end scrapers. Small scrapers made on waste flakes are the most common form in each phase. Ovate, triangular and asymmetrical bifaces are also known in components of both phases.

Other shared traits include large quantities of worked and/or utilized flakes, prismatic flakes, pitted hammerstones, pestles, bird bone tubes, columella shell beads, bone awls, long bone defleshing tools, unilaterally barbed harpoons, beaver tooth chisels or gouges, tooth and bone pendants, ceramic and ground stone pipes, clay gaming pieces, paint-stones and a variety of ornamental copper objects including coiled and tubular beads and mound burials.

Associated faunal species at the Bjorklund Site which occurred in both pure Laurel and Manitoba levels were bison, moose, black bear, sturgeon, beaver, marten, turtle, muskrat, snowshoe hare and wolf. Sturgeon, moose and beaver were the dominant species in both components.

The arguments of discontinuity between the Laurel and Blackduck assemblages (Hlady, 1970, Bishop and Smith, 1975) have rested primarily on the ceramic evidence. Thirteen vessels occurring in late Laurel-early Manitoba contexts bore a blending of Laurel and Blackduck elements and were subsequently termed 'transitional' (Plate 9). These generally combined a generalized Laurel vessel shape with cord-wrapped stick impressions. Profiles were of both Laurel and Blackduck types. Recently Wright (pers. comm., 1976) has defined a number of similarly transitional vessels from the Potato Island Site in northwestern Ontario. Evans (1961,1962) noted that a number of traits were shared by late Laurel and early Manitoba vessels. These include bosses, punctates, a tendency to a rounded as opposed to a conoidal base, flattened and thickened lips, slight constriction of the neck and corded impressions. Similarities in the remainder of the assemblage indicate that this is a case of continuous development of a single group rather than another population displacement in southeastern Manitoba. As stated earlier, it is suspected that Blackduck originates from a Laurel ceramic base with some degree of external influence in an area to the south and east of southeastern Manitoba. Present evidence indicates that its introduction into this area resulted from the diffusion of an idea rather than the movement of people.

Only a slight amount of evidence of a Selkirk Phase occupation was recovered from the Bjorklund Site and hence most of the information on this manifestation is derived from the work of MacNeish (1958) and to a lesser extent Hlady (1970).

There are as yet no published radiocarbon dates associated with Selkirk remains in southeastern Manitoba. A mixture of Selkirk and Blackduck ceramics were, however, recovered from the Harris Site in southwestern Manitoba. These are associated with a radiocarbon date of A.D.1740 ± 50 (S-519, Hlady;1970:279). MacNeish (1958:55) dated the Selkirk Focus at A.D. 1350 to A.D. 1750. Hlady (1970: 280) modifies this only slightly (A.D. 1400 to A.D. 1800).

The latest Blackduck ceramic type at the Bjorklund Site was attributed to MacNeish's (1958:162) Cemetery Point Corded type. MacNeish noted that this type appeared more common in Selkirk components than in those of Mahitoba Phase age. Stratigraphic evidence at the Bjorklund Site served to confirm this notion of contemporanity. This type shares the attributes of vessel form, lip treatment, profile type, method of manufacture and the frequent absence of decorative elements with Selkirk Ware vessels. The prime distinction between the two wares is the corded surface finish of Blackduck and the fabric impressed bodies of Selkirk Ware vessels. These techniques produce a very similar visual result. It would seem that wrapping a paddle with a fabric instead of with a cord is a somewhat minor detail in terms of overall ceramic technology. The oblique over horizontal cord-wrapped stick impressions, common to most Blackduck vessels are present on the Sturgeon Falls Fabric-impressed type of Selkirk Ware (MacNeish, 1958:167). Thus a sharing of morphological, technological and decorative traits, added to a certain degree of contemporanity between Blackduck and Selkirk ceramics indicate that the former played a major role in the development of Winnipeg Fabric-Impressed Ware. MacNeish (1958:167) suggested a Manitoba Ware derivation for one of his Selkirk types. To what extent this evidence supports a thesis of cultural continuity, however, must be determined by reference to the remainder of the assemblage.

The three projectile point styles which MacNeish (1958:103, 104) associates with the Manitoba Phase

(Plain and Prairie Side-notched and Eastern Triangular) occurred in roughly equal proportion in both the Manitoba and Selkirk Phases. Only Selkirk Side-notched is restricted to the Selkirk assemblage and MacNeish (1958:105) suggests a derivation from the earlier Manitoba forms. Selkirk Side-notched points exhibit isosceles-triangular blades with slightly convex blade edges, convex bases and wide shallow notches at the junction of the base and sides. Many varieties of this type do not, in fact, appear markedly distinct from the Manitoba forms.

Both assemblages include flake side scrapers, oblong plano-convex end scrapers, prismatic end scrapers, triangular end scrapers and small disc-shaped scrapers and these incorporate the bulk of scraper variation for each phase (MacNeish, 1958:107). Only six and four complete bifaces were reported from Selkirk and Manitoba components respectively (MacNeish, 1958:118). Of the three types represented, one type was shared (small half-moon-shaped bifaces). The single biface borer and four ovoid bifaces of Selkirk affiliation were lacking in Manitoba components which MacNeish excavated. Elsewhere MacNeish (1958:117) states that ovoid bifaces occur in all southeastern Manitoba horizons.

Other traits which occur in components of the Manitoba and Selkirk Phases include: pitted hammerstones, anvil stones, full-grooved mauls, bone awls, tubular steatite pipes, shell paint dishes, long bone defleshing tools, unilaterally barbed harpoons, antler end scraper handles, beaver tooth chisels or gouges and scapula hoes.

MacNeish (1958:176) reports bison, clamshell, deer, muskrat, bird, bear, turtle, fish, beaver, and wolf remains to be associated with Selkirk components, and these also occur in the Manitoba Phase faunal inventory.

Ethnic and Linguistic Identifications

MacNeish (1958:49) provides the following evidence for an association of the Selkirk Focus with the "western branch of the Cree nation":

> 1. The Selkirk Focus represents the material remains of the latest prehistoric group in the eastern Manitoba area (as evidenced by its stratigraphic position at Lockport and Cemetery Point), which lasted into historic times (as may be seen by the European artifacts in association with the aboriginal ones at the Alexander's Point Site).
> 2. Both the early historic maps and documents indicate that the historic Alexander Point Site (as well as the prehistoric Sturgeon Falls, Cemetery Point and Waulkinen Sites) is in territory that was occupied by no other group but the Cree.
> 3. Specific Cree villages (or village) and a fort exclusively for the Cree are located by reliable observers (from the 1700 to 1800 period) as being on the north bank of the Winnipeg River near or at Lake Winnipeg. The Alexander's Point Site, of roughly that period, is located in such a position.

4. The fabric-impressed pottery diagnostic of the Selkirk Focus has about the same geographic distribution as the area occupied by the Cree.
5. A number of artifact types, the kind of storage pits, and the type of burial of the Selkirk Focus coincide with those recorded for the Cree by ethnologists.

After an examination of the historic and archaeological evidence, Hlady (1970:278) concurs with MacNeish's identification, plus the previously presented evidence of cultural continuity, permits the speculation that, at least the western branch of the Lake Forest Archaic configuration and the subsequent Laurel and Blackduck populations in the western Great Lakes[5] area spoke some form of Algonkian language. Such an association is consistent with Wright's (1972a, 1972b) statements of continuity in the Shield (at least since the beginning of the Woodland Period), Quimby's (1960:125) association of cord-marked ceramics in the Upper Great Lakes with the Chippewa, and Fitting's (1970:191) and Wright's (1965, pers. comm., 1976) denial that Blackduck ceramics are a product of the proto-historic Assiniboine. With the exception of the Iroquois-speaking groups to the east, the great majority of peoples occupying the Lake Forest in the Historic Period were Algonkian-speaking. Furthermore, the distribution of Laurel and Blackduck in the Lake Forest, Boreal Forest, Aspen Parklands and eastern Grasslands more closely approximates the historic range of Algonkians than any other group. The inferred lifeways of the Lake Forest Archaic, Laurel and Blackduck peoples is more compatible with an

Algonkian way of life than with any other major group in the area at the time of white contact.

Siebert's (1967) study of the 'Original Home of the Proto-Algonquian People' employed the standard procedure of placing the 'Urheimat' (original home) within the area of greatest multiple intersection of ranges of trees, birds, mammals and fish whose names can be reconstructed into Proto-Algonkian. Siebert (1967:40) defines the Proto-Algonkian homeland as follows:

> The original home of the Algonkian peoples lay in the region between Lake Huron and Georgian Bay and the middle course of the Ottawa River, bounded on the north by Lake Nippising and the Mattawa River and on the south by the northern shore of Lake Ontario, the headwaters of the Grand River, and the Saugeen River.

Siebert associates occupation of this and a slightly expanded area with dates of 1200 B.C. and 900 B.C.. It should be noted that Siebert's 'Urheimat' corresponds with the eastern Lake Forest area.

A number of difficulties are inherent in Siebert's work. First, he does not consider that ecological zones and hence the ranges of trees, birds, mammals and fish upon which he bases his study have not remained constant through time. The time of the occupation of southern Ontario by these Proto-Algonkian people, is correlative with the Sub-Boreal Climatic Episode. As has been stated earlier, it appears that the southern margins of the Boreal Forest and by inference the northern edge of the Lake

Forest was considerably north of its present position. The complex interaction of climate, vegetational zones and the species adapted to the latter make the size and precise location of such a 'homeland' indeterminable at present. Second, Siebert ignores the effect of a seasonal round by people occupying the area during the late Archaic and Middle Woodland Periods. It is entirely possible that generalized Proto-Algonkian speakers occupied a much larger range than the one Siebert sets forth, and came into contact with the reconstructed species only at certain times of the year. Nonetheless, the observation that the majority of species with reconstructable names exhibit a Lake Forest adaptation is considered significant.

A number of archaeological sequences in various regions have been considered the product of Proto-Algonkians. Siebert's (1967:39) caution that

> There is no proof that the Proto-Algonquian language was ever an absolutely uniform mode of speech or that all terms labelled as PA are necessarily of equal antiquity.

points out the dangers of asserting a one-to-one relationship between linguistic groups and archaeological complexes. The present evidence, however, suggests that an association of some Algonkian speakers with the bulk of the archaeological material attributed to the western Lake Forest Archaic-Laurel-Blackduck-Selkirk continuum is the most likely possibility.

Summary and Conclusions

After 1000 B.C., three Archaic populations occupied southeastern Manitoba and the surrounding areas. Peoples of the Pelican Lake Phase (locally known as the Larter Phase) persued a way of life centred around the exploitation of bison with minor dietary supplementation by other smaller species such as turtles, ducks and perhaps fish. The spring, summer and fall were spent on the plains bison hunting, with the major hunts occurring in the spring when the bulls were prime and in the fall when the cows were in prime. The onset of winter probably saw the fusion of these large populations into smaller groups to exploit the smaller groups of bison in the Aspen Parkland zone. To the north and east, groups identified as belonging to the Shield Archaic traditions occupied the Boreal Forest. The way of life of these people is incompletely understood as no fauna have been recovered from components of this tradition. The Lake Forest area, a transitional ecological zone between the northern coniferous forests and the southern broad-leafed forests of the Carolinean Biotic province, was the home of a number of distinct yet interacting cultural groups. These (the Old Copper, Red Ochre, Glacial Kame and Laurentian complexes) peoples exploited the abundant resources of this transitional zone by means of a diversified economy centred around the hunting of large animals,-the trapping of smaller fur-bearing and riverine adapted mammals, extensive fishing, the collection of plant foods--possibly including wild rice. The seasonal rounds of those people may have included forays to the northern shore of Lake Superior for the hunting of caribou and other big game or fishing in the numerous waterways at or near Lake Superior. This may provide an explanation of the heterogeneity of Archaic (Shield Archaic) materials in this area. These components do, in fact, appear to exhibit stronger relationships to the various Archaic assemblage to the south than to each other.

Discontinuities between the Archaic and Middle Woodland assemblages in southeastern Manitoba and continuity between the Laurel and Lake Forest Archaic comlpexes permit the speculation that near the beginning of the Middle Woodland Period (c. 300 B.C.) and expansion of Lake Forest peoples occurred into southeastern Manitoba and that their occupation of the northern shores of Lake Superior was on a year-round basis.

The onset of the cooler and wetter conditions associated with the Sub-Atlantic Climatic Episode witnessed a southerly and westerly shift of the margins of the Boreal Forest, a western expansion of the Lake Forest zone, and a concomitant depression of the Parkland edge and western movement of the eastern margins of the Grasslands. This resulted in a shift in the ranges of a number of species and those groups of people who depended on them. Lake Forest-adapted peoples expanded to the west with the Lake Forest ecological zone. A possibly critical factor to this phenomenon may have been an expansion of the area suitable for the growing of wild rice. If Lake Forest-adapted peoples did not move into harvest this resource as it spread, their expansion was at least syncronous with that of wild rice.

Larter Phase populations in southern Manitoba were also shifting the geographic range of their seasonal cycle to the west at this time in response to the winter home of the bison and the people who exploited them. Laurel peoples, employing a diversified mode of resource exploitation suited to the transitional Lake Forest zone, encountered little difficulty in adapting to this new transitional zone in southeastern Manitoba. The resources of the Lake Forest were still available to them and in addition, small numbers of Grassland-adapted species, particularly bison, could now be utilized also. The diversification of these Lake Forest people gave them an adaptive advantage over the highly specialized Larter populations in a time of changing environmental conditions and furthermore rendered a larger and more stable population possible.

Continuities in the archaeological assemblage of the western branch of the Lake Forest Archaic, and the Laurel, Blackduck and Selkirk Phases; the historic identification of Selkirk Phase peoples as Cree; the geographical distribution of these four complexes; evidence that all these groups followed a way of life most similar to historic Algonkian-speaking people residing in the area; and the speculation based upon the linguistic data that Proto-Algonkian people were adapted to a Lake Forest environment support the view that southeastern Manitoba has been continuously occupied by Algonkian-speaking peoples since the beginning of the Woodland Period.

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Plate 1

Selkirk Vessels 1-3

a. Sturgeon Punctate
b,c Alexander Fabric-impressed


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b
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d
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f
g

a

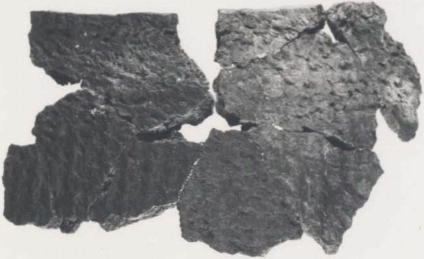

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Plate 2

Manitoba Vessels 1-7

a-g. Cemetery Point Corded

Plate 3

Manitoba Vessels 8-11

a. Cemetery Point Corded
b,c Blackduck Brushed
d Waskisk Vertical Cord and Punctate

a

b

c

d

Plate 4

Manitoba Vessels 12-16

a-e Manitoba Herringbone

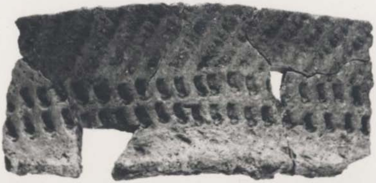

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Plate 5

Manitoba Vessels 17-30

a-n Manitoba Herringbone


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Plate 6

Manitoba Vessels 31-44

a-n Manitoba Herringbone

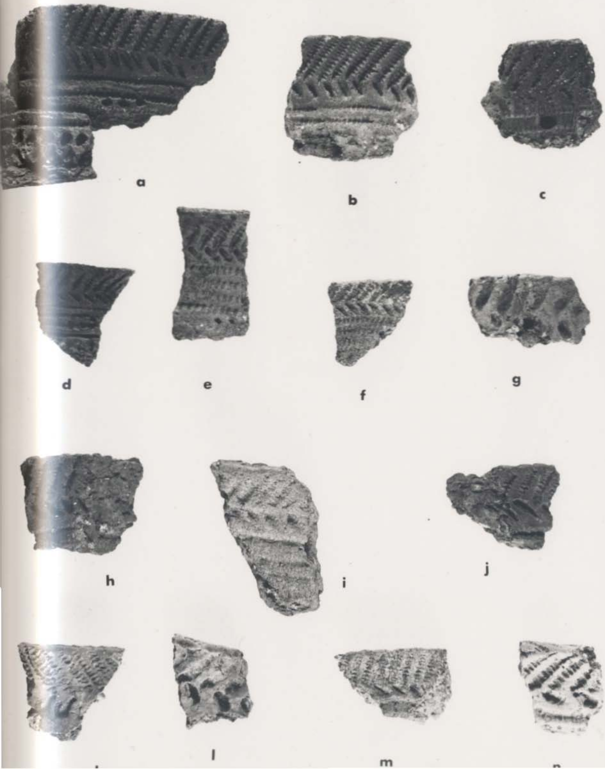
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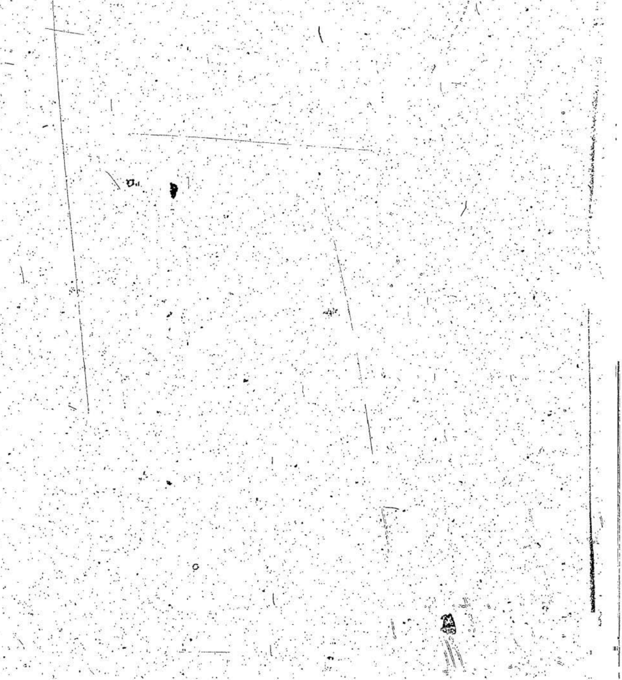
Plate 7

Manitoba Vessels 45-56

a-l Manitoba Horizontal



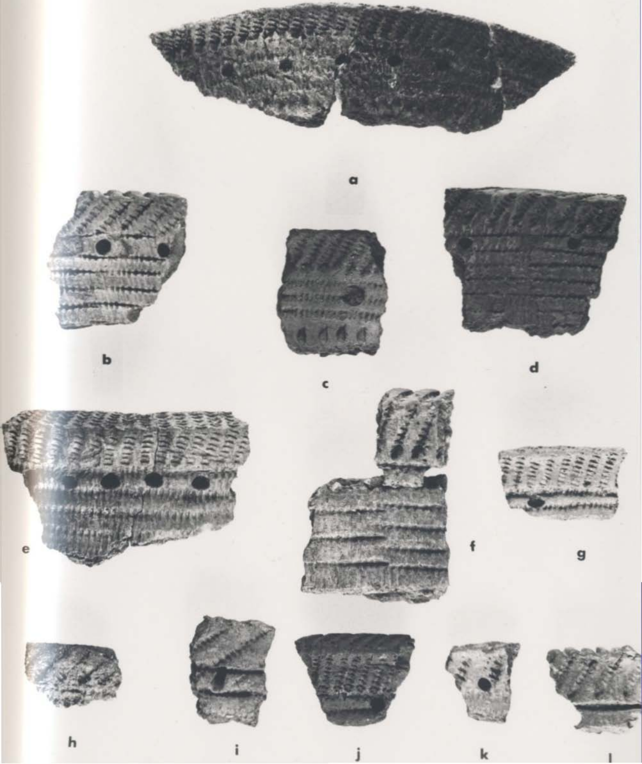

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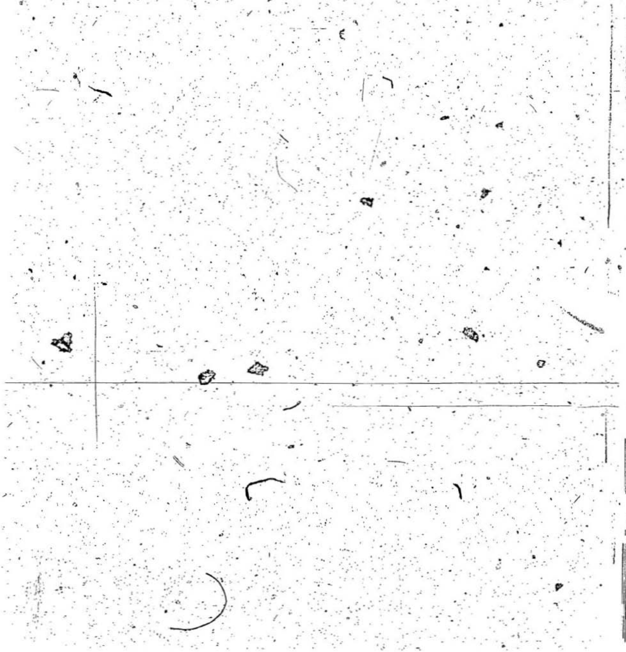
Plate 8

Manitoba Vessels 57-76

a-t Manitoba Horizontal



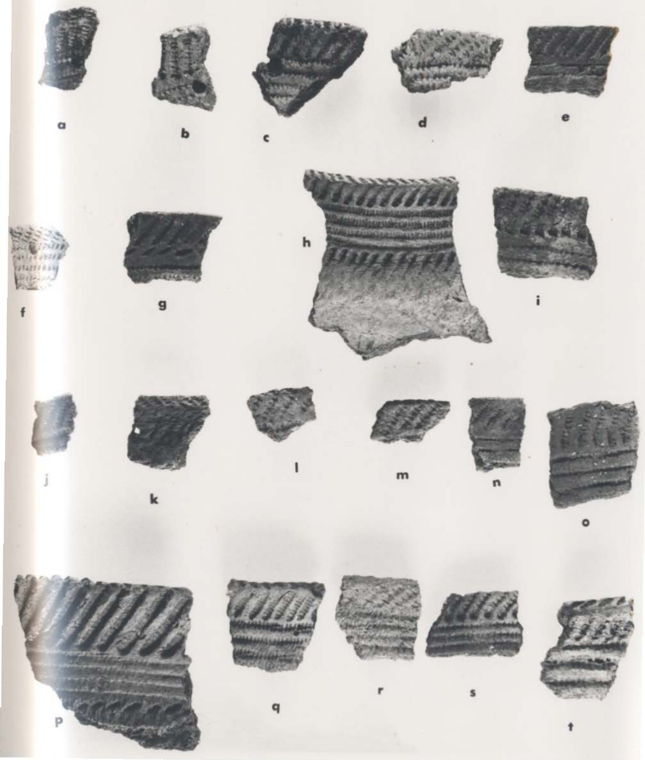

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Plate 9

Laurel-Manitoba Transitional Vessels 1-13

a,b	Pseudo-cord impressed vessels
c,d	Osufsen Boss and Cord
e-l	Corded vessels, undifferentiated as to type
m	Lockport Cord-wrapped stick

a
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Plate 10

Aberrant Late Woodland Vessels

a. Corded and punctated vessel
b. Juvenile vessel

a

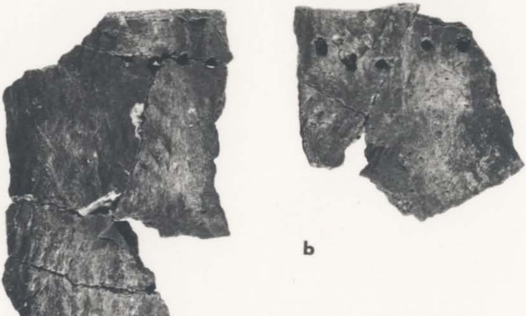

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Plate 11

Laurel Vessels 1-14

a-n. Laurel Dentate (type-core)

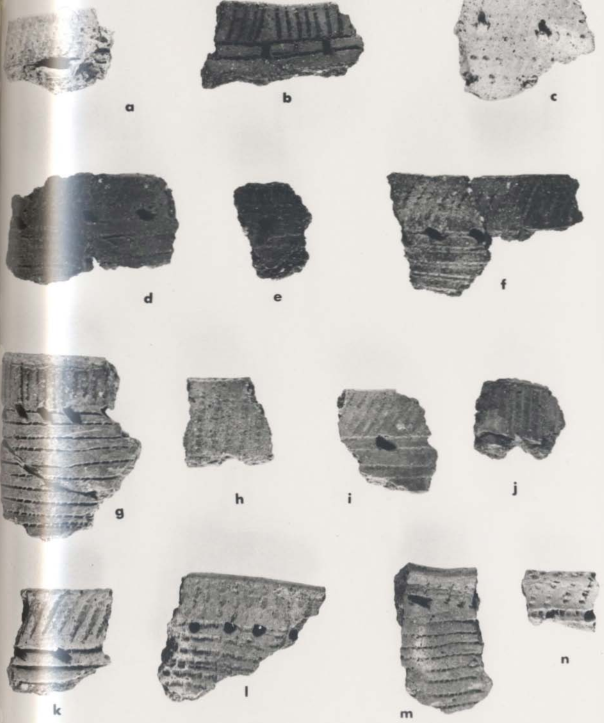
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Plate 12

Laurel Vessels ~~15-31~~

a-q Laurel Dentate (type-core)

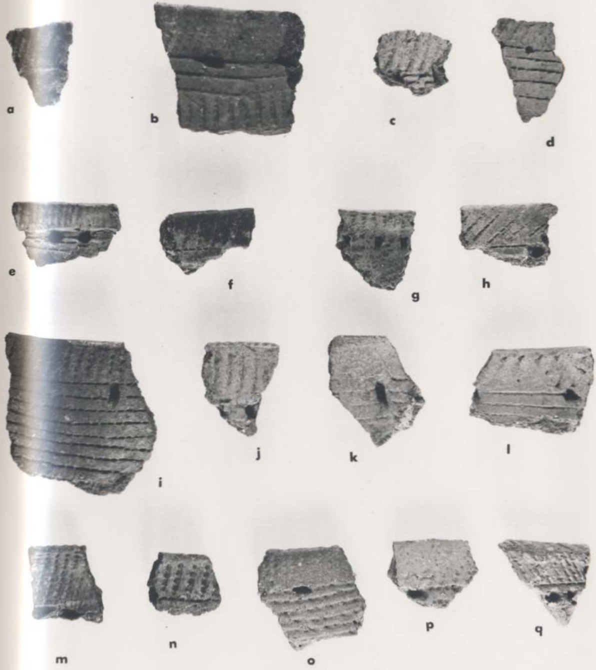
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Plate 13

Laurel Vessels 32-40

a-i Laurel Dentate (variants)


a
b
c
A27-857
d
e
f
g
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i

Plate 14

Laurel Vessels 41-53

a-i Residual Punctate Vessels
j,k Laurel Bossed subtype Bossed
l,m Laurel Bossed subtype Bossed and Punctated


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Plate 15

Laurel Vessels 54-71

a-i Laurel Pseudo-scallop Shell
j-r Laurel Residual Plain Vessels

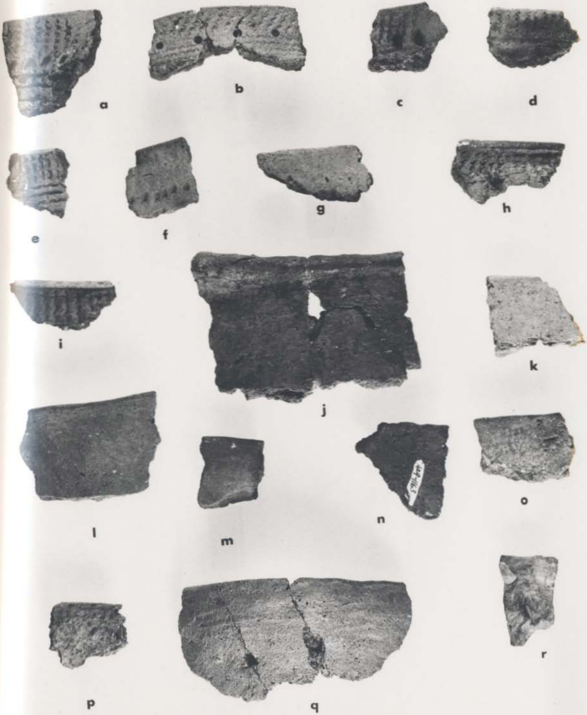
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Plate 16

Laurel Vessels 72-85

a-n Laurel Incised Vessels


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Plate 17

Laurel Vessels 86-115

a-c Laurel Oblique subtype Undragged Stamp

d-dd Laurel Oblique subtype Dragged Stamp

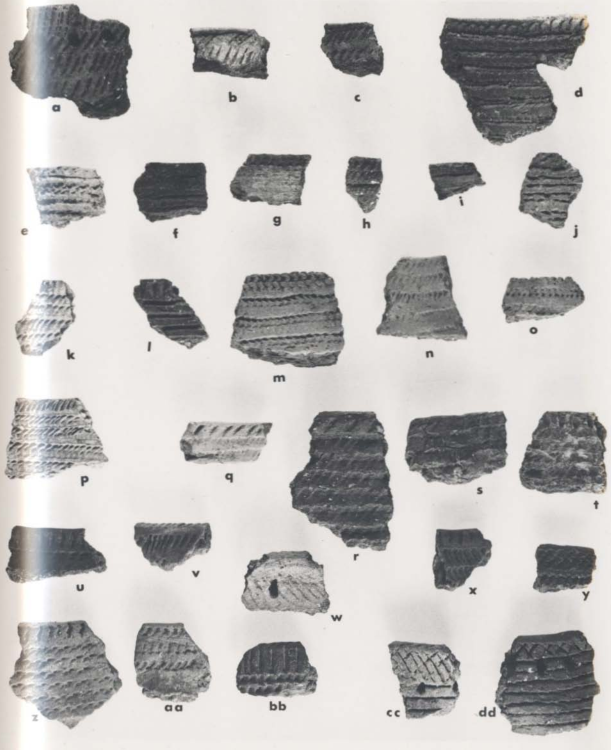
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Plate 18

Laurel Vessels 116-124

a-i Lockport Linear


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Plate 19

Miscellaneous Middle Woodland Vessels 1-7

a. Smoothed over punctated sherd
b. Brushed (?) and punctated sherd
c. Corded and punctated sherd
d. Punctated and dentated cup
e. Plain sherd with a single horizontal band
f. Juvenile pottery, dragged stamp and punctated
g. Basket or 'mat'-impressed sherd


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Plate 20

Bjorklund Site Projectile Points

a-k Eastern Triangular
l,m Stemmed points

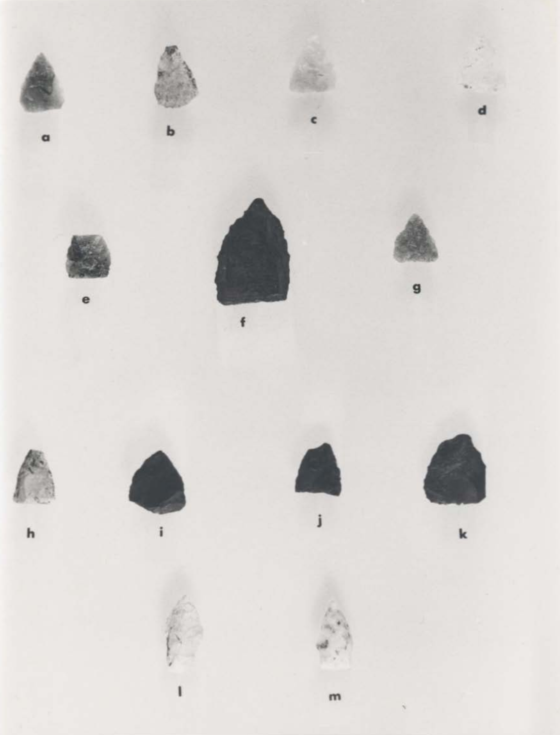
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Plate 21

Bjorklund Site Projectile Points

a-e Plain Side-notched
f-p Prairie Side-notched


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Plate 22

Bjorklund Site Projectile Points

a-h Whiteshell Side-notched
i-m Laurel Triangular
n-q Anderson Corner-notched


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Plate 23

Bjorklund Site Projectile Points

a,b	Larter Tanged
c	Selkirk (?) Side-notched point
d-l	Fragmentary points
m	Small 'eared' point
n	Notched and stemmed point
o-r	Fragmentary points
s	Bevelled ground slate tip fragment


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Plate 24

Bjorklund Site Scrapers

a-c Large Ovoid Plano-Convex End Scrapers
d-z Combination Side-End Scrapers

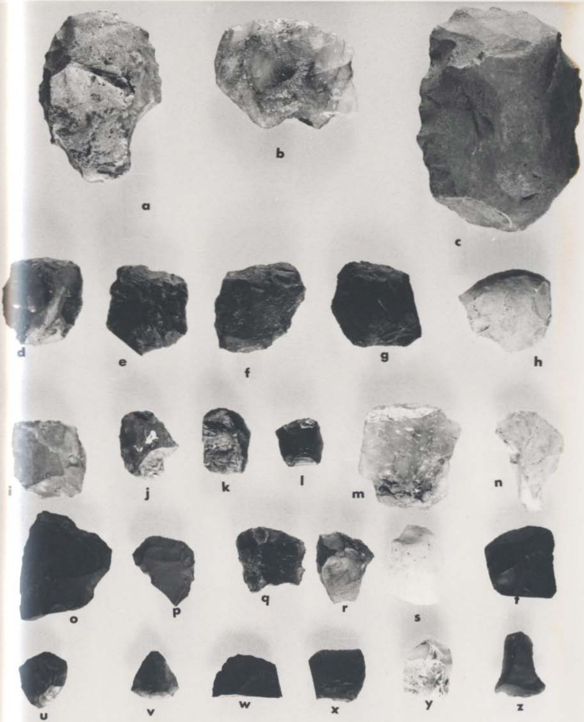
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Plate 25

Bjorklund Site Scrapers

a-q Combination Side-End Scrapers
r-ss Flake Scrapers

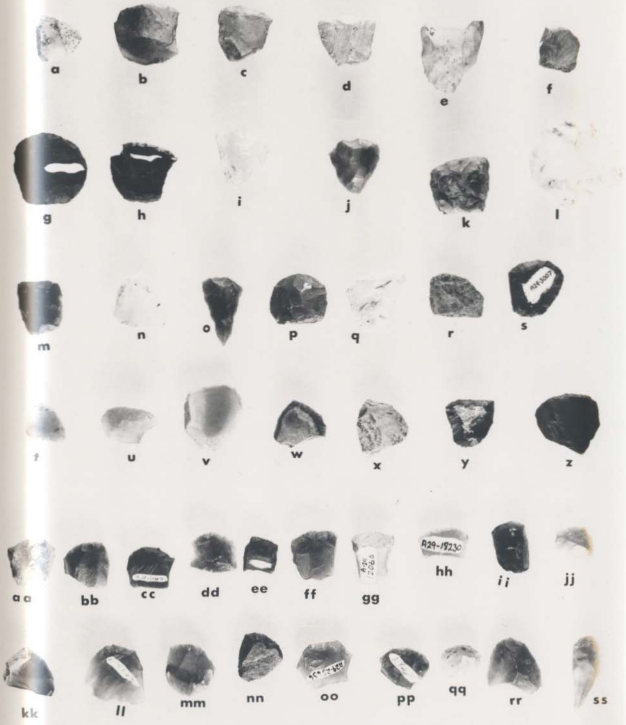
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Plate 26

Bjorklund Site Scrapers

a-f Flake Scrapers
g-v Side Scrapers
w-gg End Scrapers

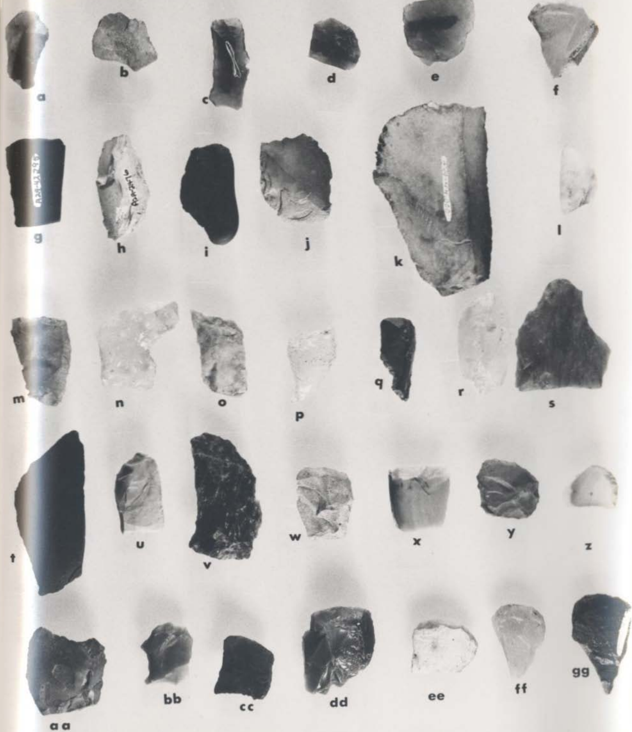
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Plate 27

Bjorklund Site Scrapers

a-k End Scrapers
l-p Large Prismatic End Scrapers
q-w Fragmentary Scrapers


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Plate 28

Bjorklund Site Bifaces

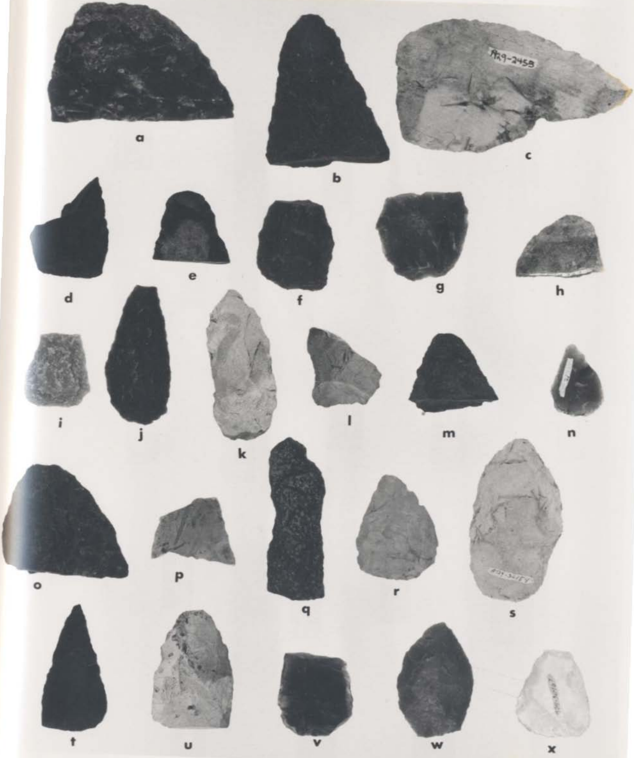
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Plate 29

Bjorklund Site Artifacts

a,b	Spokeshaves
c-f	Chipped Stone Squares
g	Fragmentary Ground Celt
h	Bifacial Chopper
i	Adze
j,k	Drills or Perforators
l	Copper Strip
m	Gaming Piece, fashioned from a cord-roughened sherd
n	Gaming Piece of untempered clay
o	Distal tip of a long bone defleshing tool
p	Fragmentary Bird Bone Needle
q	Fragmentary Unilaterally Barbed Harpoon Head


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Plate 30

Bjorklind Site Pipes

a-c Incised Ceramic Pipes
d,e Ground Stone Pipes
f Plain Ceramic Pipe
g Ceramic Pipe with Annular Impressions


a


b


c


d


e


f


g


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Plate 31

Burial Accompaniments, Feature 6-74

a	A29-27000:	Black Ryholite Knife or Chopper
b,c	A29-27004,27005:	Columella Shell Beads
d	A29-27006:	Ablema plicata
e	A29-27007:	Hammerstone
f-i	A29-27008-27011:	Retouched Flakes
j	A29-27012:	'Killed' Biface
k-m	A29-27013-27015:	Exhausted Quartz Cores

Plate 32

Burial Accompaniments, Feature 6-74

a A29-27016: Scraper
b-d A29-27017-27019: Retouched Flakes
e A29-27020: Sub-triangular Biface
f-i A29-27021-27024: Retouched Flakes
j,k A29-27025, 27026: Scrapers

Feature 1-75

l Ribs of Human Infant showing perforation


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