THE HISTORICAL GEOGRAPHY OF HURONIA

THE HISTORICAL GEOGRAPHY OF HURONIA IN THE FIRST HALF OF THE 17TH CENTURY

by

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SCOPE AND CONTENTS: The purpose of this thesis is the reconstruction of the geography of Huronia during the first half of the 17th century. Six broad, interrelated and basically geographical themes constitute the major portion of the thesis: the delimitation of the settled area; the physical characteristics of the area in as much as they relate to the Huron occupance; population estimates for the period; settlement patterns; the subsistence economy; and the interrelated facets of politics and trade. Where necessary sociological factors were introduced to give geographical patterns greater meaning. In attempting such a reconstruction and interpretation of a past landscape some emphasis is placed on the functional relationships that existed between the various cultural and natural phenomena in the landscape.

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Introduction

a) The Importance of Huronia

Today, Huronia is best known as a tourist area encompassing most of Simcoe County, Ontario. In the early part of the 17th century, the northern part of this area was the territory of the Huron Confederacy; a group of semi-sedentary, agricultural Indians, belonging to the larger family of Iroquoian-speaking peoples. With a population estimated at 20,000 to 30,000, in a territory of some 340 square miles, Huronia was perhaps the most densely settled area of aboriginal Canada.

By the beginning of the 17th century, when the French arrived in the St. Lawrence valley, the Hurons were joined with the Algonquin tribes of the Canadian Shield and the Petun Indians of the Collingwood area in a military and trading alliance against the powerful Iroquois Confederacy located south of Lake Ontario. Together the Hurons and Algonquins controlled the access to the lands north of the Great Lakes and in particular the resources of the Canadian Shield. Realizing this, the French were obliged to commit themselves to the Huron-Algonquin alliance. Soon after initial French-Huron contact, the Hurons joined the Algonquin as major suppliers of fur to the French traders in the upper St. Lawrence area. They thus became one of the most important commercial allies of French trading interests in North America.

Out of a genuine missionary zeal, and to further cement the French-Huron alliance, at first Récollet and later Jesuit missions, were established among the Hurons. The hope of these able and courageous men was to build a Catholic Christian community allied to the French cause in North America.

With their large semi-sedentary agricultural population, housed in villages with up to several thousand people, the Hurons offered an unusual opportunity for missionary ambitions. That these ambitions were not realized can be attributed to the onslaught of European diseases, trade rivalries and the age old rancours of inter-tribal warfare. Until the late 1630's, however, when disasters began to overtake the Hurons, Huronia was a stable territorial entity and as such offers the geographer a good opportunity to study a significant aspect of the aboriginal geography of Canada.

In spite of the shortcomings of the ethnohistorical and archaeological material on the Hurons,[1] more is known about this group of Indians than any other group in Canada. Yet no geographer has ever attempted a study of the Hurons. It is therefore not surprising that other early Canadian Indian groups have also been ignored by geographers. This thesis is therefore somewhat of a pioneer effort in a field that has traditionally been left to the archaeologist and anthropologist. It is hoped that the author can demonstrate that the geographer can also make a contribution and thereby point the way to further research in the aboriginal geography of Canada.

b) The purpose and approach to the thesis

One of the principal themes in historical geography is the reconstruction and interpretation of past landscapes. In keeping with this theme, the problem of this thesis is to reconstruct the geography of Huronia during the first half of the 17th century. In attempting such a reconstruction some emphasis will be placed on the functional relationships that existed

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1. A discussion of the ethnohistoric sources as well as 17th century maps relating to Huronia can be found in Appendix VIII.

between the various cultural and natural phenomena in the landscape. Unlike some historical geographies little attempt will be made to trace the origin of the geographical patterns of Huronia. Until considerably more archaeological work has been done in Huronia and adjacent areas most attempts to explain the origins of a particular feature, let alone a complex geographical pattern, would at best be a guess. Rather than tracing the origin of the geography of Huronia, an effort will be made to reconstruct the area and explain how the Hurons functioned within it. The approach to the problem of reconstructing the geography of Huronia is therefore ecological rather than historical.

The major difficulties underlying such a research problem are primarily attributable to a lack of adequate source material. Intensive archaeological and palaeoecological work has only recently begun in the area (Tyyska, 1968; Hurley and Heidenreich, 1969) and much of the potentially significant work of previous years, particularly on the excavations at Cahiagué, has not been published. In order to overcome the lack of a wide range of comparative material it was necessary to generalize and extrapolate from particular archaeological and written information for an area and culture as a whole. While the author is keenly aware of this shortcoming, he also realizes that only decades of intensive archaeological work could provide enough material to overcome this problem. Generalizations from particular instances would not be permissible in the study of societies that exhibited great variations in their cultural behavior. Similar to most tribal societies, the latitude of Huron group behavior was prescribed and restricted by traditional social norms. It can therefore be reasoned that, to a large extent, individual social behavior and

particular archaeological remains are a fairly accurate reflection of a total way of life. Whether stated explicitly or not, practically all the ethnohistorical work that has been done on the Hurons, has had to proceed from this principle, and this study is no exception. In all cases the authors had to build, what they considered to be, a "reasonable situation" from a few scraps of evidence. The result has been, and always will be until more archaeological work has been done, a rough approximation of a culture group in its area of settlement, rather than a description of a group in all its complexities. Similarly, some of the features of resource exploitation are only briefly described. Here a "reasonable case" had to be built out of the interrelationships between Huron technology, social behavior and the natural environment. Technology, social behavior and the natural environment can be fairly accurately reconstructed; the interrelationships and their end results measured in corn, fish or meat production are not known, and must be reconstructed in terms of "a reasonable case". The unfortunate aspect of such arguments is that it is difficult to prove or disprove a particular case. Instead each case is examined in terms of whether it is more or less reasonable.

A related problem to the one of inadequate or particularized material is the problem of change over time. No cultural group or area stays static and the Hurons are a good example of a society that changed rapidly and ultimately collapsed due to outside pressures and internal weaknesses. Unfortunately the ethnohistoric sources only hint at some of the social changes that were occurring and, except for the development and intensification of French-Huron trade, are almost entirely mute on other aspects of geographical interest. The archaeological record supports the contention

that trade became intensified over time and that there may have been some changes in the construction of palisades and houses. Neither source offers any information on other aspects of geographical change. There is for example no evidence that there was any major change in resource exploitation or the size and distribution of settlements. The introduction of metal goods such as copper kettles, iron axes or iron fish-hooks does not seem to have altered the Huron's way of life, but probably made it more efficient. Since such changes can only be guessed at, the bulk of this thesis will deal with a more or less stable situation prior to the disruptions of the late 1630's brought on by the ravages of European diseases; the social conflict of the 1640's precipitated by religious conversions; and the final disasters of the late 1640's at the hands of the Iroquois armies. Since the final result of these disruptive elements was the total disintegration of a way of life and the disappearance of an entire cultural group, a study of the demise of Huronia should perhaps be left to a sociologist or anthropologist rather than a geographer.

The organization of the thesis follows a standard pattern. The first chapter is devoted to defining Huronia and delimiting the area of active occupance. This is followed by a discussion of the physical geography of the area as it might have been during the period of the Huron occupation. Recent work, still in the process of analysis and too late to be included in this thesis, seems to confirm the major conclusions drawn in the chapter on the vegetation, soils and climate of the area (Hurley and Heidenreich, 1969). Once the area is delimited and the physical environment established, some of the pertinent social determinants underlying the major geographical patterns are discussed. These are the

socio-political organization of the Hurons, the distribution of the tribal groups and estimated populations. Such a discussion, is considered essential as a prelude to a better understanding of Huron settlement patterns and their subsistence economy. In general, settlement is here considered to be "the facilities man built in the process of occupying an area" (Kohn, 1954:125). This definition is elaborated in the proper chapter. For the sake of clarity a discussion of subsistence economies is treated separately. This separation is of course somewhat artificial because subsistence economies result in a cultural landscape and are therefore a part of "the facilities man built in the process of occupying an area". In this case, however, clarity of organization was considered a greater virtue than geographical philosophy. Of all the chapters in the thesis the one on Huron agriculture is the most hypothetical. This is again due to a lack of adequate data. Perhpas the only way in which these difficulties can be overcome is to launch a long term experiment in Huron agriculture similar to the one conducted in Denmark in European Neolithic agriculture (Iversen, 1956; Steensberg, 1957). The final chapter of the thesis is concerned with the reconstruction of Huron trade. It was necessary here to combine a discussion of trade with that of external politics because the two, at least to the Hurons, were inseparable. Pre-European and French-Huron trade are considered. The later French period, from the mid 1630's on, will be treated lightly not only because the subject is large enough to be treated separately, necessitating a thorough discussion of European trading practices, motives and policies, but also because this was a period of rapid interrelated change.

Although this thesis is primarily concerned with Huronia before the

period of rapid change beginning in the mid 1630's, constant reference must be made to events and situations in that period in order to gain a clearer understanding of the earlier period. In essence therefore the problem of this thesis is to reconstruct the geography of Huronia from the earliest period of direct French-Huron contact in 1609 (Champlain, Vol. II:109) to the mid 1630's when, with the onslaught of European diseases, rapid changes started to disrupt traditional Huronia, ending in the extinction of the culture and the disappearance of the area as a geographical region.

Chapter I

Huronia: The Position and Delimitation of the Occupied Area

Introduction

The main purpose of this chapter is to define Huronia and delimit the extent of the occupied area during the 17th century. This discussion will be prefaced by an explanation of the names "Huron" and 8endat along with some of the geographical implications of these names.

Until the arrival of the Jesuits, Huronia was in ill-defined territory. Both Champlain and Sagard imply a well defined area but do not delimit its boundaries. Before Huronia is delimited by means of the Jesuit source material, it will be shown how knowledge of Huronia slowly built up from Champlain's first references to the Hurons until the arrival of the Jesuits.

The actual delimitation of Huronia will be done in two ways; 1) by determining the probable location of Huron villages and Jesuit missions mentioned on the contemporary maps and in the written descriptions; 2) by examining the distribution of archaeological sites which reportedly contain French trade material. The discussion on the location of villages and missions might seem unnecessarily detailed and therefore somewhat tedious. This detail is necessary not only because the subject is surrounded by a great deal of controversy, but also because much of the material introduced here will be made use of in later chapters, such as population estimates, the establishment of the trail network and estimates of resource potential.

1. The Names "Huron", "Huronia" and Wendat

a) The derivation of the words "Huron" and "Huronia."

The name "Huron" first came into common usage sometime shortly before 1623. The first reference in Champlain to the Hurons by that name was in July, 1623 (Champlain, Vol. 5:100). Prior to that time he had called them either by the name of one of their chiefs, (i.e. Ochateguins after chief Ochasteguin) or by the name of one of the four tribal groups that made up the Huron nation (i.e. Attigouautan). Sagard uses the name Huron throughout his whole book, while in the Jesuit Relations it appears for the first time in 1625 (J. R., Vol. 4:171).

According to Jérôme Lalemant the word "Huron" was first used by some French soldiers or sailors as a nickname for a group of Indians whose haircut reminded them of the fur on the head of a wild boar (hure) (J. R., Vol. 16:231-233). Lalemant goes on to explain that at first this name was applied to all the sedentary Indian groups in New France. Later, as French contact became more and more concentrated on the Hurons, the name was exclusively used for them.

To all the early travellers the territory occupied by the Hurons was called Le Pays des Hurons (the country of the Hurons). A resident in Huronia would describe himself as being aux Hurons (among the Hurons) or in le pays des Hurons. The name "Huronia" does not occur in any of the early sources, yet it has been in common usage since the latter part of the 19th century. When the word was first coined is not known. The earliest reference the author has been able to find is one in Potier's Elementa Grammaticae Huronicae (1745), which refers to la défunte huronie (the deceased or defunct Huronia) (Potier, 1745:30).

The name "Huronia" does not appear on any 17th or 18th century maps. On these maps the area is usually referred to as Contree des Hurons, Pays des Hurons, or simply Hurones, Hurôs or Hurons. Yet the name has a familiar ring, and to a modern writer it would be unthinkable not to use it.

b) The meaning and implications of the word "Wendat" in defining the occupied area of Huronia.

The Hurons seemed to have called themselves 8endat (pronounced Ouendat or Wendat), (Jones, 1908:419). This appellation occurs only once in the Relations (J. R., Vol. 16:227), and most probably came into common usage after the destruction of the confederacy. The Jesuits simply referred to them collectively as Hurons, or, if a more specific reference was necessary, by the name of one of the tribal subdivisions of the Hurons. If this reflects common Huron practice, i.e.: that they referred to themselves primarily by their tribal affiliations rather than a common national name, it supports the theory that the Hurons considered themselves a confederation of tribes rather than a nation with a common national identity.

According to Jones (1908:419-420), the term Wendat can have three meanings. Either, "The One Language," "The One Land Apart," or "The One Island." Jones made a good case for every one of these translations, however the latter two seem the most likely. It would be illogical for the Hurons to call themselves speakers of "The One Language" because theirs was only one of several Iroquois dialects. As a matter of fact there were even differences in the dialect spoken among the four Huron tribes (J. R., Vol. 10:11). The Huron language set the Hurons apart from the Algonquin speakers, but not from the other Iroquoian groups.

Does dwellers of "The One Land Apart" or dwellers of "The One

Island" make more sense? The meaning of these two translations is very similar; both refer to an area set apart from other land in a physical or conceptual way. Generally speaking the Hurons occupied what is now northern Simcoe County, and this was indeed a land "set apart." In fact the northern half of the County could for all practical purposes be considered an "island." In pre-European times it was almost entirely surrounded by water or vast swamps.[1] In the east was Lake Simcoe and Lake Couchiching. These drained into the Severn River flowing through the great swamps that are so characteristic of the edge of the Canadian Shield. To the northwest and west lay Georgian Bay and Nottawasaga Bay. The southern approaches to Huronia were effectively blocked by the drainage basin of the Nottawasaga River, which was in effect a huge swamp stretching from Nottawasaga Bay through Flos and Vespra Townships all the way to Kempenfeldt Bay. Prior to the opening of roads and drainage operations the northern half of Simcoe County was a fairly well defined physiographic region which was effectively separated from the rest of the Province. It was an island of well drained soils surrounded by water and swamp (Map No. 26). This held true well into the 19th century and was the cause for somewhat different settlement histories in the northern and southern halves of the County.[2]

The theory that Wendat meant a "land apart" and was considered an "island" by the Hurons, is re-enforced by a reference to a conversation between the Jesuits and some Hurons, in which the latter refer to themselves

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1. The physiography of Huronia is more fully discussed in Chapter II.

2. Williams (1908:66) reports that the early settlers of the southern townships of Simcoe County had little communication with the northern townships and quite erroneous ideas what the physical conditions of the northern townships were like.

as "inhabitants of the Island" (J. R., Vol. 15:21; Vol. 33:237-239). Admittedly the entire theory is somewhat tenuous but considering the extent of the evidence it is at least plausible.

2. Early Attempts to Define the Position and Areal Extent of Huronia

a) The growing awareness of Huronia.

In 1603, on his return from having explored the Lachine Rapids, Champlain questioned a couple of Algonquins about the geography of the lands beyond the areas he had visited. Among other things he was told of a "nation" of "good Iroquois" who traded with the Algonquins and had access to a northern coppermine (Champlain, Vol. 1:164). It is not clear exactly who these "good Iroquois" were, but from what is known about intertribal relations at that time there seems little doubt that Champlain was being told about the Hurons.

Between 1604 and 1607 Champlain explored the eastern seaboard of Canada and the north eastern United States. In 1608 he returned to the St. Lawrence Valley and built his "habitation" at Quebec. By June, 1609 he was ready again to explore the country of the Iroquois south of the St. Lawrence. On St. Eloi island he met his Algonquin allies who were accompanied by a group whom Champlain called Ochateguins after their chief Ochasteguin. These people had never seen the French before but were allies of the Algonquins and were well acquainted with the Iroquois country. The reason why the Ochateguins had come to the St. Lawrence was to participate in a joint French-Algonquin raid on the Iroquois and to cement a military alliance with the French. In turn they promised Champlain to help him explore the areas adjoining the St. Lawrence (Champlain, Vol. II:110,119). The Ochateguins, Champlain informs his readers, were the "good Iroquois"

(Champlain, Vol. II:109).

In 1610 the Ochateguins returned to the St. Lawrence to participate in another raid, but did not arrive in time. Disappointed they returned to their country, but left a youth with Champlain to learn French (Champlain, Vol. II:142).[1]

The next meeting between Champlain and the group of Indians under Ochasteguin was in June of 1611. He now calls them Charioquois and renews his pledge to help them and visit their country (Champlain, Vol. II:186, 195-196).[2] He learns that the country of the Charioquois is some 150 leagues from the Lachine Rapids and decides to send a French youth named Brulé with the Charioquois to learn their language (Champlain, Vol. II: 204).[3&4]

The year 1612 was spent in France helping to reorganize de Monts trading company. In 1613 Champlain returned to New France and at once set out to explore a passage to the Northern Sea. On May 29th he departed up the Ottawa with only one Indian guide. At the juncture of the Ottawa and the St. Lawrence he explains that the latter flows due west to the country of the Ochateguins some 150 to 200 leagues away (Champlain, Vol. II: 260; Vol. IV:158). On reaching Morrisson Island on the Ottawa, Champlain

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1. In relating these events in the 1632 edition of his Voyages, Champlain identifies the Ochateguins as Hurons (Champlain, Vol. IV:119).

2. In the 1632 edition he substitutes "Hurons" for Charioquois (Champlain, Vol. IV:136).

3. In the 1632 edition he calls the Charioquois Hurons and places them 180 leagues from Lachine.

4. The French league and other contemporary measurements are discussed in Appendix I. The league is generally taken as about three miles.

learns that the northern salt sea was much farther away than he had been led to believe. One Indian claimed it was some 35 to 40 days journey north of the country of the Ochateguins (Champlain, Vol. II:293).

In 1612 and 1613 Champlain published two maps of eastern Canada. The 1612 map (Map No. 1) is fairly good up to the Lachine Rapids (grant sault). The western portions of the map seem to be constructed from hearsay. The Chariocay (Charioquois) are placed due west of Lachine and north of what seems to be Lake Ontario. On the 1613 map (Map No. 2) the Ottawa is depicted, but the geography of the areas east of Lachine is poor. The Charioquois (Charioquet, on map) are placed west of Lachine and south of the Ottawa, while the Hochataigains (Ochateguins?) occupy a position near the north eastern end of Lac St. Louis (Lake Ontario). It is curious that Champlain should make such a distinction between the Ochateguins and the Charioquois because they seem to represent the same group of Hurons. None of these names appear in any later ethnohistoric sources or maps. In all likelihood, for want of a better name, Champlain simply called the Hurons after the chief who happened to be leading them at a particular time.

In summary then, before 1615, the year he visited Huronia, Champlain knew that a fairly numerous agricultural people lived about 150 to 200 leagues west of the Lachine Rapids. These people were called the "good Iroquois" by their northern neighbours the Algonquins to distinguish them from the Iroquois south of the St. Lawrence with whom both groups were at war. Champlain also knew that a large lake, Lac St. Louis (Ontario), separated the two Iroquois groups, and that to get to the "good Iroquois" one could not take the shorter St. Lawrence - Lac St. Louis route, but

had to pass up the Ottawa and later south again; the southern Iroquois made the shorter route too hazardous.

b) The position and extent of Huronia according to Champlain's visit in 1615-1616.

After spending the year 1614 in France, Champlain returned to Quebec. This time he was determined to get to the country of the "good Iroquois." He departed from Quebec on July fourth, 1615, having been preceded by Father Joseph Le Caron, a Récollet priest, a few days earlier. After paddling up the Ottawa, Champlain cut across to Georgian Bay via the Lake Nipissing-French River route and then south until he landed on the northern tip of the Penetanguishene Peninsula on August first.

During this visit Champlain calls Huronia the "country of the Attignaouantan" (Champlain, Vol. III:46). Later sources explain that Attignaouantan were only one of the five major tribes that constitute the Huron confederacy, but Champlain made no such distinction. In his description of Huronia, Champlain mentions that it is "shaped like Brittany and similarly situated, being almost surrounded and enclosed by the Freshwater Sea" (Champlain, Vol. III:122). In length it stretched some 20 to 30 leagues and in width 10 (Champlain, Vol. III:50). The western limit of Huronia was the northern tip of the Penetang Peninsula and the eastern limit presumably Lake Couchiching. He makes no mention of a southern boundary or any habitations east of Lake Couchiching or Lake Simcoe. As a matter of fact while travelling through the Kawartha Lakes on his journey to the Onondaga he writes that the area was abandoned sometime earlier due to enemy pressure (Champlain, Vol. III:59). In a rather cryptic passage Champlain mentions that the Onondaga once forced the Hurons to move some 40 to 50 leagues (Champlain, Vol. III:125).

Although he does not state from where this movement took place, it could have been the Kawartha area, which is close to the Onondaga frontier. This passage will be re-examined in Chapter III.

Beyond stating that the country of the Attignaouantan lay in latitude 44°30', Champlain says little else that can be used to give the area a sharper definition. His estimate of 20 to 30 leagues for the length of Huronia and 10 leagues for its width are almost certainly over-estimations. The distance from Lake Couchiching to the northern tip of the Penetang Peninsula is only 38 miles or roughly 12 leagues. As will be seen later, Brother Gabriel Sagard and the Jesuits use the same dimensions of Huronia as Champlain, but define their limits more accurately in terms of fixed landmarks. Champlain's calculation of latitude was much more accurate. In fact he was only about 10' out; Huronia being in latitude 44°40'.

Before his death in 1635 Champlain drew two more small scale maps. The first of these was engraved in 1616 but was never completed (Map No. 3). The incomplete plate of this map was later discovered by P. du Val (Geographe du Roy) who embellished it with place names and published it in 1653 (Map No. 5). Both maps incorporate Champlain's discoveries in 1615 and 1616 including the Ottawa River-Lake Nipissing-Georgian Bay route, Lake Simcoe, the Penetang Peninsula, the Kawartha Lakes chain and Lake Ontario. Du Val's version has the name "Hurons" written in the general area of south central Ontario. There is no mention of any Huron tribe on Champlain's incomplete copy.

Champlain's last map was published in 1632 and is a fitting summary of the work of this great man (Map No. 4). Huronia is shown as a peninsula

lying between what is now Lake Simcoe, the Severn River, Georgian Bay, Nottawasaga Bay and what seems to be the Nottawasaga River in the south. The figure 86, written in the middle of this area, means:

> Country of the Hurons, thus named by the French, where there are numerous people and 17 villages enclosed each by three palisades of wood, with galleries all round in the form of a parapet for defence against their enemies. This country lies in latitude 44 and one half degrees; it is very good, and its lands are cultivated by the Indians. (Champlain, Vol. VI:244).

c) The position and extent of Huronia according to Sagard's visit in 1623-1624.

Sagard was a Récollet lay brother who came to Huronia in June 1623 and stayed until the autumn of 1624. During his visit he lived at the villages of Tequeunonquiaye[1] and Quieunonascaran, both situated in the western part of Huronia. (Map No. 23).

Much of what Sagard wrote about the geographical position of Huronia seems to have been copied from Champlain's 1619 edition of the Voyages; which shows at least that Sagard did not disagree with Champlain. His most important contribution to defining the extent of Huronia was in naming Tequeunonquiaye as the last village on the south western frontier (Sagard:74). The Jesuit sources, to be discussed later, suggest that this village lay somewhere near Spratt Point on Nottawasaga Bay. Unfortunately Sagard relates nothing of the eastern areas of the occupied territory. Unlike Champlain, he does however recognize that Huronia had territorial subdivisions, for he relates that:

There are several districts or provinces in the

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1. Tequeunonquiaye was also called Quieuindahian and during the Jesuit period, Ossossane. The French called it La Rochelle, Rupella and La Conception.

> country of the Hurons, with different names, just like the different provinces of France. The one under the rule of the great chief Atironta is called Henarhonon, that of Entauaque is called Atigagnongueha, and the Bear tribe, amongst whom we were living under the great chief Auoindaon, is called Atingyahointan. . . . (Sagard, 1939:91)

Linguistically the Atingyahointan (Bear tribe) can be identified with the Attignaouantan of Champlain. The Jesuit sources identify the Henarhonon with the Arendaronon or Rock tribe, and the Atigagnongueha as the Cord tribe or Attinguenongahac. All these tribal names have various spellings but identifications can usually be made. Beyond stating that the Bear tribe occupied the western part of Huronia, Sagard makes no attempt to locate any of these groups precisely.

d) The position and extent of Huronia according to the Jesuits, 1634-1650.

In 1639, Jérôme Lalemant attempted to define Huronia in terms of its areal extent. He wrote that:

> By the term 'country of the Hurons' must be understood, properly speaking, a certain small portion of land in North America, which is no longer than 20 or 25 leagues from East to West, - its width from North to South in many places being very slight, and nowhere exceeding seven or eight leagues. (J. R., Vol. 16:225).

In 1652, while reminiscing about the nation that was once the Hurons, an anonymous Jesuit made Huronia "a stretch of territory of only seventeen or eighteen leagues" (J. R. Vol. 40:223). De Quen's Relation of 1655 concurs, giving a length of about 17 leagues (J. R. Vol. 42:221).

All the Jesuit writers, with the exception of Jérôme Lalemant agreed that Huronia lay somewhere near latitude 44°30'; Lalemant places the country a full degree further north (J. R. Vol. 16:225). It is in the Jesuit Relations that we find the first attempts to establish the

longitude of Huronia. Standard methods for estimating longitude had not been established yet, but it is interesting how close some of the estimates were. Longitude was measured in hours or leagues; one hour being 15° and one degree being $17\frac{1}{2}$ leagues (Champlain, Vol. VI:287). Jérôme Lalemant estimated that Huronia was 1,300 leagues west of France or just over 74° (J. R., Vol. 16:227). A second estimate he made was 200 leagues from Quebec, or 12°. The actual figures are about 80° from France and 9° from Quebec. Paul Ragueneau estimated one half hour from Quebec, or 7°30' (J. R., Vol. 33:61). The closest was Francesco Bressani who placed Huronia six hours west of Rome (90°) and three quarters of an hour west of Quebec (11°15') (J. R., Vol. 38:235). The actual figures being 92°30' west of Rome and 9° west of Quebec. The fact that the Jesuits came so close in their estimates is a great tribute to their training and interests.

The frontier of Huronia was defined by the Jesuits in terms of three villages, Ossossane (Sagard:74), St. Joseph II (J. R., Vol. 39:239), and St. Jean Baptiste or Contarea (J. R., Vol. 23:105; Vol. 33:81). To these might be added St. Michel, which at least by implication was on the southern frontier, because there is no mention of any villages further south. The precise location of these villages will be discussed in the next section of this Chapter.

Internally the Jesuits divided Huronia into four tribal areas (J. R., Vol. 16:227); the Attignaouantan (Bear Tribe), Attinguenongahac (Cord Tribe), Arendaronon (Rock Tribe) and the Tohontaenrat (Tribe-of-the-One-White-Lodge). Later a fifth tribe was mentioned, the Ataronchronons (Tribe-Beyond-the-Silted-Lake), near Ste. Marie I. The precise location

of these tribal areas will be discussed in Chapter III.

3. The Location of Huron Villages and the Delimitation of Huronia.

a) Introduction

The precise extent of Huronia can best be determined by establishing the location of Huron villages and Jesuit Missions. From the source material discussed in Appendix VIII, a tolerably accurate reconstruction of the occupied area of Huronia can be made.

Probably the first attempt at reconstructing the geography of 17th century Huronia, was made by an unknown scholar who made a series of maps from the written descriptions in published journals (Map Nos. 17 to 21). Because he only had the journals to guide him and evidently did not have access to any of the Jesuit maps, his work is more of historical than scientific interest.

In the last century a multitude of writers attempted to reconstruct Huronia. Among these Shea (1855) and Parkman (1867) are probably the best known.[1] However detailed work did not begin until the turn of this century with the extensive archaeological reconnaissance work of A. F. Hunter (1899-1906) and the superb historical detective work of Rev. A. E. Jones (1908). Both Jones and Hunter assisted in the preparation of the Thwaites edition of the Jesuit Relations; however, both writers changed their minds on many points after the Relations were published.

Of all the works on Huronia, Jones's Old Huronia deserves special mention. It is an exhaustive search of all the pertinent literature including extensive linguistic work on Huron place names. Little criticism

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1. See also Martin (1848); Harris (1893); de Rochemonteix (1895).

can be levelled at Jones. At times he misread some evidence or was too literal in interpreting some of the distances quoted in the Journals. Perhaps his greatest fault was in measuring all distances in a straight line, thus ignoring physical obstacles and natural routes of travel. Jones, however, was writing well before the advent of topographic maps and the discovery of three of the four large scale Jesuit maps of Huronia.[1] In this light his work stands as one of the monuments of Canadian historical-archaeological research.

One of the consequences of Jones' massive study was that few writers after him re-investigated the problem of reconstructing the spatial distribution of Huron villages, or made any attempt to relocate the lost Jesuit maps. Most of these recent studies are papers attempting to relocate a single village or mission. Among these, Ridley's (1947) and Kidd's (1953) studies of Ossossane are noteworthy examples. Others are McIlwraith's (1947) and Heidenreich's (1966 b)) work on Cahiagué, Heidenreich's study of Carhagouha (1968) and Jury's (1955) work on St. Louis. Less successful attempts are Jury and Fox's study of St. Ignace II (1947) and E. M. Jury's Toanché (1967). Three broader studies can be mentioned, but these add little that is new. Of these, Shaw's (1942) paper is a rehashing of Jones's discussion on Sagard's estimates; E. M. Jury's (1963) article is a popularized version of Jones, and Kidd's (1949 b)) paper a discussion on the methodology used in attempting an identification of Jesuit Missions.

Since Jones's work only one attempt has been made to present a reconstruction of Huronia in the light of a re-examination of the primary

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1. For a discussion of these maps see Appendix VIII.

sources with the aid of some of the Jesuit maps (Heidenreich, 1966 a)), b) Problems encountered with the source material.

In reconstructing the early geography of Huronia one encounters a host of problems which need some explanation.

Since the authors of the Jesuit Relations and the authors of various other primary sources were mainly concerned with the progress of the Church in Huronia, any geographical information that slipped into their writings did so only incidentally. Consequently many statements regarding the location of villages are ambiguous and leave themselves open to different interpretations. Any distances given between villages were estimates, and not once do any of the authors give any compass directions. If we did not have the maps discussed in Appendix VIII, a reconstruction of Huronia would be a hopeless task, simply because we would have no idea in what direction the villages and missions lay from each other. One of the greatest problems, and perhaps the most easily overlooked, was the Indians' custom of changing the location of their village about once every ten to twenty years. According to contemporary descriptions this usually occurred when sources of firewood and suitable agricultural soils in the vicinity of the village were exhausted. To compound this problem, during a move a village was sometimes split into two or more villages with each receiving a new and different name. If in some cases a mission name had not been associated with a village, we would never know what had happened to it. Thus for example, if Sagard had not mentioned that Tequeunonquiaye was called La Rochelle by the French we would not have known that it was the Ossossane of the Jesuit period. According to Champlain such a change of sites could be anywhere up to

three leagues from the original location (Champlain, Vol. III:124).

c) Reconstruction of the physical geography of the Jesuit maps.

To anyone unfamiliar with northern Simcoe County, the original Jesuit maps may seem very crude indeed. For this reason a comparison between the Corographie and a modern map might be instructive (Map No. 22 a) and b)). The other three large scale maps of Huronia contain the same imperfections as the Corographie and need therefore not be discussed separately.

The most glaring defect of the Jesuit maps concerns what purports to be Kempenfeldt Bay and the North-west shore of Lake Simcoe. Kempenfeldt Bay is represented as an atrophied little inlet on a concave Lake Simcoe shoreline instead of the nine mile long bay that it is, on a convex shoreline. In other words 18 miles of land between Orr Lake and Lake Simcoe are missing. This territory was probably little known to the missionaries, because by the time that they were in Huronia there were few if any villages south of St. Michael, St. Joseph II and St. Jean Baptiste. Neither the Corographie nor Du Creux's map show the "Narrows" of Lake Couchiching. This was probably just an oversight because this gap of water is shown on the other two maps.

Passing west along the shore of Georgian Bay from the Severn River, each bay and river are perfectly identifiable until we come to an extra bay between Penetang Bay and Thunder Bay. This feature is important because Bressani places the mission Ihonatiria on its north-west corner. To explain this bay the following theory can be advanced. On a modern map the area represented by the bay is occupied by three little lakes,[1]

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1. Gignac Lake, Kettle (Second) Lake, Farlane (Farlaine) Lake.

lying within a long bedrock valley which opens toward the shore of Georgian Bay. This valley could not have been filled with water during Huron times; even though the water levels in the little lakes and Georgian Bay probably stood higher then. Anyone walking over the area and attempting to draw a map at the scale of the Corographie might have mistaken these little lakes, with the stream that connects them, lying within a large valley, for a bay (Georgian Bay). The little lakes on the Corographie lying between this "bay" and Penetang Bay correspond very well with some large swamps, which were probably more extensive at one time. From a knowledge of the area the foregoing seems to be the most likely explanation.

The fictitious bay on the Nottawasaga shoreline, ending at Ste. Magdalaine, is more difficult to explain away. In all likelihood it is an unsuccessful attempt to portray one of the little creeks flowing into Nottawasaga Bay. The little lake beside Ste. Magdalaine must be Lalligan Lake.

The remaining features on the Jesuit maps need little explanation. Both the Corographie and the Bressani map show Cranberry and Orr Lakes. Cranberry Lake (L. Anaouites) had disappeared due to a general lowering of the water table and extensive drainage operations in the 19th and 20th century. Recently the Ontario Department of Lands and Forests have made an effort to reestablish the lake. On the Description only Orr Lake is depicted. For some reason Bass Lake is left off all of the maps; pointing out again that the eastern part of Huronia was probably not as well known and as heavily settled as the western half. There were evidently two lakes named Contarea; Midland Park Lake (Corographie) and Lake Couchiching (Bressani map). The name simply means, "the little lake."

Rev. A. E. Jones devoted a great deal of space to a translation of the place names of Huron villages and geographic features. For a list of Indian place names, Jesuit equivalents and an English translation see Appendix III.

d) Ihonatiria and the Northern Part of the Penetang Peninsula.[1]

Prior to 1638 most of the Jesuit missionary activity was carried out from their central residence at Ihonatiria (St. Joseph I). Because the village lay in the western extremity of Huronia and no subsidiary missions were in existence until the establishment at La Conception (Ossossane) and St. Joseph II (Teanaustaye), their principal missionary efforts were confined to the villages in the vicinity of Ihonatiria. Since none of the villages (except Ihonatiria) had permanent missions attached to them, they bear only Huron names; their later French appelations are unknown and consequently the sites of a large number of missions belonging to the later period of La Conception cannot be determined.

On August 5, 1634, Father Brébeuf landed at the "port" of what used to be Toanche or Teandeouiata, a village where he and Father Noue had lived in 1625 (J. R., Vol. 8:89). He found the shore deserted because in the meantime the village had been moved. This, he tells us later, was done because the Hurons feared French revenge for the death of Brûlé, Champlain's former interpreter, who had been murdered at Toanche. The Indians who had transported Father Brébeuf left him on the deserted shore and resumed their journey. He hid his belongings in the woods and after wandering about for three quarters of a league found the new Toanche

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1. A tabular summary of Chapter I, section 3d) to h) can be found in Appendix IV.

(J. R., Vol. 8:93). Along the way he saw the old village standing deserted. He was welcomed by his old friends and decided to lodge with one of the " . . . most important men of the village . . . " until " . . . our cabin was ready," (J. R., Vol. 8:93). He goes on to say that he decided to build his cabin " . . . here at Ihonatiria . . . " where the people knew him (J. R., Vol. 8:99). This is an important point. Nowhere does Brébeuf say that he moved from his friends at the new Toanche to Ihonatiria. As a matter of fact, his whole story sounds as if Ihonatiria was but a new name for Toanche or Teandeouiata. This is entirely possible, because the names of villages were often changed after a move. Moreover the names of Toanche or Teandeouiata do not appear at any place in the Relations after the first mention of Ihonatiria. This would be highly unusual if these were neighbouring villages, especially when we take into consideration the fact that Ihonatiria along with Oenrio were offshoots of the old Toanche (J. R., Vol. 14:23). Thus, I am assuming that Ihonatiria and the new Toanche were one and the same village, or at least so close together that the same name can be used to describe both.

In a discussion with an Indian, Brébeuf tells us that Ihonatiria was not directly on the lake but close enough for easy communication (J. R., Vol. 10:243). In a later conversation, we find that Ondiatanen or Giant's Tomb Island could be seen from the village (J. R., Vol. 13:229). These descriptions agree so well with the position of Ihonatiria on Bressani's map that there seems little doubt that this village stood somewhere on, or near, lot 2 or 3, concession 20 of Tiny Township (Map No. 23).

There is no indication on which side of Ihonatiria the original Toanche stood. Jones placed Toanche on Penetang Bay (near lot 1, con. 17

Tiny Twp.) but mistakenly assumed that Toanche, Teandeouiata and Ihonatiria were all separate villages (Jones, 1908:56-58). His distance between Toanche and Ihonatiria is therefore much too great. This author is inclined to place Toanche three-quarters of a league west of Ihonatiria, because Oenrio the other offshoot of Toanche lay to the sout west of Ihonatiria. This would place Toanche near the shore of Methodist Bay on lot 4, concession 20, where there is a recently discovered site belonging to the early part of the 17th century (Ridley, 1966).

Oenrio was situated one league from its sister village Ihonatiria (J. R., Vol. 13:169). Judging from the Corographie this was in a south-westerly direction. As early as 1635 we hear of plans to reunite with Ihonatiria (J. R., Vol. 8:105); this was still being contemplated in 1637 and after that date we hear no more of Oenrio. Ihonatiria was abandoned by the Jesuits in 1638 and at about the same time by the Hurons (J. R., Vol. 17:11). A different location for Oenrio is marked on the Description and Bressani's map. It is entirely possible that this marks a new site for a relocated and combined Oenrio and Ihonatiria.

Anonatea was another village about a league from Ihonatiria (J. R., Vol. 13:189). It seems to have been a regular stopping place between Ihonatiria and La Conception (J. R., Vol. 13:193) and must have been near Onnentisati, a village on route to St. Michel and St. Joseph II to the south-east (J. R., Vol. 13:211; Vol. 8:139; Vol. 13:195). Neither of these villages appear on the maps. All we know about Onnentisati is that it lay near a montagne (J. R., Vol. 13:227) on the way to La Conception. It has therefore been placed south of Anonatea near La Fontaine Hill, the only "mountain" in the area.

Arontaen of the Relations has been linguistically identified by Jones as the Taruentutunum on Du Creux's map and the Corographie (Jones, 1908:53). This village was two leagues from Ihonatiria (J. R., Vol. 10: 285) and one league from Tondakea (Tundatra, Etondatra, Tondakhra). Arontaen has been placed on lot 17, concession 18, Tiny Township, a large contact site two leagues from Ihonatiria (Hunter, 1898:12). Tondakea, a league west of Arontaen, has been placed on a site at lot 19, concession 20, Tiny Township. This site occupies a position on the far western tip of the Penetang peninsula, which fits with the name Tondakea ("where the land disappears" - Appendix III). On the Description a village by the name of Taentoaton occupies a position near that of Arontaen. Unfortunately Taentoaton means precisely the same thing as Tondakea or Etondatra, i.e.: "where the shore or land disappears" (Appendix III). Since both Etondatra and Taentoaton appear on the same map, the map maker either made a mistake, or there were two villages with the same name. Since there was no standard way of spelling Huron place names, and names could be pronounced differently according to local dialects, one could expect a multitude of spellings for a single name, but always having roughly the same meaning. One would therefore suspect that the mapmaker made a slip and recorded Tondakea twice. The site of Ste. Cécile, which is written above Taentoaton, is unknown. It is recorded in the Relations as being under the jurisdiction of La Conception, and therefore in Tiny Township (J. R., Vol. 19:209). Because it has been placed roughly where Arontaen should be, it has been identified with that village.

Two villages in the northern part of the Penetang Peninsula, mentioned on the maps but little or no clue in the Relations are Arent (Arente) and Teandatetsia. Of these Arent seems to lie about three-quarters

of a league to the south-west of Arontaen (Taruentutunum). From its name we know it was near the mouth of a river. It has been placed on a large contact site, lot 18, concession 13, Tiny Township, which is a location that agrees with Jones (Jones, 1908:134). Teandatetsia does not tie in with any other known village. Literally translated it means "where there is a long village," or simply, "the long village."[1] If such a place existed it seems to have been upstream from Arent. For want of further information it has been placed on lot 15, concession 15, Tiny Township, a site described by Hunter (1898:13).

e) The villages of Champlain and the Récollet period.

Without having first examined the early Jesuit period, it would be difficult if not impossible to retrace the steps of Champlain. Champlain landed at Otouacha (Champlain, Vol. 3:46) and from there visited Carmaron a league away, Touaguainchain, Tequenonquiaye (later called Ossossane or La Conception) and finally Carhagouha where his friend Father Le Caron was living. There is no clue in any of Champlain's writings where these villages stood. Jones shows that Otouacha and Toanche are linguistically the same and are probably only two different spellings of the same name (Jones, 1908:59-61). Jones also demonstrates that the same is true for Carmaron and the Karenhassa on the maps (Jones, 1908:58). If this is so it agrees with Champlain that the villages are a league apart, i.e.: Toanche or Otouacha on Methodist Bay and Carmaron or Karenhassa a league to the east where it is on the maps. Touaguainchain defies analysis, and any location for it would be a pure guess. Bressani placed Carhagouha on Midland Bay, a place so radically different from Jones who identified it with Arontaen,

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1. For translations of Huron place names, see Appendix III.

that this placement requires closer examination (Map No. 13 b).

Le Caron lived in Carhagouha from 1615 to 1616 and then returned to Quebec. In 1623 he returned to Carhagouha and according to Le Clercq found his old cabin still standing (Le Clercq, 1881:205). Brother Sagard, who had come to Huronia with Le Caron, was sent to Tequenonquiaye. Later in 1623 Sagard departed from his village to join Le Caron whom he found not at Carhagouha but at Quieunonascaran some four to five leagues from Tequenonquiaye. Both Carhagouha and Quieunonascaran were called St. Joseph by the Récollets and on his arrival Sagard had to help build a new cabin for the Récollets (Sagard:76). This sounds as if Carhagouha had recently been moved, changed its name to Quieunonascaran, but as was customary, kept the French name (St. Joseph). During the Jesuit period Carhagouha was unknown but Quieunonascaran still existed. The move from Carhagouha to Quieunonascaran could not have been too far because Sagard had no trouble finding it. Where then was Quieunonascaran? From the Relations of 1637 we learn that it was two leagues from Ihonatiria, the direction not being given (J. R., Vol. 13:125). From Sagard we learn that Quieunonascaran lay one-half league from a bay which opened to the northern fishing grounds (Sagard:191). Further proof that Quienonascaran lay on a bay is its name, "Here-the-Thunder-Straits-Yawn-Open" or "The-Beginning-of-the-Trolling Grounds" (Jones, 1908:189-190). The only north facing bay two leagues from Ihonatiria is Penetang bay. Quieunononascaran has therefore been placed one-half league from the southern end of Penetang Bay and two leagues from Ihonatiria. This situation is just over four leagues from Tequenonquiaye. Carhagouha can therefore be placed on Midland Bay where it is on the Bressani map, only a short three-quarters of a league from

Quieunonascaran.

Rev. A. E. Jones had placed Carhagouha in the north-western end of the Penetang Peninsula, but made several mistakes in doing so. In order to explain Jones's errors it is necessary to discuss the location of Cahiagué.

After leaving Carhagouha, Champlain wandered in a very leisurely fashion to Cahiagué which he tells the reader is three leagues from the "Narrows" of Lake Couchiching (Champlain, Vol. 3:56) and 14 leagues from Carhagouha (Champlain, Vol. 3:49). Champlain's 14 leagues must be a gross exaggeration because the whole of Huronia is not 14 leagues long. Since Champlain took three days to get from Carhagouha to Cahiagué his reckoning may have been sadly out by the time he got there. Thus the estimate of three leagues from the "Narrows" to Cahiagué is probably more correct. An interesting point to notice is that Champlain estimated the whole length of Huronia as 20 to 30 leagues (Champlain, Vol. 3:50). This would make the distance between Carhagouha and Cahiagué 50% or 70% the length of Huronia, or 19 to 26 miles. A village fitting Champlain's description of Cahiagué has been found on lot 10 concession 14, Medonte Township, exactly three leagues from the "Narrows." There are no other villages of similar description anywhere within a four mile radius (Heidenreich, 1966, b)). This site is some 19 miles from Carhagouha on Midland Bay.

Jones made the mistake of taking Champlain's estimate of 14 leagues literally and compounded his error by identifying Cahiagué with

the Jesuit mission St. Jean Baptiste.[1] Unfortunately Jones overlooked the fact that Cahiagué had been moved sometime before 1623 (Sagard:92); St. Jean Baptiste and Cahiagué therefore did not exist at the same time and could not have been the same village. A further mistake Jones made was not to examine a slip of Champlain's when the explorer wrote Carantouan instead of Carhagouha in one of his journals (Champlain, Vol. 4: 240). Carantouan was a village among the Andastes and had little to do with Huronia (Champlain, Vol. 3:215). This slip does not occur in the earlier edition of Champlain's works (Champlain, Vol. 3:49). Jones assumed Carantouan was a synonym for Carhagouha and was linguistically related to Arontaen. Hence he placed Carhagouha on the site of Arontaen.

The above is a perfect illustration of how easy it is to go wrong when interpreting such scanty evidence.

f) La Conception and the western villages.

La Conception (La Rochelle, St. Gabriel, Rupella, Tequenonquiaye, Quieuindohian), or to call it by its most common name Ossossane, was one of the villages most friendly to the French and the chief village of the Attignaouantan tribe. Apparently this village was first visited by Champlain in 1615 who called it Tequeunonquiaye (Champlain, Vol. 3:48). In 1623 Sagard lived at Tequeunonquiaye and mentioned that the village was also called St. Gabriel by the Récollets, La Rochelle by the French traders and Quieuindohian as an alternate name by the Indians. He

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1. Members of the Rock tribe had told the Jesuits that they remembered Champlain (J. R., Vol. 20:19). Jones interpreted this as meaning that Hurons from St. Jean Baptiste remembered Champlain, and therefore St. Jean Baptiste was Cahiagué.

described the village as lying five leagues from Troenchain (Toanche) (Sagard:75) and four to five leagues from Quieunonascaran (Sagard:76). These descriptions agree extremely well with the location the village has on the Description and the Bressani inset, namely just north of Spratt Point on Nottawasaga Bay.

When Brébeuf returned to Huronia in 1634 he was asked to establish a Church at La Rochelle but decided to remain at Ihonatiria because La Rochelle was soon to be moved (J. R., Vol. 8:101). In 1635 the village was moved and Brébeuf was present at the Huron "Feast-of-the-Dead." During the "feast" Brébeuf stayed in "the old village," one quarter of a league from the burial place (J. R., Vol. 10:291-293). The new village was four leagues from Ihonatiria (J. R., Vol. 10:291; Vol. 13:181). In 1639 the Jesuits began building at Ste. Marie I and departed from Ossossane. The Hurons shifted the village in 1640 (J. R., Vol. 21:159); the new village abeing three leagues from Ste. Marie I (J. R., Vol. 26:207), where it seems to have remained until 1649.

We thus have three different locations for Ossossane during the Jesuit period. Since each succeeding Ossossane was always fairly close to the old one, each of these locations agrees very well with the position of Ossossane on the Corographie (Map No. 14 a, b).

In the early 1950's an ossuary was excavated on lot 14, concession 7, Tiny Township (Kidd, 1953), near a site on lot 16, concession 7 which Ridley (1947) had postulated was one of the village sites of Ossossane. This mass burial conformed fairly well to the description of the one witnessed by Brébeuf in 1635, including the quantity and type of grave goods placed in it. Since Ridley's village site is about one quarter of a league

south west of the ossuary, and there are no other large contact sites within the vicinity it is highly likely that the Ossossane of the 1620's and early 1630's stood on lot 16, concession 7 of Tiny Township. Another one of Ridley's sites, lot 15, concession 9, Tiny Township, is sufficiently further north from the previous site, that it could well be the Ossossane of the 1630's or 1640's.

During the latter 1630's, the closest village to Ossossane was Angoutenc, about three-quarters of a league away (J. R., Vol. 15:23). This village was built in 1636 (J. R., Vol. 10:203) and lay on the trail from Ossossane to the villages in northern Tiny Township (J. R., Vol. 14: 69, 73). It has been placed on lot 101, concession 2, Tiny Township (Hunter, 1898:37).

Besides the villages already discussed, there are four others, which are mentioned in the Relations but which cannot be given a location with any degree of certainty. These are Andiatae, Arendaonatia, Ekhiondastsaan, and Iahenhouton, all within the western part of Huronia.

Andiatae appears to have been close to Ossossane (J. R., Vol. 13: 237-243) on the way to Teanaustayae (St. Joseph II) which lay to the south-east (J. R., Vol. 14:25-29). It was also frequently mentioned in connection with Oenrio, Arent and Angoutenc (J. R., Vol. 13:235). The best guess therefore, is that the village lay somewhere in an easterly direction from Ossossane. Perhaps it was the Huron name for St. Francis Xavier.

Arendaonatia, Anonatea and Onnentisati were all within easy walking distance of Ihonatiria (J. R., Vol. 14:13-15, 45). Arendaonatia must therefore have been in the eastern half of the Penetang Peninsula;

most likely east of Farlain and Second Lake.

Ekhiondastsaan was located somewhere on the trail between Teanaustaye and Ossossane, and Andiatae was located between Ekhiondastsaan and Ossossane (J. R., Vol. 14:27-29). From the dates at which the Fathers visited several villages along the trail one gets the impression that Ekhiondastsaan was about half-way between Andiatae and Teanaustaye, or just about where La Chaudiere should be. A more detailed location for Ekhiondastsaan will be examined later in this chapter.

Iahenhouton is only mentioned once. It was visited in 1637 by some of the Fathers in order to ask the local council if the village would accept Christianity and if they had any objections to French-Huron marriages. During this visit we learn that Iahenhouton had split off from Ossossane sometime earlier (J. R., Vol. 14:15-17); consequently it is reasonable to suppose that Iahenhouton lay somewhere in the vicinity of Ossossane.

During the Jesuit period, twelve villages were under the jurisdiction of La Conception: St. F. Xavier, St. Charles, Ste. Cécile, Ste. Magdelaine, Ste. Agnes, Ste. Genevive, St. Martin, St. Antoine, Ste. Catherine, Ste. Térèse, Ste. Barbara and St. Estienne (J. R., Vol. 19:209). Of these, only the first four appear on any of the maps, and only St. F. Xavier and Ste. Magdelaine are mentioned in the Relations in anything but cursory fashion. According to the Corographie and the Description, (Maps No. 14 a, b; No. 15 a, b), St. F. Xavier was located on the west side of the Wye River half way between Wye and Cranberry Lakes. This location is confirmed by the Relations which place it south-west of Ste. Marie I across Wye Lake and call it the closest village to Ste. Marie in that

direction (J. R., Vol. 19:172). In 1640, St. F. Xavier was placed under the jurisdiction of Ste. Marie. On the Corographie Ste. Magdelaine is placed inland from a non existent bay and beside a little lake due west of Ste. Marie I. On the Description it is seemingly identified with Oenrio. This location is too far south according to the position Oenrio had in the mid 1630's. It could however represent a relocated and combined Oenrio and Ihonatiria. As mentioned earlier, this non existent "bay" could possibly be one of the little creeks flowing east-west across Tiny Township into Nottawasaga Bay. The little lake near the headwaters of the creek could only be Lalligan Lake. Ste. Magdelaine has therefore been placed on lot 11, concession 10, Tiny Township, the location of a large contact site (Hunter, 1898:33). The position of St. Charles is also somewhat ambiguous. Both the Description and the Corographie put it on the peninsula between Midland and Penetang bays. For want of a better place I have put it beside Penetang Lake, the position it occupies on the Description. There is absolutely no clue to where the other missions were located or what their Indian names might have been.

g) St. Joseph II and the eastern villages.

During the Jesuit period St. Joseph II (Teanaustaye) was described as "the most important village of all" or "the largest and most populous village in all the country" (J. R., Vol. 17:11; Vol. 19:185). It was the capital of the Attinguenongahac or Cord Tribe and in 1648 was listed as having 400 families (J. R., Vol. 34:87). It was reported as being seven or eight leagues from Ihonatiria in 1635 (J. R., Vol. 8:139) and five or six leagues from La Conception in 1638 (J. R., Vol. 15:157). In June 1638, the mission of St. Joseph at Ihonatiria was transferred to Teanaustaye,

and Ihonatiria was abandoned. After Ste. Marie I was built, it was reported that St. Joseph stood five leagues from that place (J. R., Vol. 26:211). St. Joseph II was one of the first villages to be destroyed by the Iroquois. This took place on July 4, 1648, and there Father Daniel met his death. From the description of the attack we learn that the village stood on the southern frontier of Huronia and was heavily fortified by natural and man made defences (J. R., Vol. 39:239).

On the Corographie (Map No. 14 a, b) St. Joseph II is placed due east of Orr Lake, 4.5 leagues from Ste. Marie I and five leagues from La Conception. Taking measurements from a modern map, this position is about five leagues from La Conception, seven to eight leagues from Ihonatiria, but only 3.5 leagues from Ste. Marie I. Because of this discrepancy some authors have placed St. Joseph II considerably further south (Jury, 1965:13; Jones, 1902:121). Jones revised his original estimates and then came out in favour of the Flanagan site on lot 7, concession 4, Medonte (Jones, 1908: 15-22). In 1947 the Flanagan site was excavated and proved not to be St. Joseph II (Jury, 1948). By far the best candidate for St. Joseph II is Hunter's Fitzgerald site on the east half of lot 12, concession 4, Medonte Township (Hunter, 1901:78-84). This is the largest site (15 acres) in the area in which St. Joseph II could be located. The site has an abundance of trade material and it was well fortified by natural and man made defences. The Fitzgerald site meets all the known requirements for St. Joseph II except its distance from Ste. Marie I. As will be shown below this site makes even more sense when the locations of St. Michel and St. Ignace I are considered.

St. Michel (Scanonaenrat) was a village large and important enough

to contain entirely one of the four original tribes (the Tohontaenrat) of the Huron confederacy. In 1639, Du Peron described it as being one league from St. Joseph II (J. R., Vol. 15:169), while Jérôme Lalemant wrote that the distance was one and one quarter leagues from St. Joseph II (J. R., Vol. 17:87) the distance from Ste. Marie I is given in the Relations of 1645 as three leagues (J. R., Vol. 30:95).

The maps are conflicting on the position of St. Michel. The Description places the village on the north shore of what apparently is Orr Lake, while the Corographie places it midway between Orr and Cranberry Lakes. Taking the position of St. Joseph II into account, and the distances given in the Relations, St. Michel could not have been further west than somewhere on the north shore of Orr Lake. This conclusion was also reached by Jones, who argued that this was one of the few instances where Du Creux's map did not agree with the Relations (Jones, 1908:25). Of the sites on the north shore of Orr Lake, the ones that best fit the description of St. Michel are on the east halves of lots 74 and 71, concession one, Medonte Township (Hunter, 1901:72).

A site that has been labelled as St. Michel is Hunter's No. 26, lot 68, concession one, Flos Township (Wright, 1966:76). The site was first described by Hunter (1898:42; 1906:36) and later by Kidd (1950). Kidd was of the opinion that the site was not in a good defendable position and is therefore perhaps early historic rather than late, when defence became more important (Kidd, 1950:165). Without any explanation Wright claims that this site " . . . should be St. Michel . . . " (Wright, 1966: 76). The trouble is that unless one examines all sites in the immediate area in some detail no absolute identifications can be made. For example,

within a mile of Kidd's Orr Lake site are at least five other sites that have never been investigated (Hunter, 1898:41-42; 1901:72-73; 1906:35-36).

Another village at times administered from St. Joseph II was St. Ignace I (Taenhatentaron). It was located two leagues from St. Joseph II (J. R., Vol. 17:99) roughly three leagues from Ste. Marie II via St. Jean (J. R., Vol. 23:143) and six leagues from St. Jean Baptiste (J. R., Vol. 27: 29). St. Jean in turn was "two good leagues" from Ste. Marie I (J. R., Vol. 19:179), making the distance between St. Ignace I and St. Jean about one league. Because of Iroquois harassment, this village was abandoned near the end of 1647 (J. R., Vol. 33:125).

The Corographie places St. Ignace I in its correct position, about two leagues from St. Joseph II, and three leagues from Ste. Marie I via St. Jean. Its distance from St. Jean Baptiste near the "Narrows" of Lake Couchiching is an exaggeration. This distance is no more than five leagues.

Of the sites in the general area described by these distances, Hunter's No. 40 (west half lot 19, concession 8, Medonte Township) seems a likely choice (hunter, 1901:87).

On the Corographie, (Map No. 14 a, b), a village named Arethsi was located just north of St. Ignace I. On the Description (Map No. 15 a, b), it appears as a synonym for St. Ignace I. Since the Huron name for St. Ignace I was Taenhatentaron, the most likely explanation is that Arethsi was so close to the larger village that the two villages were sometimes called by the same name.

The closest site to the one tentatively labelled St. Ignace I is Hunter's No. 40, half a mile to the north east on the east half of lot 20, concession 8, Medonte Township (Hunter, 1901:87).

St. Joachim is mentioned in the Relations of 1640 as a mission administered from St. Jean Baptiste and as a village ravaged by smallpox (J. R., Vol. 20:21, 41). Judging from the maps it was on the east bank of the Sturgeon River about half way between Arethsi and St. Jean.

St. Jean was tributary to Ste. Marie I along with Ste. Anne, St. Louis and St. Denis (J. R., Vol. 19:167). It was about three hours or "two good leagues" from Ste. Marie I (J. R., Vol. 19:179), and one league from St. Ignace I. On the maps it is the northernmost village on the east side of the Sturgeon River. Bressani's map (Map No. 13 b) places both St. Jean and St. Joachim on the west bank of the Coldwater River which must be a mistake judging from the written descriptions and other maps.

In the general area delimited by the maps and the Relations are six archaeological sites any of which could be St. Jean and St. Joachim. Since none of these sites have been excavated, Jones's choice for St. Jean is as good as any. He places St. Jean on the west half of lot 6, concession 10, Tay Township (Jones, 1908:94). St. Joachim may be the one described by Hunter on the east half of lot 2, concession 9, Tay Township, (Hunter, 1899:80).

St. Jean Baptiste was a large and populous village on the eastern frontier of Huronia among the Arendaronons or Rock Tribe. The mission was opened in 1639 and closed at about the end of 1647, when after many defeats its citizens dispersed, some to join the Seneca Iroquois and others to scatter among the remaining Huron villages. St. Jean Baptiste was located near a lakeshore (J. R., Vol. 20:31) and was reported as being twelve leagues from Ste. Marie I (J. R., Vol. 21:173). Its distance of six leagues from St. Ignace I has already been given. These descriptions are

so meager that were it not for the maps we might never have known where the village was. All four maps conclusively place St. Jean Baptiste near the "Narrows" of Lake Couchiching. This location is hopelessly at odds with the estimated distance from St. Marie I; and is closer to five rather than six leagues from St. Ignace I. This shows again that shorter distances were easier to estimate and more reliable than the longer ones.

On the north west quarter of lot 10, concession 3, Orillia Township, is a large site containing an abundance of French trade material (Hunter, 1903:116). There seems little doubt that this is the site of St. Jean Baptiste.

Until the discovery of the Description (Map No. 15 a, b) the Huron name for St. Jean Baptiste was unknown. On this map it is identified with Contarea which A. E. Jones and others had postulated to be a separate village in the vicinity of St. Jean Baptiste (Jones, 1908:73-84). Contarea is mentioned as early as 1636 and was a day's journey from Ihonatiria (J. R., Vol. 10:95). This journey would take a traveller to the eastern frontier of Huronia. Indeed, like St. Jean Baptiste, Contarea was a frontier village, " . . . the chief bulwark of the country . . . " and both had reputations for being " . . . impious villages . . . " and " . . . most rebellious against the truth of the faith . . . " (J. R., Vol. 26:175). St. Jean Baptiste, for example, had its first live convert in 1642, three years after the mission was opened; all other conversions had been among the dying, (J. R., Vol. 23:161). This live convert was later persecuted by his own villagers.

Jones tried to make the case that Contarea was destroyed in 1642 by an Iroquois raid, and since St. Jean Baptiste existed until 1647 they

must have been different villages (Jones, 1908:79-81). The Relations of 1642 are however quite specific that the reported destruction of Contarea was a false alarm (J. R., Vol. 23:105). In actual fact a village was destroyed in 1642 and all but "a score of persons" killed (J. R., Vol. 26: 175). This village is not named and Jones thought it was Contarea. In the Relations of 1655 we discover that a large number of villagers from Contarea had gone over to the Iroquois and were living among them. This was precisely the fate of the residents of St. Jean Baptiste who had joined the Iroquois voluntarily (J. R., Vol. 36:179).

While this evidence is somewhat circumstantial, the Description is quite specific in identifying St. Jean Baptiste with Contarea. An interesting point is Bressani's identification of Lake Couchiching with Lacus Contarea (the little lake). It would be logical that the village located next to it also bore that name.

Ste. Elizabeth was a mission formed in 1640 to minister to fugitive Algonquins who had been displaced by the Iroquois from the St. Lawrence valley (J. R., Vol. 27:37). Because of the roving nature of the Algonquin bands, this mission was rarely in the same place in succeeding years. At various times, Algonquins were camped one quarter of a league (J. R., Vol. 27:41) and one eighth of a league from St. Jean Baptiste. The maps all place Ste. Elizabeth near the northwestern end of Lake Couchiching, but since this was a roving mission that location must not be taken as absolute. Ste. Elizabeth may have had a different location every year, anywhere along the west shore of Lake Couchiching.

h) Ste. Marie I and the central area of Huronia.

Ste. Marie I was established in 1639 as a central base for the

missions to Huronia and as a local centre for one of the Huron tribes, the Ataronchronons or "Nation-beyond-the-silted-lake" (J. R., Vol. 19:167). It was finally abandoned and burned by the Jesuit Fathers on May 15, 1649, when Iroquois ravages in the surrounding area made it impossible for them to continue their work in Huronia. The mission was moved to Christian Island (Ste. Marie II) and from there, on June 10, 1650, with a few survivors, to Quebec. The locations for these two missions are the only ones of which we can be absolutely certain. In both cases extensive French fortifications have been found. Ste. Marie I is located on the north-eastern corner of Wye Lake on lot 16, concession 3, Tay Township. In 1940, the property was purchased by the Jesuits and in succeeding years the site has been scientifically excavated (Kidd, 1949 a); Jury, W. and E. M. Jury, 1965). The second Ste. Marie is located on the south-east shore of Christian Island and is at present undergoing archaelogical investigation (Carruthers, 1965).

St. Louis was one of the missions under the jurisdiction of Ste. Marie I. Like many of the other missions it was established in 1639. On March 17, 1649, a band of Iroquois took the village and put it to the torch. The resulting smoke, and some say also the flames, could be seen from Ste. Marie I (J. R., Vol. 34:127; and Vol. 39:249). The narrator of the Relations places the village one league distant from Ste. Marie I (J. R., Vol. 34:127), while Bressani says " . . . not more than two miles . . . " (J. R., Vol. 39:249). Both the Corographie and the Description place St. Louis one league east of Ste. Marie I on the lower reaches of the east bank of the Hog Creek. (Maps No. 14, 15).

Due to the topography east of Ste. Marie I and the fact that the

smoke and flames from the burning village could be seen from Ste. Marie I, St. Louis must have been precisely 95° east of north from Ste. Marie I. Proceeding in that direction the banks of the Hog Creek are exactly one league from Ste. Marie I. In this area are three archaeological sites, two of them half a mile east of the creek and one (the Newton site) directly on the west bank of the Hog Creek on the west half of lot 11, concession 6, Tay Township (Hunter, 1899:66-69, 74-75).

In 1951 and succeeding years, excavations were made by W. Jury at the Newton site (Jury, W. and E. M. Jury, 1955). This site has since been proclaimed as St. Louis and the evidence is fairly convincing, even though it is on the west side of the Hog Creek and not the east side as the maps indicate. According to Jury's excavations, the palisade demonstrates a strong French influence in that it was aligned with more or less straight sides and bastions at the corners (Jury, W. and E. M. Jury, 1965: 28). This type of fortification continues a Jesuit policy first attempted at La Conception (J. R., Vol. 10:53). An abundance of trade material was recovered and the village showed signs of having been completely burned to the ground. The troublesome conflict between the location of the Newton site and St. Louis on the maps is explained away by Jury, claiming that the site must have been moved sometime between the drawing of the maps and 1649. There is no evidence for such a move and the Newton site shows a long period of occupance. The most likely explanation is that the village locations on the maps simply indicate the general area in which a village lay, and not necessarily an absolute location. The other two sites in the area have not been examined archaeologically. If St. Louis lay on the east side of the Hog Creek, Hunter's No. 21 seems the most likely of the

two (Hunter, 1899:74-75). In the meantime Jury's evidence must stand; St. Louis has therefore been placed on the west half of lot 11, concession 6, Tay Township.

Along with St. Louis and St. Jean, three other missions, Ste. Anne, Kaotia and St. Denis were connected to Ste. Marie I. There are few written descriptions of these three villages; the only clues to their locations lie in the maps. St. Denis appears to have stood on the east side of Hog Creek, about a league and a quarter south of St. Louis and south-east of Ste. Marie I. Ste. Anne was closer to Ste. Marie I than any of the other missions (J. R., Vol. 19:169). Jones thought it was Kaotia, which is not mentioned in the Relations, but the Corographie shows that there was another village between Kaotia and Ste. Marie I. Most probably this was Ste. Anne.

Two sites in the probable vicinity of Ste. Anne are Hunter's No. 11 and 12 (Hunter, 1899:72). Of these No. 12 on the east half of lot 9, concession 3, Tay Township, seems the more likely. Hunter's No. 31 on the west half of lot 3, concession 5, Tay Township, corresponds to the position St. Denis occupies on the Corographie (Hunter, 1899:77). There are no other reported sites within a radius of one mile of this place. Kaotia is more problematical. Only one small site occurs within the probable area of Kaotia. This is Hunter's No. 17, on the west half of lot 4, concession 3, Tay Township (Hunter, 1899:73). As with all the other sites mentioned this is at best a rough guess based on tenuous data.

La Chaudiere (Du Creux's Caldaria) is another village not mentioned in the Relations. On the Corographie (Map No. 14 a, b) it is placed about three quarters of a league south of St. Denis and one and one quarter

leagues north of St. Michel on the east side of Hog Creek. On the Bressani map (Map No. 13 b) the village is given its Huron name, Tiondatsae. Both the French and the Huron names mean the same thing, namely a cauldron, kettle or any form resembling a kettle, i.e.: la chaudiere d'un volcan (Encyclopédie, 1753:254). (See also Appendix III, Tiondatsae). Judging from the Corographie the village stood on or near lot 2, concession 3, Tay Township, a small site described by Hunter (1899:78). Was this the village the Jesuits called Ekhiondastsaan? In spite of Jones's translation of the work (see Appendix III) a good case could be made that it means the same thing as Tiondatsae (Appendix III, Ekhiondastsaan). In view of the fact that the location of both villages is about half way between Andiatae and Teanaustae and their names are similar, it is assumed that the villages are identical.

The last village to be discussed here is the second St. Ignace. The location of this village is of more than cursory interest because it is here that Fathers Brébeuf and Gabriel Lalemant met their tragic deaths on March 16 and 17, 1649. Unfortunately a great deal of controversy surrounds the location of this village. It is therefore necessary to state the facts as precisely as they can be gleaned from the Relations before any interpretations can be made.

Sometime before the end of April, 1648,[1] the villagers of St. Ignace I were hunting at a place some two days journey from their village. Here they were attacked by a force of Seneca Iroquois, and after suffering

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1. The Relations state " . . . about the end of last winter . . ." (J. R., Vol. 33:83). This section of the Relations was dated April 16, 1648 (J. R., Vol. 33:59).

some losses fled back to their village (J. R., Vol. 33;83-85). A few days later they returned to the spot to bury their dead and collect the game that they had caught. On their way home they were set upon by a sizeable force of Mohawk Iroquois and again suffered considerable losses (J. R., Vol. 33:89). These defeats plus the prospect of an all out attack on the village " . . . compelled those who dwelt at Saint Ignace to come nearer to us (Ste. Marie I), and to shelter themselves better against the enemy" (J. R., ibid.). The fact that St. Ignace was moved is reinforced by another passage:

> When it became necessary to demolish the Church of Saint Ignace, and the whole village commenced to disperse - owing to the losses that had fallen upon them, one after another, and the alarms that threatened them with a final misfortune . . . (J. R., Vol. 33:167).

The exact date of the move is not given; perhaps it was sometime in the spring of 1648 to permit time to plant the crops at the new site (i.e. not later than the end of May). During July of 1648 St. Joseph II plus another village were destroyed (J. R., Vol. 34:87). This disaster probably led " . . . most of the people (of St. Ignace II) . . . " to abandon their village sometime before the beginning of the winter of 1648 (J. R., Vol. 34:125). On the 16th of March, 1649 a strong force of Iroquois took St. Ignace II by surprise (J. R., Vol. 34:124). Part of the village population was massacred, most were taken captive. In all about 400 people had been present in the village (J. R., Vol. 34:125). Three men escaped to the neighbouring village of St. Louis, one league away (J. R., ibid.). The distance of one league between St. Louis and St. Ignace II is confirmed by Bressani (J. R., Vol. 39:247) and Garnier

(quoted by Jones, 1908:109). St. Louis, as was mentioned earlier, lay one league due east of Ste. Marie I.

From a description of the attack on St. Ignace II we learn that the village was surrounded on three sides by a deep natural ditch and fortified by a strong palisade of pine posts some 15 to 16 feet in height (J. R., Vol. 34:124-125). According to Bressani the Jesuits had a hand in helping to fortify the place (J. R., Vol. 39:247) as they had done at La Conception and St. Louis (J. R., Vol. 10:53). From the way some of the prisoners escaped there was no village between St. Ignace II and St. Louis. Later in the Relations we also learn that an old woman escaped from St. Ignace II to St. Michel (J. R., Vol. 34:137). Since she went there expressly to warn the villagers it is doubtful if any villages existed between St. Ignace II and St. Michel.

From the foregoing statements three different interpretations have been drawn. Ridley believes that St. Ignace II never existed.[1] His reasoning is as follows: the villagers of St. Ignace I were harassed by the Iroquois in the early part of 1648 and most of them had abandoned the village by the end of that year thus accounting for the statement that only a small part of the original village population was present when the Iroquois attacked. In support of Ridley's view it must be stated that the authors of the Relations never state explicitly that the village of St. Ignace I had been moved, and they continue to use the same name until the destruction of the mission. Du Creux also makes no reference to either an actual or implied move (Du Creux, 1952, Vol. 2:504-505, 517-519).

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1. Letter to the author dated April 3, 1967, in reply to his paper on the distribution of Jesuit Missions (Heidenreich, 1966 a)).

The major obstacles to this theory are the distances given for St. Ignace in the early Relations (discussed earlier) and those given during the attack. In both cases the statements are consistent, showing therefore that St. Ignace must have been moved closer to Ste. Marie I sometime in 1648.

Assuming then that St. Ignace had indeed been moved closer to Ste. Marie I, in what direction did it lie from the latter? This brings us to the controversy between Jones's interpretation (Jones, 1908:104-128) and that of Jury and Fox (1947). Jones reasons that St. Ignace was moved in 1648 to within a league of St. Louis. This new location was in the uninhabited area on the west side of the Sturgeon River, south-east of St. Louis. He argues that the reason for the move was to escape the harassment of the Iroquois at the frontier and therefore had to be west of the Sturgeon River. One league due east of St. Louis would have put St. Ignace II on the same site as St. Jean which was impractical. It might also be added that a location south-east of St. Louis would bring St. Ignace II closer to St. Michel. Jones followed up this reasoning by making a thorough survey of all the archaeological sites within a league east to south of St. Louis. He finally decided on the Newton site on the east half of lot 4, concession 7, Tay Township. The physical setting, the archaeological surface finds and the distance to St. Louis all agree with what is known of St. Ignace II.

In 1932, two men, Arpin and Connon, decided to find St. Ignace II. With the help of a cyclometer they measured off three miles due east of St. Louis and landed on a site on the east halves of lots 5 and 6, concession 9, Tay Township (Fox, 1941, p. 72). Excavations were begun in

the late thirties by W. J. Wintemberg, who unfortunately died before he could complete his work. Wintemberg's excavations showed that this was a site which had been fortified in the usual Huron manner and only occupied for a short time. He also unearthed two typical Huron longhouses. He did not find any European trade items, but the farmer assured him that two axes and a knife blade had been found on the site. The knife blade was analyzed by the Royal Ontario Museum and evidently had been made in the 17th century (Fox, 1941, p. 75). Although some of the archaeologists were fairly certain that this was St. Ignace II, others felt that there was insufficient evidence to warrant a formal announcement.[1]

In 1946 the excavations were continued under W. Jury (Jury, W. and S. Fox, 1947). In the meantime however a monument had been placed on the site proclaiming it as St. Ignace II (Jury, W. and S. Fox, 1946: 56). In other words Jury's task was to prove what had already been decided was the site of Brébeuf's and Gabriel Lalemant's martyrdom. If the circumstances surrounding Jury's excavations, and his reputation as an amateur archaeologist can be overlooked,[2] his results are fairly impressive. What Jury claims he found, was a site that: 1) was only occupied for a short time; 2) showed an apparent European influence on the

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1. Wintemberg's doubts about the historical authenticity of the site rested on the fact that he could not find any trace of French trade material. Although he did not publish his misgivings he expresses them in his field notes (Canada National Museum, MSS. Files).

2. Notice for example the wide discrepancies between Kidd's work on Ste. Marie II (Kidd, 1949) and Jury's reconstruction (Jury, W. and E. M. Jury, 1965). Note especially the differences between the excavated floor plans (Kidd, op. cit.: 36) (Jury and Jury, op. cit., frontpiece).

construction of some of the houses; 3) contained a very large building which he calls a church; 4) had a palisade constructed in the typical Huron manner with a gate that was atypically Huron;[1] and 5) a site surrounded on three sides by a steep ravine (Jury, W. and S. Fox, 1946: 55-78).

If Jury had bothered to publish a detailed scientific report with maps and above all photographs, much controversy could have been avoided. As it is, several questions remain unanswered. 1) In spite of the fact that Jury and Fox claim that there are no other obvious candidates for St. Ignace II within a league of St. Louis, no specific reasons are given for the elimination of a host of proven sites. Jones's St. Ignace II was brushed aside without any explanation (Fox, 1941:71). 2) No reason is given why Jury and Fox thought that St. Ignace II should lie due east of St. Louis, on the east side of the Sturgeon River. As stated earlier, a location south-east of St. Louis is more sensible because it was away from the frontier and St. Jean. 3) No explanation is given why Jury's and Fox's St. Ignace II were not fortified in the manner of La Conception and St. Louis, i.e.: with straight line palisades and bastions. 4) Perhaps the most serious objection is the relative lack of any trade materials. One knife blade was found in the 1946 excavations; two axes and a knife blade were apparently found by the owner of the farm while plowing. Even though St. Ignace II had only been occupied for one year, there should have been

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1. In 1946 Jury claimed he had found a village with a typical Huron palisade following the brink of the slope surrounding the site (Jury, W. and S. Fox, 1947:66). This palisade is depicted on the site map as described in the text. In a later publication E. M. Jury claims that the palisades had straight lines with bastions at the corners (Jury, E. M., 1963:100).

a great deal more trade material, especially if the excavations were as thorough as the report claims. This should be particularly true for a village taken by storm. Fox and Jury claim that all trade goods were carried off by the Iroquois (Fox, 1941:75). There is a passage in the Relations stating that some of the spoils of the raid were carried off (J. R., Vol. 34:135), but this could hardly apply to every bead and scrap of copper. At St. Louis for example, nails had even been found which had been used to construct some of the buildings at that site. 5) The large building excavated by Jury, if the post patterns were correctly interpreted, does not necessarily represent a European structure such as a Church. In 1962 a similar house pattern was excavated at the Copeland site, which was definitely pre-contact (Channen and Clark, 1965:5-7).

In conclusion it must be said that some doubt can be thrown on Jury's St. Ignace II and that a final selection of the actual site must await detailed investigations of other sites in the area, in particular Jones's on the east half of lot 4, concession 7, Tay Township.

4. The Distribution of Archaeological Sites in the Delimitation of Huronia.

a) Introduction

Since this thesis is only concerned with the period after 1600, it is safe to assume that Huronia can be delimited through the distribution of European trade materials.

The Hurons probably started to receive French trade goods sometime in the last half of the sixteenth century. These were obtained from the Algonquins who had begun trading with French fishermen and merchants in the Tadoussac area. In 1603, for example, Champlain relates that French goods were being passed on to "the good Iroquois" (Hurons) by the

Algonquins (Champlain, Vol. 1:164). There is no evidence to suggest that the Hurons themselves came to trade with the French before 1611. Champlain writes that he met his first Hurons in 1609, when the latter came to St. Eloi in Quebec to help the Algonquins and Champlain in the celebrated raid on the Mohawks (Champlain, Vol. 2:67-71). Judging from Champlain's descriptions, these Hurons had never seen white men before. It is interesting to note that these Hurons were not interested in trade. As a matter of fact, a Huron contingent specifically interested in trade did not come to the French until June 13, 1611 (Champlain, Vol. ?:186). These Hurons were from the Arendaronon Tribe, and in the Relations we learn that because they were the first to make the Huron-French contact it was to them that the French trade belonged under Huron law (J. R., Vol. 20:19). Huron trade will be discussed more fully in Chapter VII; in the meantime suffice it to say that French trade goods probably did not arrive in large quantities in Huronia until sometime after 1610. The distribution of these goods can therefore be used as a means of delimiting historic Huronia.

If archaeological criteria other than trade goods are used to delimit historic Huronia, the problem becomes very difficult. House patterns, projectile points, village sizes, pipe and pottery types all changed over time, but only slowly. Even if all the elements that constitute a historic site are known it would still be impossible to delimit the occupied area because of the present lack of a representative areal sample. Such a study is possible, but would entail an enormous amount of work that a whole generation of archaeologists could not accomplish. Pottery typing according to the methods and time scales set down by MacNeish

(1952), Emerson (1956) and Wright (1966) can be used to give a rough date to a site and determine its cultural affiliations, but is not exact enough to give specific dates to sites within the contact period.

Much the same can be said for radiocarbon dating. In many respects this is at present a somewhat overrated method for dating materials less than 1000 years old. For archaeological deposits dating the 16th or 17th century the radiocarbon dates could be out by as much as 100 years (Garrad, 1968:10; Stuiver and Suess, 1967:534-540). Radiocarbon methods are constantly being refined, but until the high cost of processing a sample has been reduced, the method is of only limited value for any large scale work.

A method that shows great promise for dating contact sites is the typing of European trade goods. The type and quality of almost all trade materials changed over time; this is particularly true for beads (Quimby, 1966:81-90). At the moment rough time scales for trade materials have been set up, but these need a great deal of refinement. Such refinement is possible and awaits competent researchers.

Of all the areas in Ontario, Simcoe County is archaeologically the best known. This is largely due to the work of A. F. Hunter (1898; 1899; 1901; 1902; 1903; 1906) who made extensive site surveys throughout the area. Hammond (1904), Jones 1908) and more recently Ridley (1947; 1966) have added to and corrected some of Hunter's work. At present the task of site surveying is being put on a systematic basis by the Ontario Archaeological Society.

About the turn of the last century, A. F. Hunter travelled the concession roads of Simcoe County asking farmers if they had found any

Indian remains. Any reported finds were listed in a catalogue by township, concession and lot, accompanied by a short description of the finds. When a township was completed the results were published with a sketch map. In many cases, but not all, Hunter examined the site in the field to determine the accuracy of the farmers' statements. Hunter's records are particularly good for Oro, Medont, Tay, Orillia, Flos and Vespra Townships. Large portions of Tiny Township were not surveyed by Hunter because they were not being farmed. This is particularly true in the sandy areas of the northern parts of the Penetang Peninsula. His notes on Innisfil Township were never published, but were used in a paper by R. E. Popham (1950).

Personal experience has shown that Hunter's notes must not be considered absolutely accurate or complete. Some sites have been obliterated over the last sixty years, new ones have been found, other reported finds have simply been mistakes. In spite of these drawbacks Hunter's site records do provide a good general overall picture of the distribution of Indian sites.

To supplement Hunter's notes, a search was made through the files of the National Museum of Canada, Ottawa (Canada National Museum, MSS. Files). These files have yielded a great deal of information on actual sites visited by the archaeologists of the museum, letters sent to the museum of reported finds by farmers and lists of artifacts in the possession of the museum from Simcoe County. All records are catalogued by township, lot and concession.

Enquiries were made at the Archaeology Division of the Royal Ontario Museum, Toronto, but the author was told by its director Dr. W. A.

Kenyon that no additional material was available.

b) The distribution of archaeological sites in the delimitation of Huronia.

From the site records of Hunter and others it is possible to construct a map showing the distribution of archaeological sites in northern Simcoe County (Map No. 24). In order to increase the usefulness of the map an effort was made to separate those sites containing a great deal of trade materials from those containing a little and those containing none at all. Archaeologists generally term all sites containing trade material as "contact sites;" i.e.: sites that existed during the period of European-Indian contact. Earlier sites are called "pre-contact." If a site is known to have been visited by Europeans and this has been proven through excavations, this site is termed a "historic site;" i.e.: Ste. Marie I and II; St. Louis and Cahiagué. Sometimes the term "historic site" is used to describe all sites belonging to the "historic period;" i.e.: 1615-1650. Due to the difficulty of establishing absolute chronologies for any of these sites this is a dangerous term. At best it should only be used for those sites containing a great deal of trade material or Jesuit religious trinkets such as crosses and finger rings. In this thesis all sites for which trade material has been reported are termed "contact sites." These are subdivided, where necessary, into early or late contact sites. The term "historic site" will be avoided.

Keeping the limitations of the archaeological descriptions in mind, several useful conclusions can be drawn from the map (Map No. 24).

The number of contact sites drops off sharply south of a line joining Cranberry, Orr and Bass Lakes, to the shore of Lake Simcoe near the Narrows of Lake Couchiching. A few early contact sites exist south

of this line, primarily towards the eastern end of the area. Towards the north-east there are no sites of any kind beyond the upland areas running in a concave line from Matchedash Bay to the north-western shore of Lake Couchiching.

Within the area occupied by the contact sites the northern portion of Tiny Township and the eastern parts of Medonte Township have fewer contact site records than the remainder of the area. In the case of Tiny Township this can be explained by the incompleteness of the archaeological record. Since there is mention of only three villages in the historical sources for all the land lying between the Coldwater River and the "Narrows" of Lake Couchiching, this area may have been largely empty during the late contact period.

It is possible therefore, to delimit Huronia during the contact period along fairly sharply defined lines which, as will be shown in the next section of this chapter, are not too different from Huronia as delimited by the villages mentioned in the historical sources.

5. The Reconstruction of the Occupied Area: A Summary

On the basis of the foregoing discussion, Huronia can be delimited at least for the Jesuit period.

From 1634 to 1647, the southern frontier of Huronia lay along a line from just north of Spratt Point through Cranberry, Orr and Bass Lakes to the "Narrows" between Lake Couchiching and Lake Simcoe (Map No. 25). The missions of La Conception (Ossossane), St. Michel (Scanonaenrat), St. Joseph II (Teanaustaye) and St. Jean Baptiste (Contarea) were all along the southern frontier. No known villages existed south of that line. At least one village may have been outside the south-eastern frontier. This

nameless village was destroyed near St. Jean Baptiste (Contarea) in June, 1642 (J. R., Vol. 26:175) at the same time when the larger village was threatened (J. R., Vol. 23:105).[1]

The north-eastern frontier stretched from Matchedash Bay to Lake Couchiching along the margins of the arable soils. Cahiagué, which was abandoned sometime before 1623, was situated on this frontier. The rest of Huronia was surrounded by the waters of Georgian and Nottawasaga Bays. In total Huronia covered some 340 square miles.

Before 1634 the situation was probably little different (Map No. 25). In the south-western part of Huronia the frontier may have extended a few miles further south to account for Sagard's location of Tequenonquiaye later (Ossossane). In the east there were probably more villages during Champlain's time than during the Jesuit period. The Jesuits record St. Jean Baptiste and one other village; Champlain mentioned Cahiagué and " . . . neighbouring villages . . . " (Champlain, Vol. 3:56). Therefore the scattering of early contact sites in north-eastern Oro and South Orillia Townships, probably date from Champlain's time or earlier. Neither Champlain, Sagard or the Jesuits mention any occurrences of refugee movements from areas immediately beyond the boundaries of Huronia. What references there are, relate to population movements prior to 1600, or to the disasters of the 1640's. That such occurrences would have been noted can be seen from Lalemant's description of the arrival at Ossossane of a group of refugee Wenrôh's who had been displaced from the Neutral-Iroquois frontier (J. R., Vol. 17:25-31).

In 1647 Iroquois incursions began in earnest. Towards the close of that year St. Jean Baptiste was abandoned. Its villagers dispersed

1. W.C. Noble (private communication) feels that this village was located on the south shore of Bass Lake.

to other Huron villages and the Iroquois. This probably meant that by the beginning of 1648 all lands east of the Coldwater River were empty of population (Map No. 25). St. Joseph II, now on the south-eastern frontier, was the next village to be attacked. It fell in July, 1648 accompanied by a neighbouring village which remained nameless (J. R., Vol. 34: 87) (Map No. 25). Either shortly before, or shortly after the fall of St. Joseph II, St. Ignace I was abandoned. Never varying their direction of attack, the Iroquois continued to roll up the eastern frontier. In the spring of 1649 they destroyed 'two or three frontier villages" in the vicinity of St. Ignace II (J. R., Vol. 39:247) and then the main missions of St. Ignace II and St. Louis. The "two or three frontier villages" were probably St. Jean, St. Joachim and Arethsi because the frontier between St. Michel and Ossossane had remained untouched (Map No. 25). After taking St. Ignace II and St. Louis the Iroquois withdrew. When news of these disasters reached the rest of Huronia the remaining population scattered. According to Raguenau fifteen villages remained;[1] these were burned by their inhabitants before they fled to allied tribes (J. R., Vol. 34:197). By April, 1649 the only viable place of habitation left in Huronia was Ste. Marie I. On May 15th, a joint decision between the Jesuits and remaining Huron chiefs was made to remove Ste. Marie I and all Hurons who were still in the country to Christian Island. By the close of 1649 the only area of Huronia still occupied was Christian Island. In June, 1650 the few who survived the winter withdrew to Quebec leaving Huronia entirely deserted.

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1. In all likelihood these were the villages of the Attignaouantan.

In summary then, both the historical descriptions and the distribution of contact sites agree on the limits of the occupied area of 17th century Huronia. In a later chapter it will be shown that it is doubtful whether Huronia existed as a territorial entity much before that time. In any case, the area of land termed le pays des Hurons or Huronia in the 17th century can be fairly rigorously delimited (Map No. 25). It is suggested here that the term Huronia be restricted in its definition and usage to that part of Simcoe County inhabited by the Hurons after 1610.

Chapter II

The Physical Geography of Huronia

Introduction

The purpose of this chapter is to outline the physical geography of Huronia. This will be done by describing briefly the principal physical variables of climate, drainage conditions, soils and vegetation. Throughout the discussion an attempt will be made to determine the degree to which 19th and 20th century conditions were similar to those of the 17th century. Lastly the study area will be divided into physiographic regions.

At the outset it must be stated that it has not been the intention to write a complete physical geography of the area. An effort has been made to provide information that has a bearing on later chapters such as the discussions on the tribal areas and agriculture.

1. Appearance of the Area to Early Travellers

Champlain begins his description of Huronia by comparing it to the "Canadian Shield." In contrast to the areas to the north which ". . . is partly rugged and partly flat, uninhabited by savages, and slightly covered with trees including oaks . . ." (Champlain, Vol. 3:46), Huronia was a great change. Here the country was ". . . very fine, mostly cleared, with many hills and several streams, which make it an agreeable district . . ." (Champlain, ibid.). Huronia was ". . . very pleasant . . ." compared to the ". . . bad country . . ." bordering Georgian Bay; it was ". . . so very fine and fertile that it is a pleasure to travel about in it . . ." (Champlain, Vol. 3:47-48).

His observations regarding the local vegetation are quite good. After enumerating the most common trees he sums it all up by stating that Huronia contained ". . . the same varieties of trees that we have in our forests in France . . ." (Champlain, Vol. 3:51). While in the western part of Huronia he commented on ". . . many great plantations of fir trees . . ." (Champlain, ibid.); undoubtedly a reference to the pine barrens of western Tiny Township. In the same general area he described the soils as being ". . . a little sandy . . ." (Champlain, ibid.). His references to the fact that Huronia was ". . . for the most part cleared . . ." (Champlain, Vol. 3:46,122), are reinforced by a reference to the presence of ". . . good pastures in abundance . . ." (Champlain, Vol. 3:130). This probably refers to abandoned cornfields that have been colonized by grasses. Specific references to vegetation and climate will be discussed later in the chapter.

Sagard described Huronia as:

> . . . a well cleared country, pretty and pleasant, and crossed by streams which empty into the great lake. There is no ugly surface of great rocks and barren mountains such as one sees in many places in Canadian and Algonquin territory. The country is full of fine hills, open fields, very beautiful broad meadows bearing much excellent hay . . ." (Sagard: 90).

His references to the open state of Huronia are quite numerous. In two other descriptive passages he contrasts Huronia to the "Canadian Shield." After describing a quaking sedge mat, dense woods with a tangle of fallen and rotting trees he goes on to say:

> Then there are rocks and stones and other obstacles which add to the toil of the trail, besides the innumerable mosquitoes which incessantly waged most cruel and vexatious war upon us; if it had not been for my care in protecting my eyes by means of a piece of thin stuff which I had covering my face, these fierce creatures would have blinded me many times, as I had been warned. . . . Among the Hurons, because their country is open

> and settled, there are not so many mosquitoes, except in the woods and places where there is no wind during the great heat of summer. (Sagard: 63).

In a later passage he states that:

> Of mosquitoes and maringouins, which here we call midges and the Hurons Yachiey, there are not many in the fields, because their district is open country and mostly cleared. (Sagard: 221).

Sagard devotes four entire chapters to the birds, land animals, fish and vegetation of Huronia. These will be discussed in greater detail later, however they confirm what Champlain said, namely that Huronia was in some respects very similar to France.

The descriptions of the Jesuits, while not quite as explicit as those of Sagard and Champlain, tend to confirm the impressions already gained. Huronia is described as being: ". . . tolerably level, with many meadows, many lakes . . . etc." (J. R. Vol. 15:153). Brébeuf writes that it has ". . . a fine situation, the greater part of it consisting of plains" (J. R., Vol. 8:115). The fauna was apparently very much like that of France (J. R., Vol. 15:153). Several Jesuits made references to the sandy soils of Huronia: ". . . the soil of this country is quite sandy . . ." (J. R., Vol. 8:115); and again:

> . . . the soil of the Huron country and adjacent regions being sandy, if three days pass without its being watered with rain from Heaven, everything begins to fade and hang its head. (J. R. Vol. 10:35).

Bressani described the soil as ". . . poor, but not sterile . . ." (J. R., Vol. 38:241). The descriptions of the vegetation and climate will be discussed later.

In general then, the early travellers described a country that reminded them somewhat of France. It had a similar flora and fauna, and

was for the most part cleared of forest. None of the early descriptions have anything good to say about the "Shield." All agree that it is a "bad country" in contrast to Huronia.

2. Climate

In this section the salient features of the climate of Huronia will be described, and an effort made to compare it to the climate as depicted in the original source material. The analysis of the present climate will be based on the statistics published by the Ontario Department of Agriculture (1951 to 1960) for the town of Orillia; the work by Putnam and Chapman (1938), and the report on the Climates of Canada for Agriculture prepared by Chapman and Brown (1966) for ARDA.

In eastern Canada a daily mean temperature of 42°F is usually taken as the beginning of the growing season, and 38°F as the end (Chapman and Brown, 1966: 6). In Huronia the growing season usually begins sometime between April 15th and April 20th, ending about October 28th to October 31st.[1] Thus the length of the growing season is about 195 days. Killing frosts can still be expected after mid April and before the end of October. Since the length of the frost free period is of vital importance to corn growing the average beginning and end of the frost free season have been calculated. The last frosts in spring can be expected about May 16th to May 20th and the first in the fall about September 30th to October 5th. The frost free period is therefore about 135 to 142 days. Since the Indian corn varieties matured in about 120 days, both the length

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1. A table of climatic statistics is presented in Appendix V.

of growing season and the frost free period are adequate for corn growing.[1]

As can be expected, temperature data in the ethnohistorical sources are meager. In 1615 Champlain recorded the first frost on September 10th while just east of Lake Simcoe (Champlain, Vol. 3:58). This is 17 days earlier than the average beginning of frost for that area. By October 18th of the same year he experienced his first snowfall (Champlain, Vol. 3:79). Today the first snowfall cannot be expected for at least another month. According to Champlain, winter lasted about four months, from November to April ". . . when the trees begin to send out their sap and to show their buds . . ." (Champlain, Vol. 3:114,168).[2] Sagard stated that it began to get "rather cold" in November (Sagard: 185). The Jesuits put the length of winter at five to six months (J. R., Vol. 10:93,101), and summer three to four months (J. R., Vol. 10:91). In 1634 the first snow was recorded in the beginning of December (J. R., Vol. 8:143).

Another way of approaching the problem is to examine when certain activities took place. Wood was gathered before there were any leaves on the trees. This was done towards the end of March and the beginning of April (Champlain, Vol. 3:156; Sagard: 94). These dates agree fairly well with the present beginning of the growing season in mid April. Unfortunately there are no specific references when corn planting began. By the beginning of June it was already in the ground (J. R., Vol. 10:51;

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1. Will and Hyde give as ripening dates for Iroquois corns 100 to 132 days depending on the variety. (Will and Hyde, 1917: 314-315). Sagard (: 104) stated that corn matured in three to four months; Pehr Kalm (1935: 104) estimated a maturing date of three months.

2. In another passage he says "from the month of December to the end of March . . . when the snow has melted" (Champlain, Vol. 3:164).

Vol. 35:83-84), and by early August it was "far advanced" (Champlain, Vol. 3:46). Apparently it was planted early in spring and on occasions destroyed by late frosts (J. R., Vol. 8:99). Among the Hurons and Abenaki at Quebec, corn was planted at the beginning of June ". . . or when the snow is almost wholly melted . . ." and harvested at the end of August (J. R., Vol. 67:142-143). Sagard and others were under the impression that spring and summer began a bit earlier in Huronia than in Quebec (Sagard: 104). The impression that one gathers from these few bits of evidence is that corn was planted sometime between the middle and end of May and harvested towards the end of August or early September. This fits very well with the present seasonal rythm. Corn is still planted at the end of May and harvested at the end of August.

Huronia has an average annual rainfall of about 30 to 35 inches, which is fairly evenly distributed throughout the year. About 14 to 16 inches fall during the May to September growing season. According to Chapman and Brown the area covered by Huronia has a potential evapotranspiration of 23 inches, while the average annual actual evaportranspiration is about 20 inches (Chapman and Brown, 1966, Figures 17 and 20). Huronia has therefore a slight water deficiency of about three inches during the late summer. Such a low rate of water deficiency is not very serious in an area with water retentive soils. In Huronia, on some of the coarse sands cultivated by the Hurons one could expect periodic droughts. Putnam and Chapman calculated the frequency of summer (May to September) droughts for Ontario (Putnam and Chapman, 1938:428-430). Drought was calculated on the basis of one inch of rainfall or less per month. On that basis Huronia has a drought frequency of eight to ten per cent or roughly one

serious summer drought every ten years. If 1.5 inches or less are taken as conditions of drought, which might be more realistic on coarse textured soils, droughts could occur two or three times every ten years.

Because the Hurons were almost completely reliant on agriculture, droughts were one of the major contributors to famine. Because such famines disrupted the mission activities and the Jesuits were frequently accused of being responsible for them, careful note was made in the Relations whenever such an event occurred. Summer droughts occurred in the following years:

1628 (J. R., Vol. 10:43) - "The drought was very great everywhere, but particularly so in our village (Ihonatiria) and its neighbourhood (Penetang Peninsula)."

1635 (J. R., Vol. 10:35-43) - This was the worst drought recorded by the Jesuits. No rain from the end of March to June 13th. After that it rained with a few intervals until mid July. A second drought lasted from mid July to the end of the month.

1638 (J. R., Vol. 17:135-137) - The drought that year affected not only Huronia, but was particularly severe among the Neutrals. The latter sold some of their children to obtain corn. (J. R., Vol. 15:157).

1643 (J. R., Vol. 27:65) - A severe famine existed among the Hurons and among the tribes ". . . for a hundred leagues around." Indian corn was extremely scarce. The famine was primarily due to the disruption of agricultural activities as a result of Iroquois incursions the previous year. While these raids might have been primarily responsible for the famine in Huronia, they could hardly account for the famines in areas ". . . a hundred leagues around." It is therefore assumed that conditions

of drought also existed.

1649 (J. R., Vol. 35:85) - This year and the next were disastrous not only because of the defeats suffered by the Hurons, but also because the summer drought of 1649 killed the corn sown on Christian Island. Not enough rain fell that year to save the crop.

Since the Jesuit record in Huronia extends from 1628 to 1650,[1] we have mention of five droughts in twenty-two years, or roughly two every ten years. As stated earlier, this is approximately what one would expect in this century taking 1.5 inches of rain per month on a coarse-textured soil as conducive to drought.

It is interesting to note that in Western Europe during the period, winters were slightly more severe and summers slightly moister than at present (Lamb, 1963:142). Whether European observations can be transferred to North America, is questionable.

Bryson and Wendland (1967:296) postulate a cool Neo-Boreal phase (1550-1880 A.D.) in central North America somewhat similar to Lamb's European phases. During this period summer temperatures are considered to be cooler than at present, and autumns about $4^{\circ}F$ colder. Griffin (1961:711) and Cleland (1966:35) concur with these observations on the basis of archaeological data, however Griffin points out that these cooler conditions did not seem to have existed in Southern Ontario. His explanation for this anomaly is the modifying effect of the Great Lakes on the lands lying adjacent to their eastern and south-eastern shores.

In the absence of conflicting data and the observations presented

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1. Except 1630-1633 when New France was in British hands.

in this chapter, one can best conclude that the climate of Huronia was very similar to the present. Winters may have been slightly longer with a slightly shorter frost free season; but not short enough to hinder agricultural activities appreciably. These observations will be strengthened in the chapter on vegetation.

3. The Natural Vegetation of Huronia

a) The main species of the macro vegetation

Huronia lies in the "Huron-Ontario" section of the "Great Lakes-St. Lawrence Forest Region" (Rowe, 1959:44-45). The dominant associations throughout the area are maple (Acer saccharum), beech (Fagus grandifolia) and maple, beech, basswood (Tilia americana). In some areas beech drops out of the association and is replaced by elm (Ulmus americana) and hemlock (Tsuga canadensis). White pine (Pinus strobus) and hemlock are found throughout the area and may be considered secondary dominants. On very droughty soils oak (Quercus rubra, Q. alba, Q. macrocarpa) and white pine are prevalent almost to the exclusion of all the other species. Elm (Ulmus americana), poplar (Populus grandidentata, P. balsamifera, P. tremuloides), Ash (Fraxinus americana, F. pennsylvanica) and balsam fir (Abies balsamea) are also fairly common throughout Huronia.

In poorly drained areas or swamps, the most common species are cedar (Thuja occidentalis), alder (Alnus rugosa) and in open areas willow (Salix sp.) and dogwood (Cornus sp.). Tamarak (Larix laricina) is scattered throughout most of the swamps.

Among the fruit bearing trees butternut (Juglans cinerea), black cherry (Prunus serotina), pin or red cherry (Prunus pennsylvanica) and choke cherry (Prunus virginiana), are fairly common. Still found in

Huronia, but at their northern limit, are the wild plum (Prunus nigra) and bitternut hickory (Carya cordiformis).

Two other fairly common species that the Indians made use of, occurring particularly in dry open areas, are staghorn sumac (Rhus typhina) and the red juniper (Juniperus virginiana).

b) Species mentioned in the historical sources

Practically all the above species were mentioned by the early travellers in Huronia. In order to determine to what extent the species composition of the natural vegetation of Huronia in the 17th century was similar to today, each species mentioned will be examined separately.

Of the common broadleaved trees, Champlain mentioned oak, elm and beech (Champlain, Vol. 3:51). Sagard listed oak, elm and maple (Sagard: 91, 240). Of the evergreens Champlain mentioned fir trees (white pine?) (Champlain, Vol. 3:51) and Sagard the spruce, cedar and yew (Sagard:91, 240). The fruit bearing trees and shrubs were singled out for special mention. Champlain (Vol. 3:50,60), Sagard (: 83, 239) and Brébeuf (J. R., Vol. 10:103) all list the wild grape (Vitis Labrusa, V. aestivalis, V. riparia or V. vulpina). Of the varieties present in Huronia the likeliest to have been used is Vitis Labrusca, which has the largest fruit (Gleason, 1958, Vol. 2:517-520; Soper, 1949:56). The general consensus of opinion was that these grapes were too sour to eat, but could be used to make wine (Sagard:83). Strawberries (Fragaria virginiana), raspberries (Rubus sp.) and blackberries (Rubus allegheniensis) were all common (J. R., Vol. 10: 103; Sagard: 72,237; Champlain, Vol. 3:50). Of the cherries Champlain mentioned two varieties, the "small cherry" (Prunus pennsylvanica) and the "wild cherry" (Prunus serotina) (Champlain, Vol. 3:51). Both Sagard

(: 238) and Champlain (Vol. 3:50) mentioned the wild plum (Prunus nigra). Sagard thought this fruit almost inedible until it had been touched by frost. Blueberries (Vaccinium sp.) and cranberries (Vaccinium macrocarpon or V Oxycoccus) are both mentioned (Sagard: 237-238). From Sagard's description of the size of the cranberries the variety he saw is most likely to have been Vaccinium macrocarpon. Champlain (Vol. 3:50) mentioned "small wild apples." Sagard (: 238) identifies these as the hawthorn (Crataegus sp.). Nut bearing trees were listed by all the early writers. From Sagard's description these trees could only be the butternut (Sagard: 238). Chestnuts (Castanea dentata) were not found in Huronia (Sagard, ibid.). Hazelnuts (Corylus cornuta) occurred, but were very small (Sagard, ibid.). Currants (Ribes sp.), mulberries (Morus rubra) and the service berry (Amelanchier canadensis) were all common and considered to be good eating (Sagard, ibid.; J. R., Vol. 13:13).

Except for a few references by Sagard, there is little mention of any plants beyond the common trees and shrubs. Champlain spends some time describing the mayapple (Podophyllum peltatum) which he regarded as "very good, almost like figs" (Champlain, Vol. 3:50-51). Sagard describes leeks (Allium tricoccum), purslane (Portulaca oleracea) the Jerusalem artichoke (Helianthus tuberosus) and aromatic wintergreen (Gaultheria procumbens) (Sagard: 237-239). The mention of purslane is interesting because it is generally regarded as a weed that moved into Canada with European settlement (Soper, 1949:35, IV). Two species singled out for special mention by Sagard (: 240), were the plants used by the Hurons for making rope. One he described as a tree from which they used the bark. This could either be basswood (Tilia americana) or leatherwood (Dirca palustris).

Both are common in Huronia. The other plant grew in "marshy spots" and was used to make hemp. This could be indian hemp (Apocynum cannabium) or swamp milkweed (Asclepias incarnata). The flowers which impressed Sagard the most were the pitcher plant (Sarracenia purpurea) and the wood lily (Lilium philadelphicum). Orange lilies (Lilium canadense) and tiger lilies (Lilium tigrinum) he noted quite rightly, were absent from Huronia (Sagard: 241).

There are a few scattered references to other plants, but because of the brevity of the descriptions, identifications are not possible. Of the plants mentioned and identified above, there is not one that does not grow in Huronia today. Some have become rare since the area was settled by Europeans (such as the wood lily), but all have been abundantly recorded during the last 100 years. If vegetation can be used as a rough indicator of climate, one can safely conclude that on the basis of the species mentioned by the early writers the vegetation and climate of Huronia was very much as it is today.

c) The original forest of Huronia

Between 1811 and 1822 Huronia was surveyed for European settlement. Because the natural vegetation growing along the survey lines had to be described in some detail, the original field notes of the surveyors allow one to make a fairly accurate map of the pre-settlement vegetation of the area.[1] Without the survey reports such a reconstruction would be impossible or at best a very rough guess. Relicts of the original forest in Huronia are rare and tell us almost nothing of the species distribution

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1. See Bibliography: Ontario Department of Lands and Forests, MSS., Book Nos. 405, 526, 560, 572, 578, 652, 665, 703, 753.

patterns. The area has been cut over so much that for example none of the large basswood trees or the vast stretches of pine barrens are left. The same is true of drainage conditions before and after settlement. Some of the creeks and springs present in 1820 are gone today, as well as lakes such as Cranberry, Lalligan and the two nameless ones on lots 7 and 15, concessions 18 and 17, Tiny Township. In some cases old drainage channels have been obliterated, in other cases water has been diverted and all over the area swamps have been drained and the water table has dropped.

In terms of the Indian occupancy it is particularly relevant to delimit the extent of the swamps and poorly drained areas because these were not used for agriculture. The height of the water table was of some importance to the raising of corn, particularly during periods of growth when the rains failed. The presence of water at a village was of course absolutely essential. From the surveyors' notes one can delimit the swamp areas with some accuracy. The original drainage pattern can be outlined at least in its rough form, and the presence or absence of some tree species will give a fair indicator to what degree water was available for plant growth other than rain water. Since the Hurons showed a marked preference in their selection of some tree species for building materials, a map of the forest composition of the area would show to what an extent these species could have been present in specific areas.

From the surveyors' records a map was prepared showing the pre-settlement macro vegetation of Huronia and adjacent areas (Map No. 26). Since the species mentioned by the surveyors are the same as the species in the area today, judging from site surveys in farm woodlots, it is assumed that the 1820 conditions mirror those of the early 17th century.

The similarity between the present species and those of the early 17th century was noted earlier in this chapter.

One thing the survey records show very clearly is that a closed forest extended over the whole of Huronia during the early 19th century. The 170 years between the abandonment of Huronia by the Indians and the European survey of the area were therefore sufficient to allow a forest to become reestablished in even the driest sections. This shows that while periodic droughts once or twice every ten years may be disastrous for corn growth, they will not hinder the reestablishment of a macro-vegetation given enough time. Abandoned farmland in the area today shows that grasses colonize these fields first, followed by trees some thirty to forty years later depending on the soil and moisture conditions. The forest conditions shown on Map No. 26 may therefore represent a stand which is at least on the better drained areas, some 130 to 140 years old. Since the Hurons created changes in the original forest through selective cutting and large scale clearing on preferred agricultural soils, the forest during Huron times was by no means the mature forest as depicted on Map No. 26. In all likelihood young stands of the dominant species and grasslands (Champlain's and Sagard's "meadows" and "fields") occupied the areas of preferred soils which had been repeatedly cleared and abandoned in past times. Following this line of reasoning, it is quite likely that few of the tree stands in the preferred agricultural areas were allowed to mature beyond ten or fifteen years. The Hurons had to occupy forested land not only because the forest revitalized the soil and they did not have the tools to cope with grasslands, but also because they needed wood for burning and village construction. At Cahiagué alone,

Dr. J. N. Emerson estimated that some 24,000 logs were used just to construct the palisade (Emerson, J. N. and W. Russell, 1965: 5). Since none of these logs were over twelve inches in diameter, their collection would be an impossibility in a mature forest stand. Consequently, in order to obtain suitable building materials areas of young forest stands were probably preferred. Such stands could probably come into existence some thirty to sixty years after an exhausted plot of land has been abandoned.

In summary then, the well drained uplands consisting primarily of sandy soils, which were the preferred agricultural areas, probably supported immature stands of maple, basswood, beech, elm, hemlock and pine. The poorly drained, low lying areas probably supported heavier stands much like the conditions depicted on Map No. 26. Specific areas will be discussed in the section of physiographic regions.

4. Drainage and Soils

a) The height of the water table in 17th century Huronia

A question of some importance in reconstructing the physical geography of Huronia is to what extent the level of Georgian Bay has changed from the 17th century. A. F. Hunter (1911:5-7) and K. Kidd (1949:84-86) were both of the opinion that the water level in Huron times was considerably higher. Hunter estimated 12 feet and Kidd 7 to 10 feet. Jury (Jury W. and E. M. Jury, 1965:62) claimed that on the basis of his excavations at Ste. Marie I he could prove that the water levels were the same.

Hunter based his estimate on the following observations:

1) The level of the trenches at Ste Marie I were about 12 feet above the level of the Wye River in 1911. Since they once held water,

the level of the Wye, and therefore Georgian Bay, must have been twelve feet higher during the Huron times.

2) Ste. Marie II stands at present on a four foot high abandoned beach line, some 75 feet from the present shore of Georgian Bay and 10-12 feet above the present lake level. Hunter then simply assumed that the level of Georgian Bay once stood at that four foot high beach line. He reasoned that because Ste. Marie I was at the water's edge, so was Ste. Marie II.

3) Du Creux's map depicts a deeply indented shoreline which makes a great deal of sense if one allows a 12 foot rise in the water level.

4) Bayfield's survey of Georgian Bay in 1820 shows that the water level at that time was four feet six inches higher than in 1911. This drop of four feet in the nineteenth century is confirmed by farmers living along the shore of Georgian Bay.

Kidd based his estimate on his excavations at Ste. Marie I. In digging cross sections through the moat system he found water laid sands in the bottom of the moat. In order to have any water in the moat system the Wye River would have had to be seven feet higher than in 1941, when it stood at 578 feet A. M. S. L. A rise of ten feet would have flooded the moat to a depth of three feet and brought the water table to within one foot of the surface.

In 1949 Jury discovered an aqueduct which had carried spring water from the hill north east of Ste. Marie I into the moat system. According to Jury it was now unnecessary to postulate a higher lake level; the moat could have been kept full of water from the aqueduct. Since the moat had an outlet at the Wye River " . . . we immediately envisioned a complete

canal system controlled by locks" (Jury, W. and E. M. Jury, 1965:62). Jury's canal system with its three liftlocks has run into heavy criticism. As a matter of fact no one but Jury seems to believe that it ever existed. The best review of the whole controversy is by Father W. A. Russell, a Jesuit Priest and archaeologist (Russell, 1965). As at Jury's supposed site of St. Ignace II, his archaeology and documentation has been so slipshod and inadequate that one simply cannot accept his evidence regarding the lift locks. Besides the lack of evidence the whole "lift lock theory" suffers due to its lack of logic. A system of three locks just in order to bring a loaded canoe twenty feet from the Wye River into Ste. Marie is a patent absurdity. Russell's theory that the aqueduct and moat system were used to drive a small mill is not only more logical, but also fits the evidence better.

Jury's major contribution is the discovery of the aqueduct which fed the moat system and the excavation of the timbers lining the retaining wall near the outlet of the system at the Wye River (Jury, W. and E. M. Jury, 1965, plate XVI). The charred tops of the timbers of the retaining wall as well as the burned remains of the feature described by Jury as "the first lock," were found eight feet below the top of the river bank. This means that the 1649 level of the Wye River stood eight feet below the present banks. Neither Kidd's nor Jury's excavations show any signs of river deposition or erosion on the site itself; one must therefore assume that the top of the river bank has maintained its level since 1649, and the river flowed eight feet below it. Kidd's contour map

(Kidd, 1949:27)[1] shows that the banks of the Wye River are at 589 feet A. M. S. L., while the Wye is at 578 feet A. M. S. L. This would place the 1649 level of the Wye at 581 feet A. M. S. L., or three feet higher than it is today.

While Jury's burned posts seem to be conclusive evidence as to where the level of the Wye River stood in 1659, it still leaves some unanswered questions. The early records pertaining to the shore of Georgian Bay definitely show that the water levels were higher in the early 1800's than they are today. In 1838, the monthly mean water level in Lake Huron was 584.69 feet A. M. S. L. (Ontario Legislature, 1953:4 and plate No. 7: 42). Since that time it has declined steadily to about 578 to 580 feet A. M. S. L., and has never again reached the pre 1838 levels. These observations support Hunter's insistence that during the memory of the farmers in the area the water levels in the middle of the 19th century were about four feet higher than at the turn of the century.

On the basis of this evidence one can only conclude that the 1649 water levels stood at about 581 feet A. M. S. L.; that after the abandonment of Huronia in 1650 the water levels rose again to about 585 feet A. M. S. L., and that in the late 19th and 20th century they dropped again to about 578 feet A. M. S. L. The 1649 water level in Lake Huron was therefore about three feet higher than today and about the same amount lower than the water levels in the first half of the 19th century.

If the 1649 water level of Lake Huron stood somewhat higher than the level in 1941, the inland water table must also have been higher. As

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1. The map was prepared by the Ontario Department of Highways at one foot contour intervals.

will be shown later, there is no evidence that Hurons drained swamps or lakes or for that matter used any soils that were not well drained. One can therefore assume that the poorly drained areas within Huronia remained relatively unchanged well into the 19th century. This is supported by the presence of Cranberry and Lalligan Lakes on the Corographie (Map No. 14 a, b), both of which are drained today. The water table in the well drained upland areas is more difficult to establish. All the available evidence points to the fact that it too must have been somewhat higher than today. Because the Hurons needed water for cooking and drinking their villages were always adjacent to a water supply. Today many of these archaeological sites are beside dry or intermittent creek beds which must have held a steady water supply in Huron times. Undoubtedly the draining of the low land areas and the clearing of the well drained upland areas in the 19th and 20th century contributed to a general lowering of the water table throughout Huronia. Huron clearing of the sandy upland areas could have contributed to local lowerings of the water table in the 17th century, but since the poorly drained areas were not touched both the vegetation and the water table of the upland areas probably reestablished themselves more rapidly than they do today.

In summary then both the Vegetation Map (No. 26) and the Soils and Drainage Map No. 27) probably reflect 17th century drainage conditions fairly accurately. The two maps are not at a scale where every spring or creek can be noted, but in general one can say that the poorly drained areas were as extensive in the 17th century as they were in the early 19th century, and that surface waters were more abundant and the water table somewhat higher in Huron times than they are today. In the case of surface

waters and the water table the 19th century conditions probably reflect 17th century conditions more accurately than the present conditions.

b) Soils

In choosing soils for agriculture the Hurons seem to have been influenced by soil texture and drainage conditions. Eighty-seven per cent of the contact sites in Huronia are located on well drained soils ranging in texture from sands to sandy loams (Map No. 27; Table No. 1). These soils comprise 65.81% of Huronia covering some 224 square miles. Because these were by far the most important soils to the Hurons, they will be examined in some detail. Information on the other soil types can be found in the Simcoe County Soil Survey (Canada Department of Agriculture, 1962).

Two major soil series comprise virtually all the well drained sands, loamy sands and sandy loams of Huronia; these are the Tioga and Vasey series (Table No. 2 and 3). According to the Simcoe County Soil Survey the Tioga series is a podzol developed on sands. The Tioga series includes soils of loamy sand, sandy loam and fine sandy loam textures. Generally the fine earth (< 2mm) fraction contains more than 80% sand, and usually over 90% sand. Stone free calcareous outwash sands form the parent material on which the Tioga soils are developed. Removal of the plant cover reveals a structureless soil which is most vulnerable to erosion, particularly on steep slopes. Characteristically the Tioga soils have a podzol profile, usually with clay illuviation into a B_t horizon. Throughout most of the profile the percentage of clay is minimal (less than 5%) but may rise to 10% in a B_t horizon. These soils are low in natural fertility with a small cation exchange capacity in the range of 0.7 to 7.0 m. e./100

TABLE NO. 1

The Relation of Contact Sites to Soil Texture and Drainage Conditions*

	Well Drained Soils			Imperfectly Drained Soils			Poorly Drained Soils		
	% of Area	No. of Sites	% of Sites	% of Area	No. of Sites	% of Sites	% of Area	No. of Sites	% of Sites
Gravel	6.73	7	5.03	-	-	-	-	-	-
Sand and Loamy Sand	26.15	25	18.10	.04	-	-	-	-	-
Sandy Loam	39.66	95	68.46	5.60	5	3.59	3.02	-	-
Loam and Silt Loam	6.56	4	2.89	.32	1	0.72	.92	-	-
Clay and Clay Loam	-	-	-	2.01	2	1.44	3.42	-	-
Muck	-	-	-	-	-	-	4.00	-	-
Totals	79.10	131	94.48	7.97	8	5.75	11.36	-	-

gms.,[1] and a low moisture holding capacity. The acidity of the parent

*In this tabulation only contact sites were used because some of the non contact sites may belong to non agriculturalists and therefore may be non Huron.

1. The cation exchange capacity of a soil is expressed in milli-equivalents (m. e.) per 100 grams of soil. It is directly dependent on the colloidal content of a soil. A soil high in organic and clay colloids has a high exchange capacity (15 m. e./100 gms. is considered average). The cation exchange capacity of a soil can therefore be used as a rough measure of natural fertility. (Ontario Department of Agriculture, n. d., Publication No. 492).

TABLE NO. 2

Soil Profile Developed under Coniferous Forest Cover on the Tioga Series

Horizon	Depth of Horizon	Munsell Colour	% Loss on Ignition	% Sand	% Silt	% Clay	% Total Fe_2O_3 + Al_2O_3	pH
A_0	1"	-	-	-	-	-	-	-
A_1	3"	10YR2/2	7.1	-	-	-	-	5.2
A_2	1-2"	10YR5/2	1.6	92.3	1.5	5.7	2.82	4.6
Bhfe	7"	2.5YR3/4	5.8	94.9	1.0	4.1	7.69	5.5
B_3	7"	5YR4/8	3.7	96.0	1.0	3.0	5.02	5.6
C	-	2.5YR6/4	2.1	96.0	1.0	3.0	4.41	5.5

Note: The above profile was taken on Lot 10 Conc. 14, Medonte Township. Additional information may be found in the Soil Survey Report of Simcoe County (Canada Dept. of Agriculture, 1962:43-45, 106-107).

material may range about pH 6.5 to 7.5 but in the leached A_2 horizons drop to about pH 4.5 to 5.0. Calcium is the dominant exchangeable metallic cation, the Tioga soils being particularly deficient in potassium, phosphorus and nitrogen. Tioga soils warm up quickly in the spring and are easily worked. However their low fertility precludes any intensive agriculture without large quantities of fertilizer.

The Vasey soil series is developed on glacial till and ground moraine derived from a mixture of local limestone and "Shield" granite. The parent material is sandy and the soils have a sandy loam texture. The percentage of the sand fraction can be quite variable, but is usually in the range of 60% to 80%. Clay fractions are only slightly higher than in the Tioga series, but the silt percentages are markedly greater. The

TABLE NO. 3

Soil Profile Developed under Mixed Forest Cover on the Vasey Series

Horizon	Depth of Horizon	Munsell Colour	% Sand	% Silt	% Clay	pH
A_0	1"	-	-	-	-	-
A_1	$\frac{1}{2}$-1$\frac{1}{2}$"	10YR2/2	92	3	5	5.6
Bhfe	3-4"	10YR4/3	80	8	12	6.2
B_3	5-7"	10YR4/3	82	8	10	5.9
C	-	2.5YR6/2	88	8	4	6.1

Note: The above profile was taken on Lot 4, Conc. 12, Medonte Township. Additional information may be found in the Soil Survey Report of Simcoe County (Canada Dept. of Agriculture, 1962:32-33, 106).

combined silt and clay represent around 30%, the silt being the larger fraction. Stoniness is variable, but generally the Vasey soils are more stoney than the soils of the Tioga series. In some areas the land surface is studded with large ablation boulders. On the whole the Vasey soils are less erodable, have a higher moisture holding capacity, and are slightly more fertile than the Tioga series. The cation exchange capacity of the Vasey soils is in the order of 4 to 14 m. e./100 gms. pH values vary according to the composition of the till and are similar to those of the Tioga series. The soil profile is usually grey-brown podzolic. Although slightly more fertile than the Tioga series, the Vasey soils are also deficient in phosphorus, potassium and nitrogen.

Once depleted, the recovery rate of these two soil types is extremely slow. As was mentioned in the chapter on vegetation, weeds and

TABLE NO. 4

Soil Profile in Sub-Surface Storage Pit
Dated at ca. 1615 A. D.

Horizon	Depth of Horizon	Munsell Colour	% Loss on Ignition	% Sand	% Silt	% Clay	% Total Fe_2O_3 + Al_2O_3	pH
A_0	2"	10YR5/4	-	-	-	-	-	-
A_{1-2}	2"	10YR5/4	9.3	96.0	2.0	1.9	3.10	6.2
Bh_2	2"	10YR5/4	3.5	96.0	2.1	1.9	3.01	6.0
Bf_3	4"	10YR5/4	2.5	95.9	2.0	2.0	3.25	6.0
C	-	10YR5/4	1.7	95.9	2.1	2.1	3.21	6.0

Note: This profile was taken in a sub-surface storage pit at Cahiagué, Lot 10, Conc. 14, Medonte Township.

grasses reoccupy these soils first and trees at a much later date. On lot 10, concession XIV, Medonte Township, for example, a field of Tioga loamy sand has stood vacant for five years and has only been recolonized by the common weeds and a few grasses. There is no evidence of a humus layer or colonization by tree species. Even though soil fertility may be restored after thirty to sixty years or more of abandonment, soil profile development probably takes many hundreds of years. Pedological investigations at Cahiagué show that there was no trace of soil profile development in a loamy sand over a time span of 350 years (Cruickshank and Heidenreich, 1969:45-46) (Table No. 4). This is really not too surprising considering the climatic regime of the area and the nature of the parent materials (ibid.: 45).

Again, it should be noted that it would probably take thirty to

sixty years before a thoroughly depleted Vasey or Tioga soil can be used again without the benefit of a fertilizer. The question of soil depletion and rates or regeneration will be examined in detail in the chapter on agriculture.

5. Physiographic Regions

The area of Huron occupance, as delimited in Chapter I, can also be delimited along fairly well defined physiographic boundaries (Map No. 28). The southern frontier lay along the watershed separating the lands drained by the rivers and creeks flowing into Georgian Bay and northern Nottawasaga River and the creeks flowing into Lake Simcoe. The north-eastern frontier lay along the margins of the well drained uplands between Matchedash Bay and Lake Couchiching. The rest of Huronia was surrounded by water.

a) The southern frontier

The southwestern frontier of Huronia is sharply delimited by an extent of swampy lowlands stretching from the shore of Nottawasaga Bay to Orr Lake in the north all the way through Flos and parts of Sunnidale and Vespra Townships in the west and south. In the east the "Flos Lowlands" extended up the east arm of the Nottawasaga River to the headwaters of the Sturgeon and Coldwater Rivers. The eastern boundary of these lowlands terminated at the steep bluffs of the recessional shorelines of glacial Lake Algonquin which ring the edges of the "South Oro Till Plain" and the "Dry Hills of Oro." The only breaks in this otherwise flat lowland are a few patches of slightly higher lying better drained soils, and the "Hillsdale Ridge."

The larger part of the "Flos Lowlands" consisted of swamp underlain by clays and silts. Prior to European settlement in the early part of the

19th century the dominant vegetation was open swamp and a thick tangle of cedar, alder and willow. Tamarack, pine, hemlock, fir and elm grew where trees could find root; all are indicators of fairly poor drainage conditions. Some of the slightly better drained soils supported a beech-maple-basswood association with a sprinkling of elm and pine, but such areas were not very extensive.

The "Hillsdale Ridge" was an island in Lake Algonquin. It consists primarily of sandy loams grading into coarse sands and gravels along the western edge. Like all the upland areas in northern Simcoe County, springs used to issue along the outer slopes but are rare or absent to-day. Since the coarse sand and gravel portions of the ridge tend to be droughty, almost every tree species was excluded except pine. The sandy loams tended to support a mixed forest of maple, beech, basswood, elm and hemlock.

The southeastern frontier of Huronia lay along the northern edge of a large sand and gravel kame moraine known locally as the "Dry Hills of Oro" (Hunter, 1902:155). Throughout its length and breadth this area is characterized by its varied topography and the porous surface materials. The "Dry Hills" vary between 1,000 and 1,200 feet A. M. S. L., rising some 200 to 300 feet above the valley of the Coldwater and Nottawasaga Rivers, and up to 200 feet above the "Oro Till Plain" to the south. The jumbled topography is typically that of a kame moraine, with slopes in places exceeding 20 per cent. The surface materials throughout the area are sands, loamy sands and gravels. The soils developed on these materials are podzols of the Tioga series. Because of the porous nature of the materials, and their depth there is little surface water in the "Dry Hills." In the past, springs have issued along the perimeter of the area. Some

of these are reported in the survey reports, others were mentioned by Hunter; most of them are gone to-day. Perhaps the best indication of the earlier existence of springs is the string of pre-contact sites along dry creek beds on the southern margins of the "Dry Hills" (Compare Map No. 24, and Map No. 28).

In pre settlement times the forest throughout the "Dry Hills" was an open beech, maple, basswood, pine association, showing that the water table was low, but still available to trees. In some of the dryer sections pine, and oak predominated. Forest regeneration throughout the area is slow because of the infertile and porous nature of the soils. No studies have been made in the area, but some farmland, abandoned about 40 years ago, is still under a grass cover to-day.

The area south of the "Dry Hills" is termed the "Oro Till Plain." This area rises abruptly from Lake Simcoe (718 feet A. M. S. L.) to about 800 feet one half mile inland, and from there gently to about 1,000 feet at the margins of the "Dry Hills." Throughout its area, the till plain is dotted with swampy depressions, and generally east-west trending gravel deposits. Except for the steep ascent from the lake, most of the area has a gently rolling topography with slopes rarely exceeding 10 per cent. Outside the poorly drained areas, the soils are predominantly loams and sandy loams of the Vasey, Bondhead and Dundonald series. These soils are moderately fertile and supported a substantial mixed forest of beech, maple, basswood, hemlock and elm. Along the southern, moister margins of these till plains, ash and birch entered the association. Surface water is plentiful, and all the creeks flowing through the area have their origins near the southern margins of the "Dry Hills."

b) The northeastern frontier

The northeastern frontier was marked by a more or less continuous swamp stretching along the arable uplands of Huronia from Matchedash Bay to Lake Couchiching. This swamp slowly graded into the rock knob-swamp landscape of the "Canadian Shield."

The northeastern swamp ("Coldwater Lowlands") occupies the depression of the contact zone between the "Shield" to the north and the limestones to the south. For the most part the contact zone is covered by impervious lake clays; in a few places limestone outcrops come to the surface. The impervious clays and the level nature of the area are the cause of the swamp. Like most of the swamps along the margins of the "Shield" this is primarily a cedar and alder swamp. Tamarack is more prevalent throughout this area than in the great swamp of the "Flos Lowlands." Scattered throughout the swamp are small islands of better drained silt and clay loams. These supported a beech, maple, basswood association with hemlock, elm, pine and ash as secondary dominants. There are no reported Huron contact or pre-contact sites anywhere within the "Coldwater Lowlands." Some Algonquin sites have been reported along Matchedash Bay, the Severn River and the upper reaches of Lake Couchiching.

c) Huronia

Huronia is a narrow stretch of land, some forty miles long and seven to ten in width. In all it covers about 340 square miles. It consists of a series of broad curved ridges separated by deep flat-floored valleys. The recessional shorelines marking the perimeter of the ridges indicate that these were once islands in glacial lake Algonquin and its recessional stages. Each physiographic area will be discussed in turn

from east to west (Map No. 28). Details regarding acreages of soil texture and drainage can be found in Appendix VI.

The "Medonte-Orillia Till Upland" covers approximately 41,000 acres. Much of the area has a gently undulating topography with slopes rarely exceeding 10 per cent. The edges of the area are marked by the recessional shorelines and boulder pavements of glacial lake Algonquin, except in the south where the area abuts against the "Dry Hills." Most of the surface area is covered by a sandy till which forms the parent material of the brown podzolic and grey-brown podzolic Vasey series. These soils are well drained and of fair to moderate fertility. Tioga sands and infertile gravel soils occur as patches in the eastern half of the area.

Throughout, the "Medonte-Orillia Till Upland" is well supplied with springs and creeks. Small swampy depressions are common along the margins of the creeks. Bass Lake, its cold waters fed by springs from the surrounding hills, occupies the south central part of the upland.

The original forest of the area was a beech maple, basswood, hemlock association. Pine and oak were more prevalent on some of the droughtier sands and gravels. A narrow, imperfectly drained strip of land, covered by a tangle of cedar and alder separated the area from Lack Couchiching and Lake Simcoe.

The broad flat valley of the Coldwater River separates the "Medonte-Orillia Till Uplands" from the "Mount Saint Louis Ridge." This was an area of imperfectly to poorly drained sands, silts and clays. The uniformity of this lowland is broken by two small islands of sandy till surrounded by boulder pavements. Prior to European settlement this valley

was almost entirely occupied by a cedar and alder swamp. The swamp was continuous with the "Coldwater Lowlands" on the northeastern frontier and the "Flos Lowlands" to the southwest. Along the better drained margins of the Coldwater valley, and extending up the slopes on either side was a heavy forest of beech, maple, pine and hemlock.

On the eastern side of the "Medonte-Orillia Upland" the land fell abruptly from the Lake Algonquin shoreline to the ill-drained silts and clays bordering Lake Couchiching and Lake Simcoe. This was generally an area of swamp interspersed with hemlock, maple and basswood.

The "Mount Saint Louis Ridge" is bounded on all sides by the slopes of the Lake Algonquin shoreline. Throughout most of its length, the bluff of the shoreline is some 200 feet high. In area the ridge covers some 15,600 acres. The topography of the ridge is gently undulating and consists almost entirely of sandy till. This till forms the parent material for the soils of the area, which tend to be boulder studded sandy loams belonging to the Vasey series. At various depths the porous surface materials are underlain by varved clays. Consequently a number of springs and creeks issue along the periphery of the ridge. Some of the larger creeks have cut back into the upland providing a multitude of excellent sites for Huron villages.

The original vegetation of the "Mount Saint Louis Ridge" was a heavy forest of maple, beech and basswood. Secondary dominants were pine and to a lesser extent birch and oak. Pine was particularly prevalent on the coarse sands and gravels along the northern edge of the ridge.

The valley of the Sturgeon river separates the "Mount Saint Louis Ridge" from the "Vasey Ridge" to the west. Although narrower than the

"Coldwater Valley" it is in all other respects very similar. Only the southern half of the valley was in swamp, the northern half was underlain by coarse sands and covered by a maple, basswood, pine association.

The "Vasey Ridge" covers about 28,000 acres, and like the other upland areas to the east, consists of a thin sheet of sandy till overlying heavy clays. The surface morphology of this ridge is more varied than the previous one. This is due to the action of the Hog Creek and its tributaries, which have cut into the centre of ridge from the north transforming the interior of the ridge into a drainage basin. The Hog creek has thus divided the "Vasey Ridge" into two roughly equal segments. Of the two segments, about one third of the western one consists of swamp and poorly drained clays. The rest of the "Vasey Ridge" has soils belonging primarily to the Vasey series.

Like the other ridges, the "Vasey Ridge" is surrounded by boulder pavements and recessional shorelines. On the south it terminates at Orr Lake and the margins of the "Flos Lowlands." To the west is the valley of the Wye and to the north Hog and Sturgeon Bays.

Due to the more varied topography and drainage conditions, the original forest composition is also more varied. Basically it consisted of a maple, beech, basswood association. Pine, oak, hemlock, elm and ash occurred according to local conditions. On the south east the "Vasey Ridge" was joined to the "Hillsdale Ridge" by a narrow strip of extremely coarse sands and gravels supporting a pure stand of pine.

Two small till islands, 2,800 and 1,800 acres in size, exist north of the "Vasey Ridge" between Midland, Hog and Sturgeon Bays. Except for their small size they are similar to the "Mount Saint Louis Ridge." They

have been named the "Port McNicoll" and "Victoria Harbour" uplands (Map No. 28).

The Wye River lies in a narrow swampy depression draining Cranberry and Orr Lakes through Wye Lake into Midland Bay. This valley forms an effective natural boundary to the base of the Penetang Peninsula.

The last physiographic area to be discussed here is the "Penetang Peninsula." In area it covers some 88,000 acres, which includes all but the southeastern part of Tiny Township and all of Tay Township north of Wye Lake. In some respects it is similar to the ridges already discussed. The differences arise out of the fact that the "Penetang Peninsula" was submerged in glacial Lake Algonquin, with the result that the till areas have been water washed and deposits of sand, silt and boulders have been left on the surface (Chapman and Putnam, 1966:307). The area could be subdivided into smaller physiographic areas, but this would be of little purpose for use in later chapters.

On the western edge of the peninsula the land falls off abruptly along a 25 to 50 foot recessional shoreline to a broad beach and Nottawasaga Bay. In places this beach is up to three quarters of a mile in width and consists for the most part of longitudinal dunes separated by small cedar swamps. Besides the usual swamp vegetation the major tree species throughout this sandy area was pine. On the north and east coasts of the Peninsula the recessional shorelines are considerably steeper, varying from 50 to 200 feet in height. The shoreline is narrower and dunes are generally absent. The vegetation on this part of the coast was similar to the upland areas.

With exception of a few small swamps the upland area of the

"Penetang Peninsula" consists of well drained sandy loams, sands and gravels. The topography is fairly level in the southern portion of the area and becomes gently rolling in the north. Two higher till areas, surrounded by recessional shorelines stand out, these are Lafontaine Hill and a smaller mound east of Lalligan Lake. About 60 per cent of the soils in the area belong to the Tioga series, which are among the least fertile soils in Huronia. The Vasey series takes up about 30 per cent of the area and is slightly higher in fertility.

Several small lakes dot the interior of the Peninsula, but surface waters are not as abundant as in the areas to the east. The original vegetation reflects the generally drier conditions of this area. Both pine and oak occur as a dominant along with the ubiquitous maple, beech, basswood association. Throughout most of the southern part of the area were extensive pine forests interspersed with a few oaks.

Generally speaking this is one of the least desirable areas of Huronia, accounting for the fact that large tracts of it are still under forest to-day.

Chapter III

Tribal Socio-Political Organization, Tribal Areas within Huronia and Tribal Migrations

Introduction

The purpose of this chapter is to outline the social and political organization of the Huron tribes, to delineate the tribal areas within Huronia and trace the tribal migrations into Huronia. Such an outline is necessary to an understanding of Huron population estimates, settlement, subsistence ecoonomy and trade.

Contrary to popular opinion the Hurons were never a single tribe with what could be termed a common national identity, but rather a confederacy of five tribes " . . . associated together for the purpose of maintaining themselves against their common enemy . . . " (J. R., Vol. 17: 195). Differences between the five tribes seem to have been slight. At least they did not seem to manifest themselves in markedly different geographical patterns of behavior. What differences there were stemmed from the fact that the villagers in each tribe shared a common tribal history which expressed itself in kinship ties and intertribal politics. In most aspects of a geographical study the five Huron tribes could therefore be treated as a single group. There are for example few known differences between the five tribes as far as economic and settlement patterns are concerned.[1] However, to a Huron tribal differences were probably very real and important because they reflected his social ties, his political thinking and his community history. In other words, the tribe was a socio-political unit which found geographical expression in the tribal territory, which in

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1. Noble (1968) has suggested minor differences in longhouse interiors and cemetary plots between the five Huron tribes.

turn had come into being through tribal migration into Huronia. Other ways in which the socio-political structure of the Hurons expressed itself, such as in settlement patterns, will be discussed in later chapters. For the moment an attempt will be made to describe only the essential characteristics of Huron society and government, and the most immediate geographical expression of these, the tribal unit and its origin.

1. Socio-Political Organization of the Tribe

a) Social organization

References to the social organization of the Hurons are all but absent from the Ethnohistoric sources. Among some anthropologists the practice has therefore been to transfer New York Iroquois social customs to the Hurons and assume that they were more or less the same (Quimby, G. I., 1960:118).[1] Recent archaeological work at Cahingué under the direction of Dr. J. N. Emerson and Mr. A. Tyyska suggests that the Huron social structure may have been somewhat different from that of the Iroquois and what had previously been supposed for the Hurons.[2] An analysis of this work has not yet been published.

The basic social unit was the nuclear family. Marriages were monogamous, however sexual relations with other than one's marriage partner were permitted (Sagard:125; J. R., Vol. 8:119). Divorce was frequent (Sagard:124; J. R., Vol. 17:143), but was considered more serious if children were involved (Sagard:125). In the case of a divorce the children

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1. For a general discussion of North American Indian social systems and kinship terminology see Driver (1961:265-324). For discussions of Iroquois social systems see Morgan (1965:64-67); Morgan (1962:78-126); Emerson (1961, b). Definitions of sib and clan are after Driver (1961).

2. Private communication from Dr. J. N. Emerson and Mr. A. Tyyska.

as a rule went to the father, although in some instances the mother retained the girls (Sagard:125).

Descent was traced through the female line, as was inheritance (Sagard:130; Champlain, Vol. 3:140); J. R., Vol. 20:215). Marriage between people who could trace a common descent through the female line was not permitted, however distant the relationship might be (J. R., Vol. 8: 119; Sagard:123; J. R., Vol. 10:123; J. R., Vol. 38:235). Everyone who could thus trace common descent belonged to the same sib. The Hurons were therefore a matrilineal society practicing sib exogamy. In addition to practicing sib exogamy there is also evidence that some village exogamy was practiced (Richards, 1967:51).

It is possible that the Hurons, like the New York Iroquois were organized into matriclans; each matriclan consisting of men and women who traced their descent to a common ancestor (real or mythical) through the female line. Since no one could marry someone of his own clan, a husband would belong to a different clan from his wife and children. The presence of such clans might explain the Jesuit references to the fact that each "family" had a coat of arms (J. R., Vol. 15:181), and that Huron society was divided into eight "nations" (J. R., Vol. 33:243; Vol. 38:283). If this was the case, the villages of each of the Huron tribes were held together not only by a common history and political organization, but also by kinship ties. Intravillage strife would therefore be held at a minimum through the clan organization. In any case the sib organization probably achieved the same ends.

There is no clear evidence that the Hurons like the New York Iroquois practiced only a matrilocal residence pattern. All indications are that

matrilocal residence was the most common (Boucher, 1896:150), and that patrilocal and virilocal residence were practiced as well (Tooker, 1964: 127; Richards, 1967:55-56). It is probable that each extended family (composed of a number of nuclear families with common grandparents) occupied one longhouse. This would explain the fact that longhouses varied in size according to the number of nuclear families that occupied them (Sagard:94; J. R., Vol. 16:243), and that each longhouse tended to function as an economic unit (Champlain, Vol. 3:155-156).[1]

Beyond the extended family and sib the next highest social unit was the village. Village solidarity expressed itself in all matters from the actual building of the village and individual houses, which were communal affairs (Sagard:79), to the atonement of a wrongdoing committed by a villager. In the latter case, the whole village would be held responsible for the crime of one of its members (J. R., Vol. 15:157). Conversely, if a member of one village was wronged by members of another village, the whole village of the wronged person would espouse his quarrel (Sagard:163; J. R., Vol. 10:219). Other ways in which community solidarity expressed itself was in institutionalized gift giving and a general community attitude which discouraged the acquisition of material wealth for its own sake (Herman, 1956:1044-1058). As a result of these attitudes needy persons, the sick and disabled, were taken care of by the village (Sagard:79, 88-89), and persons who had been fortunate in trade, hunting or farming contributed generously to the public good (J. R., Vol. 28:49-51).

Many other examples and expressions of village solidarity could

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1. The function of the longhouse will be discussed more fully in the chapter on settlement patterns.

be given, such as institutionalized and spontaneous festivals, religious ceremonies and aspects of law. These would only serve to underline the point already made that beyond the extended family, the village was the most important social unit.

The foregoing has necessarily been only a short and somewhat superficial discussion of the Huron social system. However, it is felt that the most important points necessary to an understanding of later chapters have been outlined. These are: a) The basic social unit was the nuclear family and beyond it the extended family; b) The extended family consisting of a number of nuclear families that traced common descent to living grandparents through the female line, tended to form an economic unit and lived together in a longhouse; c) All people who traced their ancestry through the female line to a common real ancestor belonged to the same sib; d) There was usually more than one sib represented in any one village, especially the larger ones; e) Marriage was outside the sib and sometimes outside the village, therefore helping to form kinship ties between villages of a tribe; f) Through various social institutions a strong feeling of village solidarity was engendered; g) In all probability the Huron tribes and the confederacy were also drawn together by a system of clans.

b) Political organization

The basic political unit among the Hurons was the village council. The council itself was made up of the men of the village among whom the older men, and those judged the wisest, held preeminence. The chief of the council was usually elected from the best qualified male members of a particular sib. This sib had held the chieftainship for many generations. The chieftainship was therefore partly hereditary and partly

electoral (J. R., Vol. 10;233). If the person elected chief did not want the job another person would be elected from the same sib. All matters brought before the village council was " . . . decided by a plurality of votes . . . " (J. R., Vol. 10:251). When a decision was to be made anyone could speak (J. R., Vol. 10:213), but in practice the old men who were judged the most experienced, usually had their way (J. R., Vol. 10: 15, 251). If on occasions members of a village had given bad advice, they would lose all influence in the council (J. R., Vol. 10:215). The fact that some of the men were better at some things than others, led to the appointment of a number of sub chieftainships (J. R., Vol. 10:231). These sub-chiefs seem to have been largely arrangers of village affairs such as dances, feasts, games and funeral ceremonies. In the larger villages the chieftainship was shared by two men, one looking after domestic and inter-tribal affairs, the other after war and external affairs (J. R., Vol. 10:231).

In matters affecting the whole tribe the chiefs of the various villages would meet accompanied by their sub-chiefs or advisors. Any village chief could call such a meeting (J. R., Vol. 10:253). Prior to the meeting the chief would consult with his council on how he should represent his village. If the chief from any village could not attend the council a representative could be sent. If no representative was sent, the council would have to decide whether the assembly was legitimate (J. R., Vol. 10:255). Any decision was arrived at by a plurality of votes after each member had outlined exactly the opinions of his village (J. R., Vol. 10:257). No decision, whether it be that of a chief, village council or tribal council, was binding on any member or segment of the society. All government was by persuasion rather than by law (J. R., Vol. 10:253).

There was no body set up to execute the wishes of the chief or the council. . . Those that went against the wishes of the council knew that village or tribal opinion would be against them. In a close knit conservative society such as the Huron few people would wish to be ostracised by their fellow members.

Intertribal councils seem to have been rare. They were only called in matters affecting the whole confederacy such as foreign relations (trade, peace, war), and in later times when it was necessary to formulate policy regarding the French in Huronia. Each tribe sent a delegation of chiefs and advisors in proportion to the number of villages in the tribal unit (J. R., Vol. 15:39). Among these representatives one would be elected to act as president of the council who was usually one of the oldest and mutually respected men in the country. All the villagers from one tribe would choose their own spokesman who would then speak for his tribe after consulting with the others on every matter (J. R., Vol. 10:257). All decisions were arrived at by mutual agreement but were not binding on those who seriously objected (J. R., Vol. 10:261-263).

Government at an intertribal level seems to have been " . . . weak and unstable . . . " (Trigger, 1960:19). Prior to the 1640's and the Iroquois onslaughts there was probably little need for such councils. Indeed as Sagard (1939:150) and Champlain (Vol. 3:159-160) describe them, these intertribal councils were only held to renew mutual friendships, pass the time with feasts and dances, and decide on future raids on their mutual enemies. When the Hurons were faced with organized massive incursions into their territory, which threatened their entire existence, the intertribal councils proved to be ineffectual, and tribes and villages usually acted on

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their own. The intertribal council was simply too inexperienced and its rule by persuasion totally inadequate to deal with matters affecting the common good requiring rapid decisions and an organized effort in carrying them out. There is some evidence to suggest that from the middle of the 1630's on to the end of Huronia, the old men who were the ones that were used to making decisions, were greatly reduced in numbers and slowly losing their authority. In 1637, for example, Le Mercier recounts the aftermath of an intertribal council which had accused the Jesuits of being responsible for all the ills the confederacy was suffering. After the council was over a Huron took the Jesuit aside and told him not to worry because " . . . the old men no longer had any influence, but that the young men really managed everything" (J. R., Vol. 15:53). In 1640 Jérôme Lalemant reports that due to the epidemics " . . . there remained only very few old men, very few persons of skill and management . . . " (J. R., Vol. 19:127). One could say therefore, that not only were the intertribal councils ineffectual, but during the period when strong leadership was necessary many of those who could have given leadership were dead. In the last analysis, when intertribal decisions were unpopular all matters revolved back to the tribal and village councils. Nowhere is this better illustrated than by the Onondaga peace proposals of 1647. Apparently the Iroquois confederacy was racked by jealousy and dissension because the Senaca (Sonnontoueronnons) and the Mohawks (Annieronnons) had come to dominate the league and dictate policies to their smaller allies (J. R., Vol. 33:123-125). The Onondagas (Onnontaeronnons) were particularly resentful and also suffered

from Andaste[1] attacks on their southern border. The Onondaga therefore decided to sue for peace with the Hurons. The Cayuga (Ouionenronnons) (J. R., Vol. 33:123) and the Oneida (Onneiochronnon) (J. R., Vol. 33:125) were willing to join the Onondaga. Instead of exploiting the situation the Huron council stood divided (J. R., Vol. 33:119). Only the Arendaronons seemed favourably disposed to a peace treaty because the Onondagas held some of their people captive (J. R., Vol. 33:121). After many councils a half hearted exchange of ambassadors was attempted but nothing much came of the matter.

The overriding impression is that the tribal unit was far more important than the confederacy, and the village more important than the tribe. This is borne out by the fact that the Hurons, when they spoke of themselves, always mentioned their village or tribal group, and never the larger confederacy to which they belonged. There was therefore none of what could be described as a sense of national identity. The Jesuits followed this practice and referred to individuals as belonging to certain villages or tribes. Only when the village or tribal affiliation of a person was not known, or when positive identification was unimportant, was he referred to as a Huron. Perhaps the best illustration of the importance of the tribal unit is Jérôme Lalemant's decision in 1639 to organize the Jesuit missions according to the tribal districts (J. R., Vol. 19:125). We are not told much of this decision. If the tribe had not been an important social and political unit it would seem that an arbitrary division of

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1. The Andastes (Andastoeronnons) were Huron allies against the Iroquois. Their tribal area was to the south of the Iroquois (Map No. 33).

Huronia into missions would have made more sense. The tribes were unequal in population size and very unequal in the areas they covered. The decision, however, was to organize a mission to each tribe with the headquarters of the mission in the principal village of the tribe. All the missions were to be administered from Ste. Marie I, which was judged to be the geographical centre of Huronia (J. R., Vol. 33:133).

2. The Distribution of the Tribal Groups.

In 1639 Jérôme Lalemant listed four tribes as constituting the Huron confederacy; these were the Attignaouantan (Bear tribe), the Attinguenongahac (Cord tribe), the Arendoronon (Rock tribe) and the Tohontaenrat (Tribe-of-the-One-White-Lodge) (J. R., Vol. 16:227).[1] In 1640 a fifth tribe was mentioned, the Ataronchronons (Tribe-Beyond-the-Silted-Lake) (J. R., Vol. 19:167). Champlain, who was in the country for a short time, mentioned only the Attignaouantan (Champlain, Vol. 3:46), while Sagard listed the Attignaouantan, the Arendaronon and the Attinguenongahac (Sagard, 1939:91). Each of these tribes occupied their own territory within Huronia (Map No. 29). The villages within each tribal group were bound together by a common history, by their interrelated families, and by their councils (J. R., Vol. 16:229).

Of the five tribes the Attignaouantan was the largest, containing about half the population of Huronia (J. R., Vol. 10:77). In 1637 Le Mercier lists fourteen villages (J. R., Vol. 15:39) while in 1640, thirteen are reported (J. R., Vol. 19:209). All the Attignaouantan villages lay

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1. A. E. Jones's spellings and translations of names have been adopted here.

west of the Wye River, occupying entirely the physiographic area previously defined as the "Penetang Peninsula." There is no mention of any Attignaouantan villages east of the Wye or any non Attignaouantan villages west of it (Map No. 29). There has never been much controversy as to what villages belonged to the Attignaouantan. For some unexplained reason Tooker (1964: 150) counts Taenhatentaron (St. Ignace I) and Arethsi among the Attignaouantan when the Relations seem to place them among the Attinguenongahac (J. R., Vol. 19:183). For a complete listing of villages with their tribal affiliations see Appendix IV.

The "capital" of the Attignaouantan shifted over time. During Champlain's visit it was probably Carhagouha. Le Clercq called it " . . . the most famous of their villages . . . " (Le Clercq, 1881, Vol. I:96-97), and it was the headquarters of the Récollet mission. Sagard explained that Quieunonascaran was the residence of " . . . the chief of the district of the Bears . . . " (Sagard, 1939:149) plus various other important sub chiefs (Sagard, 1939:91, 99, 149, 174). This fact is further evidence to prove a point made earlier that Quieunonascaran was but a moved Carhagouha. In another passage Sagard called Tequenonquiaye (the later Ossossane), the " . . . chief town of that region, and the guardian and rampart of all the towns of the Bear Nation, where they generally decide all affairs of great importance . . . " (J. R., Vol. 5:292). This is a clear contradiction which cannot easily be resolved. The passage naming Tequenonquiaye as "chief town" comes from the Histoire which was written after the Long Journey; it is possible therefore that Sagard got the two places mixed up. At any rate, during the Jesuit period Ossossane seems to have been the principal village of the Attignaouantan (J. R., Vol. 14:25; Vol. 17:11), a position

it held until the end of Huronia.

Not only were the Attignaouantan the largest and most important of the Huron tribes, but along with the Attinguenongahac they were the oldest residents of Huronia. Brébeuf related that those two tribes spoke " . . . with certainty of the settlements of their ancestors, and of different sites of their villages, for more than two hundred years back . . . " (J. R., Vol. 16:227). These two tribes termed each other "brother" and "sister" in the councils (J. R., Vol. 16:229). The language of the Attignaouantan and the Attinguenongahac seems to have been identical, as well as their material culture; at least there is no evidence to suggest that there were any significant differences. This, as will be demonstrated, did not seem to have been the case with the other Huron tribes.

The Attinguenongahac (Cord tribe) was made up of at least three villages (J. R., Vol. 19:269) and perhaps four (J. R., Vol. 15:39). Definite among these were Teanaustaye (St. Joseph II) (J. R., Vol. 19:183), Taenhatentaron (St. Ignace I) (J. R., Vol. 19:183-185) and probably Arethsi. A fourth possible Cord village is the nameless one destroyed in 1648 (J. R., Vol. 34:87). Jones (1908:149) seemed to think that Ekhiondastsaan (Tiondatsae or La Chaudiere) was a Cord village. It was situated on the Vasey Ridge between the Tohontaenrat and the Ataronchronon. Which tribe this village belonged to is not known.

Judging from the distribution of St. Ignace I, Arethsi and St. Joseph II, the area occupied by the Attinguenongahac was all of the "Mount Saint Louis Ridge" south of Arethsi. There is no evidence to suggest that the Cord tribe occupied any lands outside that area (Map No. 29).

The principal village of the Attinguenongahac was always Teanaustaye (St. Joseph II) (J. R., Vol. 15:141). It was variously called " . . . the most important village of all . . . " (J. R., Vol. 17:11), and " . . . the largest and most populous village in all the country . . . " (J. R., Vol. 19:185); a position it held until it's destruction in 1648 (J. R., Vol. 33:141). According to the Jesuit census the village contained 400 families (J. R., Vol. 34:87) in some eighty lodges (J. R., Vol. 15:153), or a population of about 2,400.

The Tohontaenrat (Tribe-of-the-One-White-Lodge) as their name suggests, was composed of only one large village, Scanonaenrat (St. Michel) (J. R., Vol. 17:87). According to Brébeuf this was the last tribe to have migrated into Huronia. This event was supposed to have occurred sometime around 1619, or just before Sagard's visit (J. R., Vol. 16:227). To what extent the material culture of the Tohontaenrat differed from the other tribes is not known. What is known, is that their dialect was somewhat different from that of the Bear and the Cord tribes (J. R., Vol. 10:11).

The area occupied by the Tohontaenrat was the south third of the "Vasey Ridge" (Map No. 29).

The Arendaronon (Rock tribe) was the easternmost tribe of Huronia (J. R., Vol. 20:19). During Champlain's time the principal village of the area was Cahiagué (Champlain, Vol. 3:49). During the Jesuit period the capital had shifted to St. Jean Baptiste (Contarea) (J. R., Vol. 20:21). Since Cahiagué had been split into two villages and moved sometime before 1623 it is entirely possible that St. Jean Baptiste was one of these new segments.

The exact number of Arendaronon villages is not known. While relating events at Cahiagué Champlain speaks of " . . . neighbouring villages . . . " (Champlain, Vol. 3:56) but does not say how many. In view of the size of Cahiagué it is possible that there were never very many Arendaronon villages. The Jesuits listed two Huron villages and one Algonquin village among their Arendaronon mission. These were St. Jean Baptiste, St. Joachim and Ste. Elizabeth (J. R., Vol. 20:21). Another village is alluded to in a passage relating the destruction of a nameless village near St. Jean Baptiste in 1642 (J. R., Vol. 26:175). At a general council of the confederacy held in 1637 three tribes were present. The Bear were represented by fourteen villages and two other tribes by four each (J. R., Vol. 15:39). These other two tribes must have been the Attinguenongahac and the Arendaronon because the Ataronchronon seem to have been of minor importance. Since this was a very important council, deciding in fact the fate of the Jesuits in Huronia, all villages were represented. The non Bear villages were described as " . . . very populous villages . . . " (J. R., ibid). One can therefore surmise that the Arendaronon had four fairly populous villages, two of which were St. Joachim and St. Jean Baptiste. Ste. Elizabeth should not be counted among the Arendaronon because it was made up of fugitive Atontrataronon Algonquins from the St. Lawrence valley (J. R., Vol. 27:37). Since this village was not founded until after 1640, the villagers of Ste. Elizabeth could not have been present at the council of 1637. Furthermore, it is doubtful if any Algonquins would have been permitted to partake in a general Huron council.

Like the Tohontaenrat it is probable that the Arendaronon spoke

a somewhat different dialect from the Attinguenongahac and the Attignaouantan. Jérôme Lalemant admits that one of the reasons the Jesuits were so late in opening a mission among the Arendaronon was because of language difficulties (J. R., Vol. 20:21). Along with the Tohontaenrat the Arendaronon were latecomers to Huronia. Brébeuf wrote that they entered Huronia sometime around 1590 (J. R., Vol. 16:227). During the Jesuit period the Arendaronon occupied all of the "Medonte-Orillia Till Upland" and a small section of the "Mount Saint Louis Ridge" (Map No. 29). In view of the fact that all the other tribes discussed so far occupied well defined physiographic areas, the naming of St. Joachim on the "Mount Saint Louis Ridge" as an Arendaronon village is somewhat surprising. Yet St. Joachim was always administered from St. Jean Baptiste and counted among the Arendaronons. Since there is no evidence to the contrary St. Joachim must therefore be included among the Arendaronon villages.

The Ataronchronons (Tribe-Beyond-the-Silted-Lake) are the least known and most problematical of the Huron tribes. The Jesuits consistently speak of only four Huron tribes (J. R., Vol. 16:227), yet in 1639 they list a fifth, the Ataronchronons (J. R., Vol. 19:1-7). No origin for the tribe is suggested in the Relations. Jones postulated that the Ataronchronons were a " . . . congeries of other clans who, in the latter years of Huronia's existence, had, in small detachments, moved nearer Fort Ste. Marie on the Wye, and had occupied the country mainly to the northeast of Mud (Wye) Lake . . . " (Jones, 1908:447). This theory is not entirely without difficulties because the earliest reference to the Ataronchronons is in 1637 (J. R., Vol. 13:61), well before the " . . . latter years of Huronia's existence . . . " In all probability the Ataronchronons were a

fairly unimportant Huron tribe made up of villages from the other tribes which for some reason wanted to establish a tribe of their own. That this sort of thing happened is suggested by Brébeuf (J. R., Vol. 16:227). There is no reason to suppose that the Ataronchronons were refugees.

Four major villages constituted the Ataronchronons; these were Ste. Anne, St. Denis, St. Jean and St. Louis, accounting in 1640 for about 1,400 souls (J. R., Vol. 19:167). The headquarters for the mission to the Ataronchronons was Ste. Marie I, however the "capital" or principal village of the tribe seems to have been St Louis. At least it was in St. Louis that some of the important councils were held (J. R., Vol. 19:175). Other villages in the area occupied by the Ataronchronons were Kaotia (Corographie, Map No. 14) and Teaontiae (Huronum Explicata Tabula, Map No. 13). St. Francis Xavier was administered from Ste. Marie I after 1642 (J. R., Vol. 23: 39), but appears to have been a Bear village.

Judging from the distribution of the known Ataronchronon villages, this tribe occupied the northern two thirds of the "Vasey Ridge" and the "Port McNicoll" and "Victoria Harbour" uplands (Map No. 29). Like St. Joachim of the Arendaronons, St. Jean of the Ataronchronons lies outside a well defined physiographic tribal area, but was always counted among the Ataronchronons. The southern boundary of the tribal territory of the Ataronchronons presents somewhat of a problem because the tribal affiliations of La Chaudiere (Tiandatsae, Ekhiondastsaan) are not known. Jones (1908:149) thought that it was a village of the Attinguenongahac but this is at best a guess. It could not have been an Attignaouantan or Tohontaenrat village because all of these are accounted for elsewhere. The Attinguenongahac only had four villages, Teanaustaye, Arethsi, Taenhatentaron

and a nameless one near Teanaustaye on the frontier of 1648. Jones thought that the nameless one was Ekhiondastsaan (La Chaudiere); but Ekhiondastsaan was not on the frontier or close to Teanaustaye and thus could not have been the nameless village destroyed in 1648. Whether Ekhiondastsaan was an Ataronchronon village is hard to say. Only four Ataronchronon villages are mentioned in the Relations, yet at least two other villages within the territory occupied by the Ataronchronon appear on the maps. Since there is no mention of any Huron tribes other than the five already discussed a reasonable guess would be that La Chaudiere, Kaotia and Teaontia were all Ataronchronon villages in a larger tribal area. Perhaps these villages were abandoned sometime during the Jesuit period and relocated at St. Louis, Ste. Anne, St. Denis and St. Jean.

In conclusion one could say with a fair degree of certainty that the areas occupied by the five Huron tribes can be delimited along well defined physiographic boundaries. The only exception appears to be the northern one third of the "Mount Saint Louis Ridge," which was jointly shared by the Ataronchronons and Arendaronons. The southern boundary of the Ataronchronons presents a problem because the exact tribal affiliations of La Chaudiere (Ekhiondastsaan or Tiondatsae) are not known.

3. Tribal Migration into Huronia According to Ethnohistoric and Archaeological Sources.

A detailed prehistory of the Huron tribes is not within the scope of this thesis. This subject has been covered by MacNeish (1952), Emerson (1959; 1961 a); 1966; 1968), Emerson and Popham (1952), Popham (1950), Ridley (1952; 1958; 1963) and Wright (1966). Of these Wright's (1966) work is the most up-to-date and presents a logical compromise between the views held by Emerson and Ridley. In this chapter only the last phases of

the Huron tribal migrations will be discussed.

According to Brébeuf the Attignaouantan and Attinguénongahac had a history in Huronia that stretched back some 200 years (J. R., Vol. 16: 227). During this time both tribes increased in numbers through the adoption of families and villages who decided to join them (J. R., ibid.). At times some villages and families decided to leave the two mother tribes and form tribes of their own (J. R., ibid.). This could be one explanation for the formation of the Ataronchronons. Sometime shorly before 1600 the Arendaronon migrated into Huronia and about 1620 the Tohontaenrat (J. R., ibid.).

In 1615, when Champlain travelled through the Kawartha Lakes system on his way to the Onondaga, he related that Hurons used to live there (Champlain, Vol. 3:59; Vol. 4:248). The stated reason for their move was fear of their enemies (Champlain, ibid.). In a later passage Champlain explains that the Onondaga once forced the Hurons to move over a distance of forty to fifty leagues (Champlain, Vol. 3:125; Vol. 4:304). Two interesting points can be drawn from these statements. The Onondagas lived at the south eastern end of Lake Ontario, and even in later years always attacked Huronia from the east. The forty or fifty league migration of Hurons referred to by Champlain was therefore out of the Kawarthas, the same area the Hurons stated they had formerly occupied. As a matter of fact judging from Champlain's description of the landscape in parts of the Kawarthas one would suspect that the forest had not yet reoccupied the abandoned cornfields. He says for example that " . . . Along the shores (of the lakes) one would think the trees had been planted for ornament in most places . . . " (Champlain, Vol. 3:59); and again " . . . the cleared

portion of these regions is quite pleasant . . . " (Champlain, Vol. 3:60). Such forest conditions could persist on well drained sandy soils up to sixty years after their abandonment. The second point to be made is that Champlain was travelling with the chief of Cahiagué and warriors from the Arendaronon. Even though Champlain called all the Hurons Attignaouantans it is absolutely certain from the Relations that Champlain's companions were Arendaronons (J. R., Vol. 20:19). The conclusion one could come to is that the Arendaronon remembered living to the east of Huronia and were forced to migrate west up to sixty years prior to 1615, due to Onondaga attacks. This fits rather well with Brébeuf's report that the Arendaronon entered Huronia some fifty years prior to 1639. It also fits with the fact that the Arendaronons settled on the eastern frontier of Huronia.

It is unfortunate that the area east of Lake Simcoe is a virtual archaeological blank (Emerson, 1968:63). Only three sites in the area have been excavated (McDonald-Payne, Benson and Hardrock), and only the McDonald-Payne site has been described in detail (Pendergast, 1963; Emerson, 1966). Of these the McDonald-Payne site in Prince Edward County dates to the early 16th century and has its strongest cultural affiliations with sites of the same period north of Toronto such as Parsons and Black Creek (Wright, 1966: 101). The cultural materials from the Benson site on the west shore of Balsam Lake in Victoria County and the Hardrock site from Grand Island in Balsam Lake have only been partially analyzed. Of these the Hardrock site appears to date from the middle of the 16th century with its closest cultural relationships to sites of a similar date north of Toronto (Wright, 1966: 101; Emerson, 1966:197-198). The Benson site is early contact with cultural similarities to some early contact sites west of Lake Simcoe (Wright, ibid.;

Emerson, ibid.).

Inadequate data from only three sites in the area east of Lake Simcoe is hardly enough to formulate any lasting conclusions. It appears however that during the 16th century the eastern Ontario Iroquoian populations were shifting west and northwest. Judging from the distribution of reported finds of trade material all of the north shore of Lake Ontario was abandoned by early contact times (Map No. 30).[1] Since trade material is very rare east of Lake Simcoe and never present in any large quantities on any particular site, one would judge that the last remnant of the eastern Ontario Iroquoians entered Huronia in early contact times, just before the end of the 16th century, forming the historic Arendaronons. This coincides remarkably well with Champlain's and Brébeuf's accounts and the fact that no villages are mentioned east of Lake Simcoe during the historic period.

Regarding tribal movements from the south into Huronia, the ethnohistoric accounts are of little help. The most logical sequence of events is that outlined by Wright, based on the distribution of artifact assemblages, in particular pottery seriations (Wright, 1966:78-80). Wright divides the precontact Indian population west of Lake Simcoe into a Northern and Southern division which were not separate but very closely related cultural groups. During precontact times the Southern division was slowly shifting northward. Judging from the distribution of reported trade material the southern

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1. This map was compiled from the following sources: Boyle (1889); Canada, National Museum M. S. Files (Ontario, Simcoe, Victoria Counties); Garrad (1965; 1966); Laidlaw (1899; 1901; 1903; 1912; 1917); Lawrence, Gavillier and Morris (1909); Popham (1950). It must be emphasized that in all areas except Nottawasaga Township, the area of the historic Petun, trade material is rare and when present only in very small quantities.

division had migrated well north of the Holland River by the earliest contact times (Map No. 30). Hunter records only four occurrences of French trade goods south of Innisfil township (Simcoe County), and none of these are absolutely definite (Hunter, 1889:44-45). During this time the Northern division must have been made up of the Attignaouantan and the Attinguenongahac. The cultural material from the Southern division sites shows both Huron and Petun ties. Wright therefore concludes that the Southern division must have split into two groups, one going on to settle in the Collingwood area and becoming the Wolf and Deer tribes of the historic Petun (Khionontateronons) confederacy, the other group going on to Huronia. Among the latter group were undoubtedly the Tohontaenrat who were supposed to have joined the Huron confederacy some thirty years before 1639 (J. R., Vol. 16:227). Jérôme Lalemant reported that " . . . these nations (Huron and Petun) formerly waged cruel wars against one another; but now are on very good terms . . . " (J. R., Vol. 20:43). Wright speculates that these former wars could have been a result of Southern division incursions into Northern division territory (Wright, 1966:79-80). All such hostilities had ceased by Champlain's time; at any rate Petun and Hurons were living at peace in 1616 (Champlain, Vol. 3:95).

The most reasonable explanation for the northward and northwestward shift of the tribes that were to become the Huron and Petun confederacies, are undoubtedly the age old rancours of intertribal warfare with the New York Iroquois groups. This was the story told to Champlain, Sagard and the Jesuits, and there is little reason to doubt it. Intertribal warfare had been a reality for a long time before the coming of the French, although it had never reached the proportions that it did in the 1640's.

The warfare prior to the 1640's consisted of raids engendered by a desire for prestige and revenge (Trigger, 1960:20). Persistent, if not exactly catastrophic, pressure along the southern and southeastern frontier probably led to a slow migration to the historic occupance areas. With warfare of the type just described, rapid and long distance migrations were not necessary; but there was also no reason for the opposing groups to move closer together or even stay where they were. It is interesting to note that among the changes that were taking place in late precontact times was a trend for villages to become larger, to cluster and seek better defendable sites (Wright, 1966:99).

Trigger (1962:137-148; 1963 a):86-101; 1967, foreword; 1968:111) advances the theory that pressure from the Iroquois tribes was not the only reason for the northward shift of the Huron and Petun tribes. Suitable agricultural soils and the potential for trade with the Algonquins were in Trigger's opinion at least of equal if not greater importance.

Unfortunately it is not possible to either prove or disprove this theory. Since the theory is gradually being regarded as proven, it should be briefly examined.

Trigger opens his argument with the thesis that the Hurons prior to the 1640's were not militarily inferior to the Iroquois tribes and therefore warfare does not explain Huron tribal migrations (Trigger, 1963 a):92). Even if the Huron tribes were the military equals of the Iroquois tribes, there is absolutely no reason why villages would not want to move away from the frontier of conflict. Such movements did not have to take place in a spirit of panic resulting in long distance relocations, but could have taken place over short distances in the normal course of

shifting a village. Archaeological investigations certainly seem to show that the Huron tribal migrations were a rather slow process lasting over one hundred years. The movement to the north and northwest, the clustering of villages, their growth and the growing regard for defendable sites, may therefore be regarded as a desire on the part of the villagers to lessen the chances of success of Iroquois raids.

The alternate motives for the migrations, suitable agricultural soils and the desire for trade with the Algonquin tribes appear to be unlikely. Trigger seems to think that northern Simcoe County is the only large area in southern Ontario with well drained sandy soils. Although Trigger's description of Ontario soils is brief, one gets the impression that his discussion of soils outside of Simcoe County was based on Chapman and Putnam's description of the Dundalk plain (Trigger, 1963 a):90; Chapman and Putnam, 1951:156). Trigger then extends the description of the Dundalk plain over the whole of the central upland area of south-western Ontario. Trigger makes no attempt to describe the soils in other parts of Ontario except to mention that Simcoe County was ideally suited for Huron agriculture (Trigger, 1963 a):92). However, generalized and detailed soils maps of Ontario show that suitable soils could be found almost everywhere in the province south of the shield (Canada, Department of Agriculture, 1964). There was therefore no lack of suitable agricultural soils south of the shield and west of Prince Edward County. Indeed, the very fact that agricultural Indians had occupied these areas at one time shows that farming was possible.

The theory that the Huron tribes were moving closer to the Algonquins in order to trade with them also runs into difficulties. The Huron

settlements, because they were agriculturally based, were less mobile than Algonquin hunting and fishing communities. It seems highly unlikely that a semi-sedentary agricultural people would move their villages closer to a nomadic group in order to trade with them. The reverse seems more logical. Moreover during the summer, when most of the trading took place, such trade was not localized at the Huron or Algonquin villages as Trigger admits (Trigger, 1960:18). In the winter at least, it seems to have been the Algonquin's practice to move to the Hurons (Trigger, 1963 a):92). Little is known of precontact trade relations, and the seasonal cycle just described was that of the early contact period. Once the fur trade became more important, trading activities between the Huron and their neighbours intensified. It was then that the position of Huronia assumed strategic importance in the fur trade. It is unlikely that trade was of such magnitude prior to direct Huron-French contact to promote a movement of people into Huronia. The fact that Huronia was in a strategic location helped the Huron to become middlemen in the fur trade, but this was a development of the contact period. The migrations into Huronia took place before that period.[1]

The least problematical explanation of Huron tribal migrations is still the slow but constant pressure exerted by intertribal raids on frontier villages. Military superiority of the New York Iroquois or fear of complete annihilation on the part of the Hurons did not necessarily have anything to do with these movements. Most likely individual Huron villages simply

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1. The growing importance of the fur trade and Huron relations with other tribes are discussed in Chapter VII.

hoped to avoid the deprivations of occasional raids by moving away from an existing frontier. These tribal movements were therefore slow but steady, ultimately ending in the cul-de-sac between Lake Simcoe, Georgian Bay and the Canadian Shield. In the last analysis it is probably best to attempt an explanation of Huron migrations in terms of interrelated multiple causes.

Chapter IV

Estimated Population Size and Densities in Huronia

Introduction

In all the years that Huronia has been studied, few serious attempts have been made to estimate the total population of the area. Some writers have accepted the estimates made by Champlain and his contemporaries, others have discounted these as gross exaggerations and formulated their own in the light of what is known of other North American Indian societies. The purpose of this chapter is to examine these population estimates, and to derive a reasonable approximation for the Huron area.

1. Contemporary Estimates

The first estimate of the total Huron population was made by Champlain during his 1615-1616 visit. In the 1619 edition of his diaries Champlain states that the Huron population "may amount to 30,000 souls" of whom 2,000 were "warriors" (Champlain, Vol. 3:122). In 1632 Champlain's account of his visit to the Hurons was republished with minor alterations. For some reason, he or his publisher reduced this figure to 20,000 (Champlain, Vol. 4:302). In both cases the number of warriors is given as 2,000 and the number of villages as 18.

Sagard, whose familiarity with Champlain's writings has already been noted, gave a population estimate of 30,000 to 40,000 of whom 2,000 to 3,000 were warriors (Sagard:92). His estimate of the number of villages was 25 (Sagard:91). Unlike Champlain, Sagard did not travel widely in Huronia, and in compiling his book seems to have taken a great deal directly from Champlain. His population estimate may be a good case in point.

The earliest Jesuit estimate was made in 1633 by Le Jeune, who placed the total Huron population at 30,000 (J. R., Vol. 6:59). Since Le Jeune had never been to Huronia he could only have obtained this figure from Champlain or the Jesuits, J. Brébeuf and A. de Noue. The latter two resided among the Attignaouantan from 1626 to 1628.

Between 1634 and 1635 three estimates were made. All three were by Brébeuf and all three placed the total Huron population at 30,000 (J. R., Vol. 7:225; Vol. 8:115; Vol. 10:313). In every case Brébeuf put the number of settlements at twenty.

In the autumn of 1634 the first outbreaks of contagious diseases were reported among the Hurons (J. R., Vol. 8:43, 73). The Jesuits described the epidemic as measles or smallpox, but of a much more virulent variety than was known in France (J. R., Vol. 8:87-89). Prior to European contact smallpox and measles were unknown to the North American Indian groups; in the case of the Hurons, exposure to these diseases was disastrous. In a letter dated March 28th, 1640, Jérôme Lalemant mentioned that the Huron population had fallen from 30,000 to 10,000 (J. R., Vol. 17: 223). The letter was written to the Cardinal, Duke de Richelieu and in it Lalemant blames the decline of the Huron population primarily on the ravages of the New York Iroquois. Since the letter was a request to the government of France to take action against the Protestant English and Dutch, as well as their Indian allies, Lalemant's explanation that the Iroquois were largely to blame for the population decline is highly suspect. As a matter of fact in May of 1640, two months after his letter to Richelieu, Lalemant put the blame for the Huron population decline on the epidemics (J. R., Vol. 19:127). In the same passage Lalemant makes reference to a census taken

in the autumn and winter of 1639. Apparently the Jesuits took some pains to make the census as accurate as possible, because the deployment of their missionaries was to some extent dependent on the population size of the tribes and distribution of the villages. The results of the census revealed:

> . . . thirty-two hamlets and straggling villages, which comprise in all about seven hundred cabins, about two thousand fires, and about twelve thousand persons. (J. R., Vol. 19:127).

Unfortunately this figure includes the neighbouring Petun (Tionnontate), who lived in the Collingwood area. Although there are no separate population estimates for the Petun, Jérôme Lalemant wrote that in 1640 the Petun resided in nine villages (J. R., Vol. 20:43). If one could assume that the Huron-Petun population was roughly proportional to the number of villages in each confederacy, then the Hurons had a 1639 population of 8,700 and the Petun 3,300. In the light of other estimates, a post-epidemic Huron population of 8,700 seems to be slightly too low.

The last rough population estimate was made in 1645 by Jérôme Lalemant. At that time he stated that the Huron population was about 10,000 to 20,000 (J. R., Vol. 28:67).

After the final destruction of Huronia three Jesuits recounted what in their opinion was the original population size of Huronia. Le Mercier, in 1653 estimated 30,000 to 35,000 (J. R., Vol. 42:221), and G. Druillettes in 1658 again placed the figure at 30,000 to 35,000 (J. R., Vol. 44:249).

Only one of the early authorities differs markedly from the other estimates. In 1691 Le Clercq wrote that at one time there had been " . . .

18 towns comprising about 10,000 souls . . . " (Le Clercq, 1881:96-97). It is not exactly clear which period in Huron history Le Clercq was referring to, but it seems to have been the Récollet period prior to 1629 because he discusses Le Caron's early visit to Huronia in the same chapter. The passages Le Clercq quoted from Joseph Le Caron make no references to population estimates, so Le Clercq may even have obtained the figure of 10,000 Hurons from later Jesuit estimates. It is really remarkable that Le Clercq would assign a figure of 10,000 to a pre-epidemic Huron population when all his early sources were in terms of 30,000. Perhaps he was simply using the post-epidemic Jesuit estimate without giving the matter much thought. It is doubtful if Le Caron estimated 10,000 Hurons when his travelling companions Champlain and Sagard both put the figure at about 30,000.

In summary, there seems to be a general consensus that from 1615 to the mid 1630's the Huron population was fairly stable about 30,000 people. After 1638, due primarily to the ravages of smallpox, the population was reduced by about two-thirds to 8,700 or 10,000. Lalemant's 1645 estimate would seem to indicate that 8,700 may have been a low estimate and the actual figure was somewhat higher.

2. Modern Estimates

Most modern writers have more or less accepted the seventeenth century estimates (Hunter, 1948:3; Kidd, 1949:8; Hunt, 1960:40; Jury and Jury, 1965:15; Wright, 1966:81; Trigger, 1960:16, 1963 a:91, 1963 b:152, 1967: foreword).

Only three authors have attempted to question the earlier Huron population estimates and devise their own. Mooney (1928:23-24) felt that

the Huron population in 1600 was about 10,000 and the neighbouring Petun, 8,000. Since Mooney's work was published posthumously from an incompleted manuscript, it is not entirely clear how he derived his figures. Judging from the bibliography found with the manuscript, he did consult the Jesuit Relations, but apparently paid no attention to the pre-epidemic estimate of 30,000 Hurons. For all intents and purposes Mooney's estimate of 10,000 for the pre-historic Huron population can be regarded as a guess, influenced perhaps by the post-epidemic Jesuit estimates.

Kroeber (1939:140) accepted Mooney's population estimate for the Hurons and attempted to justify it in terms of agricultural efficiency and socio-economic variables (Kroeber, 1934:8-12; 1939:146-150). His basic premise was that the Indians of the agricultural east were not farmers but "agricultural hunters" (Kroeber, 1939:150). Agricultural produce, he contended, accounted for only one half of their diet, even though their corn yields (15 to 20 bushels per acre), were only slightly below the 1934 United States average of 25-30 bushels per acre (Kroeber, 1939:146). Basically Kroeber saw the production of corn as a means of carrying out warfare between the Iroquois groups. Warfare in turn kept populations down making additional agriculture unnecessary (Kroeber, 1939:149). Consequently, Kroeber reasons, one should expect low population numbers and densities. His population density was computed by combining Mooney's figures for the Petun and Hurons (18,000) dividing this into the "Huron-Petun culture area" (139,200 sq. km.). The result is a population density of 12.9 Indians per 100 sq. km. (Kroeber, 1939:140). All things taken into consideration, Kroeber feels that this population density is about right for Indians that were primarily hunters and secondarily agriculturalists.

There is little doubt that both Mooney's and Kroeber's estimates are wrong because they are founded on very questionable premises. Apart from the fact that the Hurons were not "agricultural hunters" but agriculturalists who derived more than 50 per cent of their diet from agricultural produce, it is very doubtful if pre-contact warfare was of such a nature that it contributed to a lack of population increase. Even if Mooney's and Kroeber's estimate of 18,000 Huron-Petun in 1600 A. D. is taken as being correct, his derivation and confidence in a population density as low as 12.9 Indians per 100 sq. km. certainly is not. Kroeber delimits a culture area of 139,200 sq. km. (53,606 sq. mi.) stretching all the way from the Niagara escarpment to the Saguenay and from the southern edge of the Canadian Shield to the north shore of Lake Ontario and the St. Lawrence as far as the junction of the Ottawa, where the southern limits of the culture area dip south to include what are now the eastern Townships of Quebec (Kroeber, 1939: Appendix Map 1). It is doubtful whether the Hurons and Petun as such, ever occupied this stretch of territory. They certainly did not occupy it all at the same time, much less in 1600 A. D. Furthermore the Hurons and Petun were not a dispersed population but one living in compact villages associated together in tribal areas, with a high predilection for certain soil types. In other words only a portion of Kroeber's culture area ever supported the Hurons and Petun at any one time. Therefore a density of 12.9 Indians per 100 sq. km. does not make any sense and one should expect considerably higher population densities.

The actual area occupied by the Hurons in the early 17th century has already been delimited (Chapter I). This was an area of some 883 sq.

km. (340 sq. mi.). To this one can add a generous 195 sq. km. (75 sq. mi.) for the Petun area, resulting in a total area of 1,078 sq. km. (415 sq. mi.) from which the Hurons and Petun derived most of their sustenance. Even if Mooney's estimate of 18,000 Hurons and Petun is taken as accurate, this would mean a population density of 16.7 persons per sq. km. (43.4 per sq. mi.), or 1,670 people per 100 sq. km. When Huron soil preferences are taken into consideration and their degree of agricultural efficiency, the actual population density is somewhat higher. Clearly then, Kroeber's justification of Mooney's estimates is founded on several misconceptions which in turn throws considerable doubt on Mooney's original estimate.

Only one writer has tried to make a serious case for a higher Huron population estimate than 30,000. Robert Popham (1950:86-87) came to the conclusion that the pre 1636 Huron population could have been as high as 45,000 to 50,000. He accepts the figure of 30,000 for the conventional Huronia, but claims that on the basis of the presence of trade goods on ten village sites in Innisfil Township, Simcoe County, the whole area west of Lake Simcoe was also occupied in early historic times but overlooked by Champlain and the Jesuits. Popham therefore reasoned that the whole of Simcoe county was occupied prior to 1636. His final figure was derived by estimating a population density of 55 people per square mile over "conventional Huronia" and then extending this figure over the whole of the County.

A basic criticism can be levelled at this estimate; it concerns Popham's definition of the occupied area. The figure of 55 people per square mile was based on the assumption that the early estimates of 30,000 Hurons applied to Simcoe County north of Kempenfeldt Bay and that Champlain,

Sagard and the Jesuits simply did not know of the Hurons in Innisfil or adjacent townships. That this assumption is highly unlikely has already been discussed earlier (Chapter I). There were probably no major areas of settlement south of the Cranberry, Bass and Orr Lake frontier; the Innisfil area was abandoned sometime before Champlain's arrival and the displaced population formed the bulk of the Petun and some of the Huron tribes. In view of Champlain's and the Jesuit's knowledge of the Petun and even the Neutrals, it does not seem possible that they could have overlooked ten Huron settlements in Innisfil Township; a supposed population equal to that of the Petun and one third to one quarter the size of the Hurons.

3. Evaluation of Contemporary Estimates and New Approximations

a) Evaluation

One of the really remarkable things about the early population estimates is the way in which the figure 30,000 was accepted by all the early writers up to the Jesuit census of 1639. From the manner in which this figure was used there seems little doubt that Sagard and the Jesuits were simply using Champlain's original estimate. Champlain's 1632 revision (or misprint) to 20,000 people did not seem to have been taken into account. The universal acceptance of a population estimate of 30,000 could mean four things: 1) Everyone agreed that 30,000 was a reasonable estimate; 2) A second estimate was not attempted because the later writers were not acquainted with the whole of Huronia; 3) Champlain's estimate suited the political and other motives of the Jesuits; and 4) during the fifteen to twenty years after Champlain's visit the figure had become so accepted that no one really thought about revising it.

It has already been stated that Champlain's estimates regarding long distances must be regarded with caution. There is no reason to suppose that his population estimates were any more accurate. Any attempt on Champlain's part to estimate the population of as large a group as the Hurons is therefore open to suspicion. Sagard almost certainly did not travel much in Huronia and in all probability simply copied from Champlain. The Jesuits however were a different matter. Several of them were familiar enough with Huronia to have made independent estimates before their census of 1639. Yet they seem to have relied solely on Champlain's estimate of 30,000 Hurons.

Some ethnologists such as Kroeber (1939:177-180) and Steward (1949:656-657) have rejected missionary estimates as being exaggerations. Other writers have shown that in many cases missionary estimates were actually much more accurate than those of Kroeber and his colleagues (Dobyns, 1966:395-416). In attempting to justify the mission to the Hurons and seeking aid for such an enterprise, the Jesuits would certainly gain from inflated population estimates; yet there is no evidence that they would deliberately falsify documents that were sent to their Superior in Quebec and ultimately back to France and Rome. One is therefore inclined to believe that the original estimate of 30,000 was simply accepted as reasonably accurate and that the question was of little concern until the mission had to be reorganized in 1639, at which time a more accurate census had to be made.

For reasons already stated, the 1639 census count of 8,700 to 10,000 people, is probably the most accurate estimate for the post-epidemic Huron population. An attempt will now be made to use this estimate and

other methods to arrive at some understanding of the pre-epidemic Huron population.

b) New Approximations.

A method that has been widely used to estimate pre-European Indian populations is the death rate due to contagious diseases applied to more accurate post-epidemic population counts (Dobyns, 1966:410-412). According to the Jesuits smallpox was the primary agent in reducing the Huron population (J. R., Vol. 8:87-89). This disease affected in particular the old and young (J. R., Vol. 17:11), thus removing not only a percentage of the population, but also two particular segments of the social structure, the children and the old people. It is impossible to estimate a rate of decline among the Hurons from contemporary documents. Numbers of dead or dying are given for a brief period such as a month, or single visit by a missionary, but never over an extended period of time (J. R., Vol. 17:25, 61). The Jesuits estimated that by 1640 the Huron population had declined by about two-thirds (J. R., Vol. 17:223).

Studies made on more complete data from uninoculated Indian populations suggest a smallpox death rate of 75 per cent among California groups (Cook, 1955:322), while among the Assiniboine a death rate of 66 per cent has been recorded (Dobyns, 1966:411). In 1780 David Thompson observed the catastrophic effects of small pox among the Chippewa, Blackfeet and Snake Indians. In a relatively short time the disease had decimated about three fifths of the Plains Indian population (Thompson, 1962:236). In addition to his personal observations, Thompson quotes the Blackfeet's own estimate that more than half of their population had died (Thompson, 1962:245). Other studies list death rates of 50 per cent among the Chickasaws, Catawba

and Cherokees in mid 18th century Georgia and South Carolina (Duffy, 1951: 335, 338), and slightly later a similar death rate among the Pueblo of New Mexico (Aberle, et al., 1940:167).

The studies cited above all deal with unvaccinated aboriginal American populations who apparently experienced smallpox for the first time. These populations range from hunters and gatherers to agriculturalists and from western Canada to the southeastern and southwestern United States. A death rate of 50 to 70 per cent among such populations appears to be common. It is interesting to note that as late as 1924 a smallpox epidemic in Windsor, Ontario, carried with it a mortality rate of 71 per cent among the unvaccinated infected population (Heagerty, 1928:95).

In view of these figures, similar death rates among the Hurons would not be unexpected. If the 1639 census of 8,700 to 10,000 Hurons is taken as reasonably accurate of the post-epidemic population, the following pre-epidemic estimates can be made (Table No. 5).

With 9,000 Hurons as an average post-epidemic population and an average death rate of 60 per cent the resulting population before the mid 1630's could have been in the order of 22,500.

A method for estimating aboriginal populations occasionally used, is to take estimates of the total number of warriors in a tribe and multiply this figure by the average number of people in a family (MacLeod, 1928:545-546). The only estimates of warrior totals for Huronia are Champlain's figure of 2,000 (Champlain, Vol. 3:122) and Sagard's figures of 2,000 to 3,000 (Sagard:92).

References to the average number of people per family are scarce. Virtually nothing is known about family size, birth rates, death rates

TABLE NO. 5

Huron Population Estimates Based on Smallpox Death Rates

Death Rate	1639 Census of Post-Epidemic Population	Pre-Epidemic Estimate
50%	8,700	17,400
60%	8,700	21,750
70%	8,700	25,660
50%	10,000	20,000
60%	10,000	25,000
70%	10,000	33,300

and average life spans. Ragueneau cites one case in which 8 to 10 families made up 60 to 80 people. (J. R., Vol. 35:87), or six to ten people per family. In 1657-58 Druillettes described several agricultural tribes in the western Great Lakes area with a similar socio-economic structure to the Hurons. After stating that for every man " . . . there are at least three or four other persons, namely, women and children . . . " (J. R., Vol. 44:245) he goes on to describe some of these tribes and villages in greater detail (J. R., Vol. 44:245-247). From his descriptions one can gather that the average family size was roughly in the order of four to six people including the men. All these estimates are within the range of 3-7 members per Huron family set by Trigger (1966:440).

Studies done on other shifting agriculturalists suggest the following family sizes: Gabel (1967:32) takes an average of 5 people; Sahlins

(1968:30) estimates 5 to 8; Cowgill (1962:277) actually worked out the average size of a household among shifting cultivators in the Maya Lowlands as 6 people, and Howells (1960:168) used a family figure of 5 to estimate Pecos Pueblo populations.

From the 1639 Jesuit census of the Hurons and Petun one can derive an average family size of three, which is obviously much too low in view of these other estimates. This low figure is explained by the Jesuits as being due to smallpox and that prior to the epidemics the longhouses and villages were much more populous (J. R., Vol. 19:127). If the aforementioned smallpox death rate of 50 to 70 per cent is applied to the average post-epidemic family size of three, one would get a pre-epidemic family size of 6 to 8 people.

Taking all these estimates into consideration a Huron family size of 4 to 8 people does not seem unreasonable. Applying an average of six members per family to Champlain's and Sagard's estimated 2,000 or 3,000 warriors one would get total population estimates of 12,000 to 18,000 Hurons, providing that each family furnished one warrior.

David Thompson's observations among pre-epidemic Mandan populations in 1797-98, tends to reinforce the opinion that one warrior for every six or seven people in an agricultural North American Indian group is a reasonable estimate (Thompson, 1962:173). In all he visited two groups of 1,520 and 1,330 people, with 220 and 190 warriors respectively, or one warrior to about seven people. Family sizes seemed to have varied up to ten people.

Even if the size of the average Huron family has been correctly estimated, little confidence can be placed in the resulting total population estimate unless we have independent means of checking Champlain's

and Sagard's warrior figures. Of all the early writers, Champlain was probably the best informed on the fighting potential of the Hurons because he tried to raise an army among them in 1615. This army was composed of at least 500 men (Champlain, Vol. 3:60), although 2,500 had been promised (Champlain, Vol. 3:32). Since the 1615 campaign had first been called off and then hastily revived only 500 warriors turned up. According to Sagard this was about the average number of Hurons that went to war every year (Sagard:152). In the case of the 1615 expedition, most of the warriors came from Cahiagué and the neighboring villages (Champlain, Vol. 3:56), so presumably they were mainly Arendaronons. If the other tribes could put up a similar number of warriors, a total warrior population of 2,000 to 3,000 does not seem unreasonable.

A third method of gaining an understanding of the total Huron population is to estimate the population size of the individual villages that made up the five tribes. In a few cases the populations of villages can be estimated; in other cases an idea of their size can be gained from the importance with which the Jesuits regarded them. While this method is of course fairly subjective, it tends to support the earlier estimates.

Champlain (Vol. 3:122) estimated 18 villages; Sagard 25 (Sagard: 91); Le Clercq (Vol. 1:96-97) gave a figure of 18 (probably from Le Caron or Champlain); Brébeuf (J. R., Vol. 8:115) listed 20 in 1634 and the same number in 1636 (J. R., Vol. 10:313). The 1640 census lists 32 villages and hamlets of which 9 belonged to the Petun (J. R., Vol. 19:125-127). The discrepancies between the various estimates are understandable in view of the fact that villages shifted periodically and occasionally split into two or more villages or sometimes combined into one.

Using the Relations and Maps discussed in Chapter 2, part 3, a careful tribe by tribe inventory can be made of the names and number of villages belonging to each tribe during the Jesuit period (Table No. 6). Each village will be rated in relation to the largest villages and according to the scraps of information that can be gathered about them in the Relations.

The Jesuits regarded Teanaustaye (St. Joseph II) as the largest village in Huronia (J. R., Vol. 17:11; Vol. 19:185; Vol. 33:141), and the size of the others can be estimated in relation to this one. Teanaustaye was composed of 80 cabins (J. R., Vol. 15:153) and 400 families (J. R., Vol. 34:87). This works out to five families per longhouse, which is about right considering the Jesuit estimate of an average of three hearths per longhouse and two families per hearth (J. R., Vol. 19:127). Longhouses varied enormously in size (J. R., Vol. 16:243), but judging from excavations in Huronia a longhouse containing six families seems about average (Emerson, 1961 b):62-64). At six persons per family, Teanaustaye could have contained about 2,400 people.

One of the other large villages was Ossossane with 40 longhouses (J. R., Vol. 15:153), or a population of about 1,500 people. St. Jean Baptiste and St. Michel were at least as large as Ossossane because like Ossossane, they were the principal villages of their respective tribes. Accordingly Teanaustaye will be given an arbitrary rating of 4, signifying it as the most important and the largest village in Huronia with a population of 2,400. Ossossane, St. Michel and St. Jean Baptiste will be given ratings of 3 to 4 but less than 4 with populations varying between 1,500 to 1,800. The other villages will be rated from 1 to 3 depending on their

"importance." A rating of one will carry an arbitrary population figure of 300 and a rating of two a population of 600. In archaeological terms a village containing 300 people in about six longhouses can be considered small. It is doubtful whether there were any villages smaller than this during the historic period.

Two other fragments of information that we have is that the Attignaouantan made up about half of the Huron population (J. R., Vol. 10: 77), and that the Ataronchronons had a post-epidemic population of 1,400 (J. R., Vol. 19:167).

The village by village tabulation results in a total Huron population of 20,400 (Table No. 6). Such a series of estimates is of course fraught with difficulties and open to challenge. In the light of available knowledge however, it is difficult to see where these estimates could be refined. Closer approximations might be made if the exact location and acreage of every village was known. In that case estimates could be made on the basis of numbers of families per longhouse and numbers of longhouses per acre. The latter ratio could be established through a comparison of excavated sites. As yet not enough sites have been excavated to establish good longhouse per acre ratios. Only many years of diligent digging will allow one to make less subjective estimates of Huron populations.

There are a number of other methods of estimating populations which can be used with varying degrees of success. Most however require specific information which is never available for all the Huron villages. Howells (1960:158-176) estimated prehistoric Indian populations from skeletal evidence. His method can be reduced to the relationship: $P \times \frac{R}{100} = \frac{S}{T}$;

TABLE NO. 6

Huron Population Estimates Based on Village Totals

Tribe	Village	Rating	Population
Attinguenongahac	Teanaustaye	4	2,400
	Taenhatentaron	2-3	800
	Arethsi	1	300
	Nameless one	1	300
Subtotal			3,800
Arendaronon	St. Jean Baptiste	3	1,800
	St. Joachim	2-3	800
	Nameless one	2	600
	Nameless two	1	300
Subtotal			3,500
Tohontaenrat	St. Michel	3	1,800
Subtotal			1,800
Ataronchronon	St. Louis	2	600
	St. Anne	2	600
	St. Denis	2	600
	St. Jean	2	600
	Kaotia	2	600
Subtotal			3,000
Attignaouantan	Ossossane	3	1,500
	Andiatae	2-3	800
	Angoutenc	2-3	800
	Arendaonatia	1	300
	Anonatea	1	300
	Arent	2	600
	Arontaen	2	600
	Karenhassa	1-2	400
	Iaenhouton	1	300
	Ihonatiria	1	300
	Oenrio	1	300
	Onnentisati	1	300
	Quieunonascaran	3	1,500
	Tondakea	1	300
Subtotal			8,300
Huron Total			20,400

where P is the population of a village; $\frac{R}{100}$ the estimated death rate in people per 100 per year; S the number of skeletons in the cemetery; T the number of years a village was in existence. Only a few Huron ossuaries have been excavated such as the two at Cahiagué (Hunter, 1901:98; Harris, 1949:73), containing 550 skeletons; Ossossane with an estimated 1,000 skeletons (Quimby, 1966:110); and Teanaustaye with 500 to 1,000 skeletons (Hunter, 1901:80). The problem is that even if one knew variables such as the death rate and the length of time a village was in existence, we still do not know whether all the skeletons in an ossuary came from the same village. In the case of Ossossane for example, eight or nine villages buried their dead together in one ossuary (J. R., Vol. 10:291). The Teanaustaye ossuary presents a different problem in that the skeletal population represents part of a massacre. Population estimates from skeletal remains are possible in the future, but must be subject to the most careful evaluation.

c) Summary

By the use of three standard methods of estimating pre-contact Indian populations the Huron population prior to the onslaught of European diseases could have been as low as 14,000 and as high as 33,300. The median figures for all three estimates run from 16,000 to 22,500 with an average of 20,200, which is close to the figure obtained by totalling the estimated village populations. On the basis of these figures it would seem that the original estimate of 30,000 Hurons made by Champlain and accepted by later writers, is about one third too large. This is the same margin of error that must be applied to Champlain's estimates of long distances. Since Champlain's estimates of distances can be checked more accurately than his

population estimates, the discrepancy of one third between his estimate of the total Huron population and that of the preceding estimates, lends support to the view that the pre-epidemic population of Huronia stood at about 21,000.

In view of the preceding discussion the author will henceforth use the figure of 21,000 Hurons to describe the pre-epidemic Huron population, and 9,000 as the post-epidemic population. For particular tribal areas and villages the figures compiled in Table No. 3 will be used. On the whole it is felt that the tribal totals are more accurate than figures for individual villages.

4. Population Densities

Using a population total of 21,000 Hurons in a culture area of 340 square miles (Appendix VI) one would arrive at a population density of 62 people per square mile (2400 per 100 sq. km.). This figure is well within the range of population densities that have been computed for shifting agriculturalists. Under tropical conditions such densities can vary upwards to 200 people per square mile (Cowgill, 1962; Dumond, 1961). Since little or nothing is known about population densities among shifting agriculturalists in mid-latitude areas, comparative figures are not available.

Population densities for the individual tribal areas vary between 52 and 233 people per square mile (Table No. 7). Figure No. 1 depicts the relation between the total tribal area and the estimated population. The Product Moment Coefficient of Correlation (Spiegel, 1961:244-245) between these two variables is 0.94 which is statistically significant at the 0.01 level using Student's test (Spiegel, 1961:247). If population is correlated with only arable soils in each tribal area the correlation coefficient is

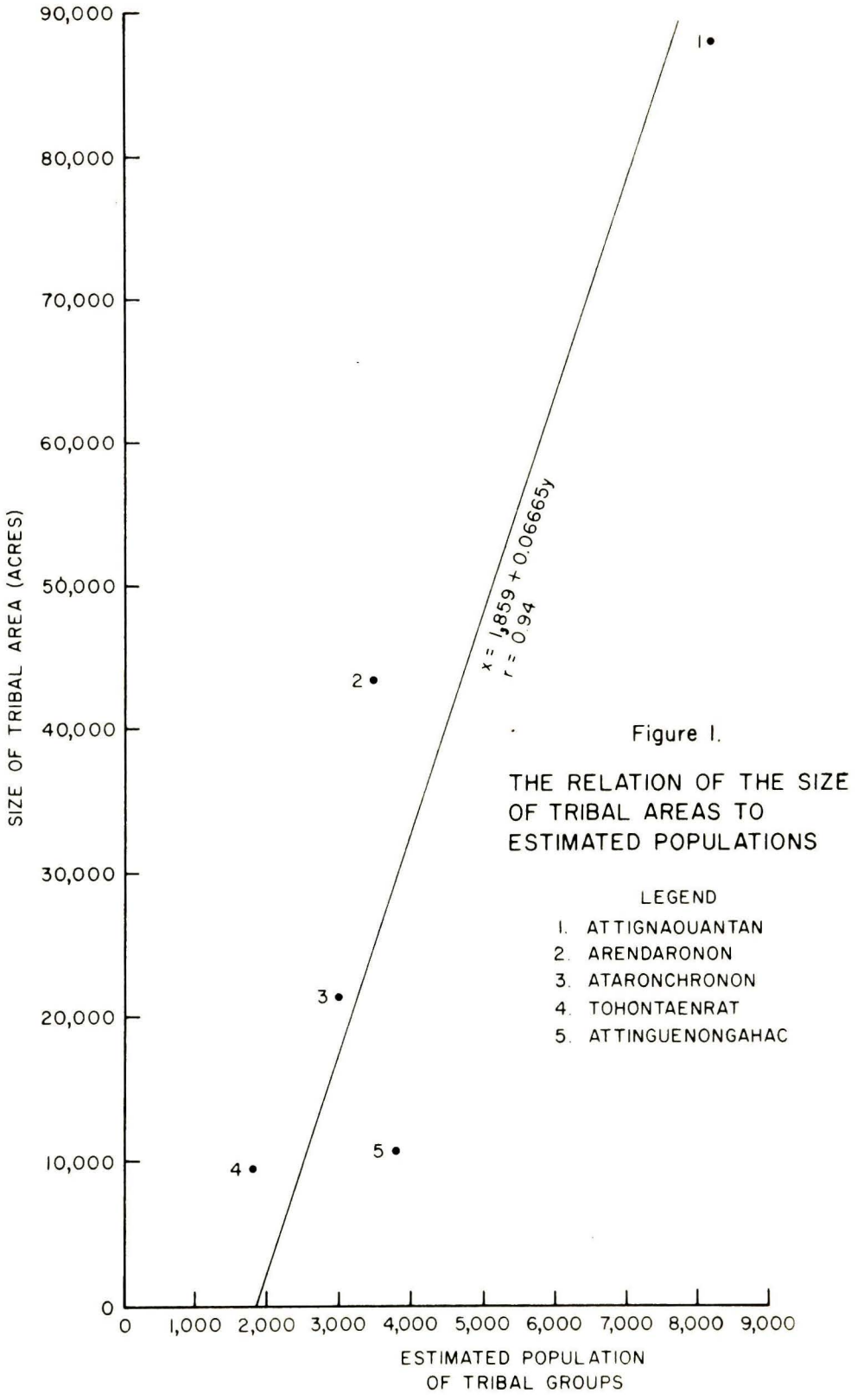

Figure 1.

THE RELATION OF THE SIZE OF TRIBAL AREAS TO ESTIMATED POPULATIONS

TABLE NO. 7

Population Densities in Huron Tribal Areas

Tribal Area	Population Estimate	Area (acres)	Area (sq.mi.)	Density (P/sq.mi.)	Arable Area (acres)	Arable Area (sq.mi.)	Density (P/sq.mi.)
Attinguenongahac	3,800	10,422	16.3	233	9,976	15.6	243
Arendaronon	3,500	43,521	68.0	52	36,016	56.3	62
Tohontaenrat	1,800	9,313	14.6	124	8,058	12.6	143
Ataronchronon	3,000	25,934	40.5	71	23,233	36.3	83
Attignaouantan	8,300	88,176	137.8	60	77,598	121.3	68
Huronia Total	20,400	177,366	277.2	74	154,881	242.2	84

0.95. The difference between these two correlations is insignificant because the tribal areas are situated on the well drained upland areas of Huronia with about an equal proportion of agriculturally usable and non usable soils.

Since the Hurons showed a marked preference for certain soil types (Chapters II and V), an attempt was made to correlate tribal population estimates with tribal areas adjusted to a scale of preference in soil types. An index of preference was calculated in the following way for each soil type: Index of preference for soil type x = $\frac{\%\text{ of total sites on soil type x.}}{\%\text{ of soil type x in total area}}$ The computed indices show that the sandy loams were in considerably higher demand than the other usable agricultural soils (Table No. 8), demonstrating

TABLE NO. 8

Indices of Preference for Well Drained Soils

Soil type		Index of preference
Gravels	(well drained)	.7
Sands and loamy sands	(")	.7
Sandy loams	(")	1.7
Loam and silt loam	(")	.4
Clay and clay loam	(")	0

that Huron agricultural technology limited the variety of soils that could be used, but that within these limitations the Hurons showed a marked

preference for the more fertile soils (Chapter II, part 4b)). Assuming that higher population densities among agriculturalists are partly a reflection of soil productivity, the total area of each soil type in each tribal area if adjusted to the index of preference should reflect more uniform population density figures. Table No. 9 shows that this assumption

TABLE NO. 9

Population Densities in Adjusted Huron Tribal Areas

Tribal Area	Population Estimate	Adjusted Area (acres)	Adjusted Area (sq.mi.)	Density (P/sq.mi.)
Attinguenongahac	3,800	16,314	25.5	149
Arendaronon	3,500	41,106	64.2	56
Tohontaenrat	1,800	11,931	18.6	97
Ataronchronon	3,000	33,819	52.8	51
Attignaouantan	8,300	83,973	131.2	64

is fairly true in that the population densities now vary between 51 and 149 people per square mile. The Product Moment Correlation Coefficient between the estimated population and the adjusted area figures in now 0.97 (Figure No. 2).

The close correlations between tribal area and population, and the significance of preferred soils in this correlation can be attributed to a fairly close adjustment to an agricultural resource base. The relatively higher population density for the Attinguenongahac is explainable either as an error in the original population estimate or in terms of an adjustment of tribal boundaries. Admittedly the population figure for the Attinguenongahac is only an estimate, but so are the figures for the other four tribes. One would therefore assume that any error of estimate is spread fairly evenly over the five groups, and not favouring one by as much as 100 to 150%. What is more likely is that an adjustment of

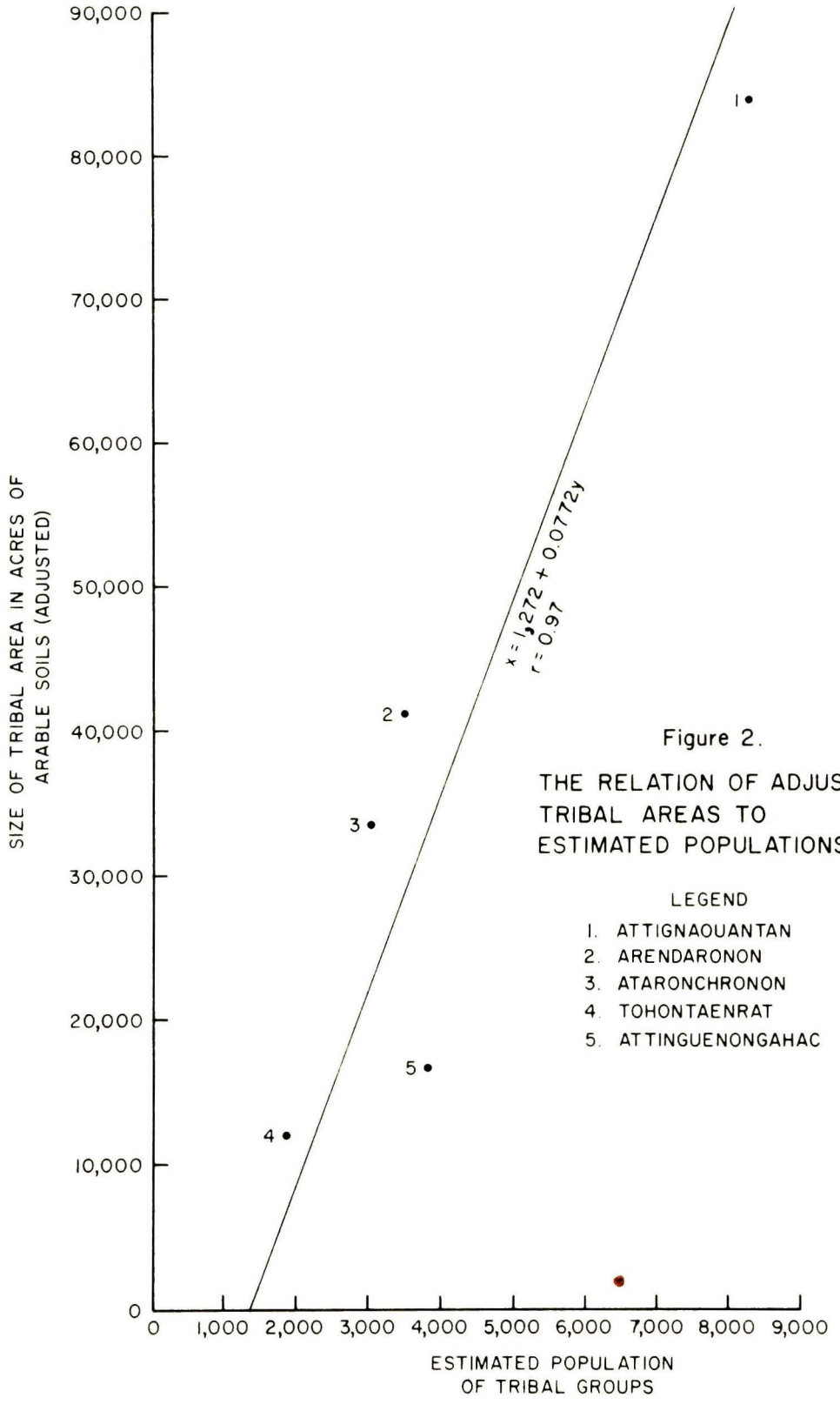

Figure 2.

THE RELATION OF ADJUSTED TRIBAL AREAS TO ESTIMATED POPULATIONS

territorial boundaries took place necessitating a higher Attinguenongahac population concentration. The likelihood that this in fact took place can be deduced from the tribal history of the Huron confederacy (Chapter III, part 3). The Attinguenongahac, it will be recalled, once shared Huronia with the Attignaouantan. The three tribes that moved into the country just before the French arrival, moved into the south, central and eastern sections of Huronia, thus surrounding the Attinguenongahac on three sides. It is therefore likely that the redistribution of land affected the Attinguenongahac more than the Attignaouantan and necessitated a shrinking of tribal boundaries.

In summary then, the overall population density of Huronia before the 1630's was in the order of 62 people per square mile, using a culture area of 340 square miles and a population of 21,000. The population densities of individual tribal areas varied from a low of 52 people per square mile to 233 per square mile. In making this estimate the lowlands adjacent to the tribal areas were omitted. A narrower range of population densities was obtained when the soils of each tribal area were weighted according to a scale of preference. In this case the variation was between 51 and 149 people per square mile. The close relationship between population and the size and productivity of the tribal area is probably due to a fairly close adjustment to an agricultural resource base.

Chapter V

Features of Settlement

Introduction

Among geographers there is a surprising degree of unanimity as to what is included under a study of settlement. Broeck and Webb (1968: 340) for example define settlement in the following manner:

> The word settlement indicates to the geographer all man-made facilities resulting from the process of settling, including the establishments that shelter people and their possessions, the roads that connect, and the fences that part them.

A more complete definition is given by Kohn (1954:125):

> In general, settlement geography has to do with facilities men build in the process of occupying an area. These facilities are designed and grouped to serve specific purposes, and so carry functional meanings. Their exterior forms reflect architectural styles of the time and culture from which they spring. Their distribution produces discernible patterns in the landscape. Once created, they are apt to outlast both the function for which they were originally designed and the architectural fashions of their time. For these reasons they reflect changes in man's occupance of an area and are often the only existing landscape expressions of the past.

To demonstrate the degree of unanimity between geographers, anthropologists and archaeologists as to the content of settlement pattern analysis, the following statement by an anthropologist might serve as comparison to those of Kohn and Broeck:

> As I see it, this (the study of settlement) would include a description of (1) the nature of the individual domestic house type or types; (2) the spatial arrangement of these domestic house types with respect to one another within the village or community unit; (3) the

> relationship of domestic house types to other special architectural features, such as temples, palaces, ball courts, kivas, and so on; (4) the over-all village or community plan; and (5) the spatial relationships of the villages or communities to one another over as large an area as is feasible. (Vogt, 1956:174).

While there is a large degree of agreement between the disciplines as to the categories which should be considered in an analysis of settlement, their final objectives are somewhat different. Most geographers have been primarily interested in the spatial aspects of settlement as indicators of culture areas, culture change, economic patterns and environmental relations. Among anthropologists the emphasis has been somewhat different, in that settlement has also been used to derive inferences about social, political and religious organization (Vogt, 1956: 173-175; Willey and Phillips, 1962:48-49; Trigger, 1967b:151-152). Through the nature of their disciplines the geographer ultimately describes human spatial organization and the anthropologist human social organization. Since geography, anthropology and archaeology considers phenomena that result from human behavior the seeming differences between these disciplines are actually more apparent than real. In the last analysis all of these disciplines look at man as the possessor of learned behavior interacting with other men and his cultural and natural environment. Some of the relations between these disciplines have been summarized by Mikesell (1967).

One of the organizational problems that must be dealt with in most settlement studies is whether subsistence systems should be discussed as an aspect of settlement or given separate treatment. This question becomes particularly crucial in any discussion of the relation of

habitation units or agglomerations to the natural environment. That a dilemma should exist is quite natural because the actual settlements, the subsistence systems and the natural environment are interrelated. Some authors have tried to solve their dilemma by assuming that any one factor, usually technology or environment, acts as a determining agent on the rest.

For the sake of convenience and clarity, subsistence systems have been separated from settlement in this thesis. Under the general term "settlement" the author understands the general categories proposed by Kohn and Vogt, leaving subsistence economies to a later chapter. For the moment environmental factors have only been considered in as much as they pertain to the actual selection of a village site or the availability and nature of construction materials. Wider environmental relations will be considered under subsistence economies.

The only departure from the usual organization of a chapter on aspects of settlement is a discussion of the size, function and distribution of settlements after a consideration of the smallest unit of settlement, the dwelling, and before a discussion of the total village complex (morphology). The logic behind such an organization was an awareness that while the basic dwelling unit may have been similar for all types of settlements, the morphology of the village may have been different depending on the size and function of the villages. Conversely it is difficult to consider the size of villages without first considering the basic dwelling unit. The most logical organization was therefore considered to be (1) placing the settlement into its natural setting; (2) a discussion of the basic habitation unit; (3) a consideration

of the size, function and distribution of settlements; (4) the morphology of the settlement; and (5) the lines of communication between settlements. It is hoped therefore, that this chapter is a description of "the facilities (Hurons) build in the process of occupying an area." The manner in which they exploit that area is left to the next chapter.

1. Factors Influencing the Selection of Permanent Village Sites

a) Water Availability

To the Hurons the selection of a village site was anything but a haphazard affair. As a matter of fact considerable care seems to have been exercised in regard to a choice of location. Each site had to have a combination of specific requirements among which water availability, soil type, defendability and surrounding vegetation seem to have been the most important. Of the early writers Sagard alludes to the concern the Hurons had with picking a site:

> "This [a site] they know very well how to choose, taking care that it shall be adjoining some good stream, on a spot slightly elevated and surrounded by a natural moat if possible. . . ." (Sagard:92).

There is no doubt that a permanent and readily available water supply was of paramount importance. There is no known site in Huronia that is not immediately adjacent to a spring, creek or some other supply of water. Palisaded villages were usually placed on the edge of a stream bank, thus having the double advantage of being near water and on a slight slope for defence. In the case of unpalisaded villages the individual longhouses were scattered along the stream bank or in some cases around the head of a spring (for example the Fournier site, Tay Township, Concession III, lot 16, E. half; Russell, 1967:2). In some cases even

the larger villages seem to have been built around the head of a spring; at least Champlain reported this for an Onondaga village he attacked in 1615 (Champlain, Vol. 3:70).

Proximity to a permanent water supply was of course mandatory because the Hurons did not have the technology to dig wells or transport water over great distances. Water had to be carried in fragile earthenware, leather or bark vessels and there is no evidence that it might have been stored in any quantities except perhaps on the galleries of the palisade to quench fires in case the village was attacked (Champlain, Vol. 3: 122; Sagard:92).

b) Soil Preferences

The Huron's preference for certain soil conditions has already been noted (Chapter II, Table No. 1; Chapter IV, Table No. 5). In all 94.5% of the 139 sites examined occur on well drained soils ranging from gravels to silt loams. Together these soils comprise 79% of Huronia. The soils preferred most were well drained sandy loams, covering 40% of Huronia and having 68.5% of the sites. These were of course among the more fertile soils within the agricultural technological capabilities of the Hurons.

At the risk of belabouring the obvious, the data in Table No. 1 was tested by Chi-square (χ^2) in order to determine that the coincidence of soil types to sites was not due to chance (Gregory, 1963:151-157). A χ^2 value of 31.5 was obtained which, with 12 degrees of freedom, yields a probability value of less than 0.01. On the basis of these relationships it seems that the frequency occurrence of village sites is not related to the frequency occurrence of the soil types. One must therefore

conclude that soil type was a major factor which the Hurons took into consideration when choosing a site. Such a high degree of soil selection, and an awareness of relative soil fertility within the range of soil possibilities, is not uncommon among shifting agriculturalists (Narr, 1956: 139; Gabel, 1967:31; Stevens, 1964:267; Flannery, et al., 1967:448-449).

c) The Influence of Slope on Site Selection

The influence of slope on site selection is more difficult to evaluate. Judging from Sagard's brief statement (quoted at the beginning of this chapter), the Hurons made an effort to locate their villages on sites that had reasonably good natural defences such as a break-in-slope. Judging from the descriptions of Huron-Iroquois warfare, the success of an attack depended more on surprise than on a prolonged siege. One would therefore expect that a mere break-in-slope was not a major obstacle to the successful conquest of a village. A break-in-slope would have to be reinforced by a palisade in order to be really effective (Hunter, 1901: 66-67).

In his travels Champlain visited 18 villages, of which six were palisaded (Champlain, Vol. 3:122). Brébeuf stated that of the twenty villages he saw ". . . some villages tolerably well fortified" (J. R., Vol. 10:51; Vol. 11:7). He goes on to say that in case of an attack those Hurons that could retreated to the fortified villages, the others hid in the forest (J. R., Vol. 10:51). Sagard stated that as a rule the villages closest to the frontier were the best fortified (Sagard: 92).

In his site surveys in Simcoe County, Hunter lists ten sites out of 75 in Medonte township and eight sites out of 69 in Oro township

which he feels were chosen with defensive requirements in mind (Hunter, 1901:67; Hunter, 1902-159). Judging from field work done by the author in Medonte township Hunter's figures for sites with obvious defensive advantages should be doubled. The overwhelming impression is, that sites occurred on breaks-in slope simply because they were placed beside a spring or creek which happened to issue along the recessional shorelines of glacial Lake Algonquin. The scarcity of sites on the gently rolling uplands away from the break-in-slope near the recessional shorelines is easily explainable by a lack of surface water on the uplands rather than a lack of defendable sites (Map No. 24). The absence of palisades at many otherwise defendable sites would tend to support this view.

In general only the largest sites and especially those of the historic period seem to have been placed deliberately on defendable sites. Of these Cahiagué (Concession, 14, lot 10, Medonte Township), St. Joseph II (Concession 4, lot 12, Medonte), St. Louis (Concession 6, lot II, Tay) and Ossossane No. 3 (Concession 7, lot 16, Tiny) are particularly good examples. From the historical descriptions we can infer that the following villages were palisaded: Carhagouha (Champlain, Vol. 3:48), Ossossane No. 4 (J. R., Vol. 10:53), Quieunonascaran (Sagard:156), St. Ignace II (J. R., Vol. 34: 123), St. Jean Baptiste (J. R., Vol. 20:3133), St. Joseph II (J. R., Vol. 39:239), St. Louis (J. R., Vol. 34:125). These were without exception the largest and most important villages in Huronia. If the actual locations of these villages are correct (Appendix IV), the site of each one seems to have natural defences developed to an unusually high degree; that is, breaks-in-slope occur on two or more sides of the village. This is not true for smaller village sites in Huronia where a break-in-slope may occur on only

one side of a village.

From this discussion one might infer that a defensive position beside a break-in-slope was important in the locational requirements of the larger more important villages, and that in the majority of cases a position beside a break-in-slope simply meant that the site was located near a source of water.

It is interesting to note that among some of the New York Iroquois during the contact and historic period a defendable position seems to have been of major importance (Parker, 1916:490-491; Houghton, 1916: 513; Ritchie, 1965:317; Jameson, 1909:140-157). This characteristic of the League Iroquois village sites may reflect the fact that they were embroiled in wars with every Indian group on the entire perimeter of their frontier. As early as 1615 Champlain remarked that on the whole, the League Iroquois knew how to choose and build better defences than the Hurons (Champlain, Vol. 3:70). This observation was echoed by several writers after him (Hennepin, 1903, Vol. 1:116; Morgan, 1962: 313-315).

d) Vegetation Preferences

Although certain species of trees were preferred as building materials and firewood, macro-vegetational patterns seem to have no obvious relation to the distribution of sites (Map No. 26). Any seeming relationships can be explained in terms of soil type and drainage conditions. The preferred species were: cedar, birch, elm, pine and oak. Of these the first three are widely distributed in Huronia so that almost any site would have access to them. Cedar and elm bark were a major construction material in the building of longhouses. Both are ubiquitous throughout

the area; cedar in the swamps and elm on the moister heavier soils Birch bark was probably used in small quantities for the construction of utensils and canoes and can easily be transported over some distance if it is scarce near a site. Pine, a preferred source for resin, firewood and palisades is more common in the western end of Huronia, but there does not seem to be any obvious relationship between the location of sites and occurrence of stands of pine. In general the areas of pure pine in Tiny Township seem to have been avoided but this can be related to the coarse sands, gravels and lack of surface water in the area. As stated in Chapter II, these physical conditions are probably responsible for the pine stands.

Oak is regionally concentrated in the western end of Huronia (Map No. 26). Similar to pine, this species can exist on the droughtier sands and gravels in Tiny Township. Apart from its acorns, oaks did not have any particular value to the Hurons. Acorns seem to have been collected and consumed only in times of dire famine (J. R., Vol. 27:65; Vol. 34:197, 215, 225; Vol. 35:21, 23, 99). In 1649 for example, the refugee group on Christian Island scattered in the forest to collect acorns. Before winter they had put in a supply of 500-600 bushels (J. R., Vol. 35:99). The only references to acorns list them as a famine food. It is therefore doubtful if areas of oak were especially sought as village sites.

Some sites in Huronia were placed adjacent to small huckleberry marshes.[1] While huckleberries and other fruits were part of the diet

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1. See for example: Hunter's No. 38 and 41, Tay, Lot 5, Conc. 10 and Lot 3, Conc. 9 (1899:80); Hunter's No. 10 and 11, Medonte, Lot 17, Conc. 3 and Lot 16, Conc. 3 (1901:74).

obtained by gathering, it hardly seems possible that the presence of a berry site was a major site requirement. In all likelihood such sites became important if all the other site prerequisites were present. The possibility that these small marshes were ponds during Huron times, cannot be discounted.

There is a strong possibility that far more important than any single species or association of species, was the actual size composition of a particular timber stand. Huron technology in coping with large trees was limited and the nature of the construction of their villages demanded enormous quantities of logs under ten inches in diameter. It is therefore postulated that areas of secondary growth were sought. This hypothesis will be elaborated in part 2 c of this chapter.

e) Proximity to Navigable Waterways

In his study of Iroquois sites Houghton (1916:513) stated that navigable streams and lakes were generally avoided during the contact and early historic period; presumably because these provided easy avenues of attack. Parker (1920, Pt. 1:122) concurs with some of Houghton's observation and adds that most villages prior to the historic period were two to twenty miles inland from Lake Ontario on hilltops, but often within easy reach of navigable streams. If sites near navigable waterways were generally avoided among the New York Iroquois, this does not seem to have been the case among the Hurons during the same period. Where sites occur near lakes and streams they were often as close as preferred soil type and drainage conditions permitted. Since Huronia is dissected by a number of navigable streams (to canoes) and almost surrounded by water it would be difficult to avoid placing a village within an easy walk of

a navigable waterway. As a matter of fact, no Huron village, no matter where it was located, was more than a four-hours walk from either of the large lakes.

Prior to the historic period, a location near a navigable body of water does not seem to have been of too much importance (Map No. 24). Fishing, clam gathering and trading were seasonal affairs carried on by small groups of people. As trade with the French increased the location of a village near a stream or lake may have become more important. At any rate, during the historic period most of the villages were as close to navigable water as soil resources permitted (Map No. 23). At the same time it must be pointed out that in locating on the bluffs overlooking navigable waterways none of the other site requirements were sacrificed. In view of the Huron dependence on agriculture, a location near a lakeshore or large stream, while desirable, could only have been of secondary importance.

f) Summary

The two most important factors in selecting a site were water availability and soils. It would be pointless to try and separate these into more and less important. No village could function without either of these resources. Other factors such as natural defences, types of vegetation and proximity to navigable waterways seem to have been of secondary importance, and in some cases of no importance at all. For reasons stated in previous chapters, it is likely that areas of immature tree growth may have been preferred over mature stands. It is entirely possible that some socio-religious factors may have been operative in site selection; if this was so, there is no record of it.

During the historic period a preferred village location seems to have been on a bluff beside a spring, overlooking a navigable waterway, with a large hinterland of arable soils.

2. The Village

a) The Longhouse

Any discussion on the Huron village must by necessity begin with a description of the basic dwelling unit, the longhouse. The importance of the longhouse to an understanding of the Iroquoian tribes has been pointed out by almost every writer on the subject (Morgan, 1962:313-319; Morgan, 1965:64-67, 124-133; Fenton, 1951; Trigger, 1963a; Richards, 1967). Not only was the size and importance of a village described in terms of the number of longhouses, but the longhouse was also a reflection of the size of the extended families and the physical manifestations of the social system. Emerson (1961b:62) calls the longhouse the:

> . . . key to an understanding of Iroquois culture. It was much more than just a dwelling place--it was the basis of the Iroquois philosophy of life--and the concept of the longhouse underlay every aspect of Iroquois social, political and military life.

This discussion will begin with the physical nature of the longhouse.

i) The size of the longhouse

Since the longhouse varied in length according to the number of hearths located in it, and since the number of hearths was a reflection of the number of nuclear families, therefore the longhouse varied in length according to the size of an extended family group (Morgan, 1962: 315-316; 1965:64-65; Johnston, 1964:24-25; J. R., Vol. 16:243, Vol. 35: 87; Sagard:94). Champlain (Vol. 3:123) described the longhouse as being "twenty-five to thirty fathoms long more or less, and six

wide. . . ." Sagard (p. 93) concurs with this description. Among the Jesuits du Peron wrote that ". . . some of them (the longhouses) are 70 feet long. . ." (J. R., Vol. 15:153). Brébeuf (J. R., Vol. 8:107) was more specific stating that:

> "there are cabins or arbours of various sizes, some two brasses in length, others of ten, others of twenty, of thirty, or forty; the usual width is about four brasses, their height is about the same.

Bressani (J. R., Vol. 38:247) gives exactly the same description as Brébeuf.

Translated into modern measurements this would mean that the Huron longhouses varied in length from 12 to 220 feet, with a width and height of 20 to 33 feet (Table No. 10). The average width would therefore have been in the order of 27 feet and the length about 100 feet.

TABLE No. 10

Contemporary Size Estimates of Huron Longhouses

Author	Length (feet)	Width (feet)	Height (feet)
Champlain	± 125-160	30-33	?
Sagard	± 125-160	30-33	?
Du Peron	± 70	?	?
Brébeuf	12-50-110-165-220	20-24	20-24
Bressani	12-50-110-165-220	20-24	20-24

Among the New York Iroquois longhouses were recorded with similar dimensions to the Huron ones. In 1634 an anonymous Dutch trader placed the average width of a longhouse at 22 to 23 feet and their length ranging from ten to 100 paces (ca. 25-250 feet), with an average of about sixty paces (ca. 150 feet) (Jameson, 1909:141-144). Among the Seneca in 1677, Greenhalgh stated that the average longhouse was fifty to sixty feet long (O'Callaghan, 1849:13), while Morgan (1962:315) felt that the usual length was 50 to 130 feet.

Archaeological work shows that the size of longhouses did indeed vary considerably. Emerson places the average longhouse at about 120 by 30 feet, varying all the way up to 180 feet in length (Emerson, 1961b: 62-63). Jury, in his investigations at St. Louis found that the average size of the longhouses was about 50 by 20 feet (Jury and Jury, 1955:55). Since other aspects of St. Louis show a strong French influence, the longhouses may not be typical of the contact period. At the supposed site of St. Ignace II, Jury found that the average longhouse was about 90 by 30 feet (Jury and Fox, 1947:64-69). At the late prehistoric sites of McKenzie and Hardrock, Emerson excavated two longhouses 174 by 28 feet and 150 by 24 feet respectively (Emerson, 1954:163, 187). Going back earlier in time, at the Lalonde period Forget site, Jury excavated twelve longhouses averaging about 28 by 100 feet (Heidenreich, 1963:137), while the Lalonde Copeland site furnished four longhouses, 88 by 24 feet, 45 by 20 feet, 42 by 30 feet and one very unusual one measuring 90 by 55 feet (Channen and Clarke, 1965: 5-10). Personal observations at the excavations of Cahiagué, confirmed by Dr. J. N. Emerson, would place the average Cahiagué longhouses at about 90 by 25 feet. Longhouses similar to the Huron ones in size have also been excavated on New York Irowuois sites (Ritchie, 1965; Funk, 1967:81-84; Hayes, 1967:91-97; Tuck, 1967:75-79; White, 1967:85-89).

Taking all things into consideration the archaeological excavations validate the ethnohistoric accounts to a considerable degree. Huron longhouses varied in length from about 30 to 180 feet with a fairly constant width of about 25 to 30 feet. An average size of 80 by 28 feet does not seem unreasonable. New York Iroquois longhouses were about the same average size, but on occasions seem to have reached greater length. The

fairly uniform width and height of all the houses is probably related to the limitations of the construction materials and the methods of construction.

ii) Interior arrangement of the longhouse

The information on the interior of the longhouses gained from the ethnohistoric accounts and archaeology is also fairly consistent. According to the ethnohistoric accounts the hearths were set in a passageway some ten to twelve feet in width running down the centre of the longhouse (Champlain, Vol. 3:123; Sagard:94). Storage areas or vestibules were placed at both ends of the longhouse (Champlain, Vol. 3:123; Sagard:95; J. R., Vol. 8:107) with additional storage facilities under long sleeping platforms which ran along both sides of the lodge (Sagard:95; J. R., Vol. 8: 107-109). The average longhouse seemed to have three to four fires with two families to a fire, one at either side of the central passage (Sagard:94; J. R., Vol. 15:153; Vol. 16:243; Vol. 35:87), although longhouses with up to twelve fires were reported (Champlain, Vol. 3:123-124; Sagard:94)

One writer, Jérôme Lalemant, mentioned that the fires were usually placed two to three paces apart (five to eight feet) (J. R., Vol. 17:177). Among the New York Iroquois Lafitau described each fire as adding about 20 to 25 feet to a longhouse (Johnston, 1964:24). A Dutch trader among the Mohawk wrote that on the average there was about 17 to 20 feet of space per fire (Jameson, 1909:144). Morgan (1962:315) felt that this distance was more like ten to twelve feet. In view of the fact that the longhouse underwent great changes in the 18th and 19th centuries, Morgan's figures probably do not reflect the early 17th century longhouse.

Archaeological information on the interior of Huron longhouses is

meagre. Except for two plans (Emerson and Russell, 1965), none of the Cahiagué work has been published. The results from Jury's Forget excavations are unpublished and his work at the supposed site of St. Ignace II (Jury and Fox, 1947) and St. Louis (Jury and Jury, 1955) is too unreliable to be of much use. Some information is available from the Hardrock and McKenzie sites (Emerson, 1954) and the 16th century Copeland site (Channen and Clarke, 1965).

Judging from the longhouses excavated so far, two types of fireplaces were present. At Cahiagué, Hardrock, McKenzie and two of the four Copeland structures, large oval hearths were located down the central passage of each longhouse. These hearths varied from seven to ten feet in length and three to four feet in width. Their spacing down the centre of the longhouse was about five to ten feet apart. The usual deposit in these hearths is a light grey ash, although patches of bright orange and red fused sand and ashes are often found within the hearth area. Besides these central hearths virtually every longhouse had a large number of smaller fireplaces scattered along each side of the longhouse. In the case of two of the four Copeland structures (which are very unusual in many respects) the central hearths were absent. Instead smaller fireplaces were placed at random throughout the longhouse.

The large central hearths were probably the fireplaces reported by the early travellers. Taking their length and spacing into account, each family would on the average have fifteen linear feet of living space (ranges from 12 to 20 feet). This average comes very close to the estimates made by Lafitau and other travellers. The linear frontage along the central hearth would probably vary with the size of the family. The depth of the living

space from the edge of the fire to the longhouse walls averaged about eleven feet. Thus each family could expect to have about 180 square feet of living space (ranges from 140 to 240 square feet). Excavations at the New York Iroquois sites show that the spacing of fireplaces and the amount of living space were in every respect similar. At an average of six people per family this would give each individual about 30 square feet. Since the longhouse was really used only during the winter and at night, 30 square feet per person seems to be adequate.

In interpreting the two types of fireplaces the following theory might be offered. The large central hearths were mainly used during the winter. Their principal function was to keep the longhouses warm. The smaller fireplaces and patches of fused orange ash and sand within the large hearths were the cooking fires. Judging from the number and spacing of the small fireplaces each nuclear family cooked for itself and had at least one or two of these fires within their own living area. During the winter the central hearths provided heat. In addition to the smaller fires, during mealtimes the large fire was probably allowed to die down and concentrated at smaller areas within the larger hearth for cooking purposes. While the large hearth was burning the fire was kept within the hearth area by large logs (Sagard:94)

Most of the early travellers report that each side of the longhouse was lined with "sleeping platfoms" Sagard:93; Champlain, Vol. 3:123; J. R., Vol. 17:203). These platforms were wide enough to sleep on and raised about four to five feet above the ground. In the summer the platforms were used for sleeping and in order to escape the dust and fleas on the longhouse floors (Champlain, Vol. 3:123; Sagard:93; J. R., Vol. 10:91). In the winter

everyone slept huddled together on floormats and sheets of bark in front of the fire. The space beneath the platforms was used to store dry wood (J. R., Vol. 8:109).

There is no direct evidence that the interior of Huron lodges was divided into family compartments such as the ones described by Lafitau (Jonhston, 1964:25) and Morgan (1962:315; 1965:126). Archaeologically both sidewall sleeping platforms and family cubicles have been described for the New York Iroquois (Ritchie, 1965:308; Funk, 1967:83; Hayes, 1967:93). For the Hurons such evidence is as yet inconclusive (Emerson, 1961b:64; Noble, 1969:20). If these compartments were constructed of sheets of bark or skins suspended from a few posts, conclusive evidence as to their existence may be very difficult to determine.

According to the ethnohistoric sources large storage areas were located at each end of the longhouse (Champlain, Vol. 3:123; Sagard:94-95; J. R., Vol. 8:107; Johnston, 1964:26). According to Sagard (94-95) and Lafitau (Johnston, 1964:26) two types of storage areas were present; an interior "lobby" or anteroom used for storing casks of corn, and an exterior vestibule which served as a wood shed. The exterior vestibule could be closed in the winter with sheets of bark. These storage areas have been excavated at the Copeland site (Channen and Clarke, 1965), at Hardrock (Emerson, 1954:201-202) and at Cahiagué (Emerson, 1961b:63; Emerson and Russell, 1965:Fig. II-III). Most often however, storage areas were only present at one end of the longhouse. On the average the interior storage area was about five to fifteen feet in length and extended the width of the longhouse. Similar storage areas have been found in New York Iroquois

longhouses (Hayes, 1967:93; White, 1967:87).

The most serious storage problem was the yearly corn harvest. Not only did the Hurons have to store large quantities of corn, but the corn had to be kept dry, away from mice and other vermin and as safe from fires as possible. In most cases the larger part of the harvest seems to have been stored in large bark casks in the aforementioned storage areas. During harvest the corn was taken from the fields, tied in bundles and hung on racks along the interior of the longhouse walls to dry. When the corn was dry it was shelled and put into the casks (Sagard:104). Brébeuf reported that some of these corn bins held 50 to 60 bushels of shelled corn (J. R., Vol. 8:95). Since these bins were exposed to fire and mice, part of the harvest was stored in underground storage pits (Sagard:95). Archaeologically these storage pits are one of the most common features associated with Iroquoian longhouses. Most often they occur scattered almost at random along both sides of the longhouse. At times they are also found outside the longhouse (Funk, 1967:83). Their number per longhouse varies from a few to several hundred, and on the average they are about three feet in diameter and four feet deep. The interior of the pits was lined with bark and grass. The enormous number of pits associated with some longhouses probably means that in some cases most of the corn may have been stored in subsurface pits. In other cases the large bark casks described in the ethnohistoric sources were used as well as storage pits. A likely explanation for the pits, at least in the cases where they are found in conjunction with corn bins and storage areas, is that this is where seed corn was stored. Fires were a serious problem and sometimes contributed to famine (J. R., Vol. 8:93, 105; Vol. 10:35; Vol. 14:43-45). In instances where fires destroyed a longhouse

or group of houses, the families of the surviving longhouses would contribute corn to their unfortunate neighbours (J. R., Vol. 14:45; Vol. 8:95); but in spite of this the protection of seed corn was a matter of great importance.

One further method of providing storage facilities was to suspend two poles along the middle of the longhouse from which pots could be hung (Champlain, Vol. 3:123; Sagard:95). Apparently this was one of the few ways in which clothing and food could be kept safe from mice.

Most varieties of fish were dried or smoked and stored in bark casks within the longhouse. Whitefish were sometimes reduced to oil and stored in earthenware vessels (Sagard:186). One variety of fish, the Einchaton,[1] was not cleaned, but simply strung onto cords and suspended from the roof of the longhouse (Sagard:95).

iii) Construction of the longhouse

To all the European visitors the Huron longhouses reminded them of "arcades," "bowers" or "garden arbours" (Champlain, Vol. 3:122-123; Sagard: 93; J. R., Vol. 8:105; J. R., Vol. 15:153), i.e., a long rectangular structure with a vaulted roof (Figure 3). The exact construction of the longhouse can be inferred from archaeological excavations and the ethnohistoric sources. The outer walls of structure were usually made up of a double row of staggered posts some two to four inches in diameter (Figure 4). The posts in each row were set about 18 inches apart and were driven some two

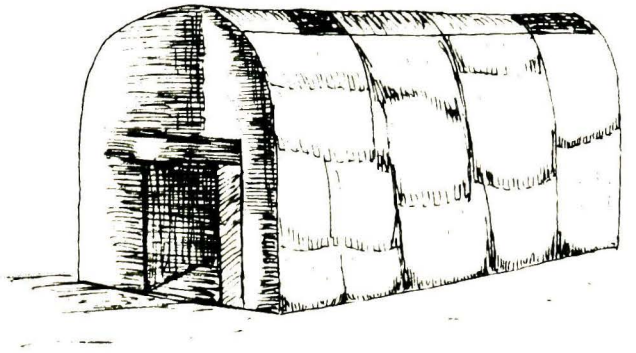
---

1. From the description given the Einchaton (Leinchaton) could be the catfish or bullhead. Sagard mentioned that it was about a foot and a half long, and resembled the French barbeau (barbel).

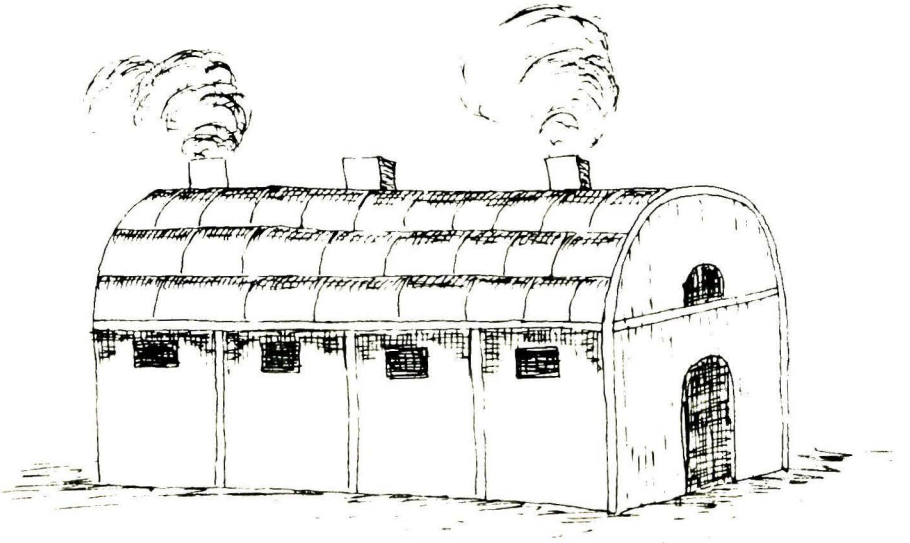
to two and a half feet into the ground (Emerson, 1954:201, 163; Emerson, 1961b:63; Emerson and Russell, 1965:Fig. II-III). Sheets of tree-bark were fastened between the uprights (Champlain. Vol. 3:123; Sagard:93; J. R., Vol. 8:105). The preferred construction material seems to have been cedar bark, although elm, ash, fir and spruce bark were also used (J. R., Vol. 8:105; Vol. 14:43-45). Among the New York Iroquois, elm bark appears to have been the usual construction material (Johnston, 1964:25). The roof framing consisted of bent boughs fastened to the exterior wall posts. Sheets of bark were woven between these boughs in such a way that they overlapped like roofing tiles (Johnston, 1964:25). To give the structure added strength, saplings running the length of the lodge, were lashed to the exterior frame, bark siding and roofing. The interior of the longhouse was kept rigid by large central support posts slightly offset from the centre line (Emerson, 1961b:64). Doors were placed on either or both ends of the longhouse, or on the sides near the ends (Emerson, 1954:164, 202; 1961b:63). The only other openings in the structure were a few holes in the roof to permit smoke to escape (Champlain, Vol. 3:124; Sagard:95; J. R., Vol. 8:107) All openings could be closed by sheets of bark or skins (Sagard: 81; Johnston, 1964:25, 26). Although the Huron longhouses appear to have been constructed with a vaulted roof, the majority of longhouses in at least one Mohawk village in 1634 were reported as having flat roofs (Jameson, 1909:141).

Judging from Lafitau's excellent description of the Iroquois longhouse, the best time for building was in the spring when the sap was rising in the trees and bark and boughs were pliable (Johnston, 1964:25). In Huronia we know of at least one village undergoing spring construction (J. R., Vol. 8:101). In January 1616 Champlain came across two villages under

FIGURE 3.

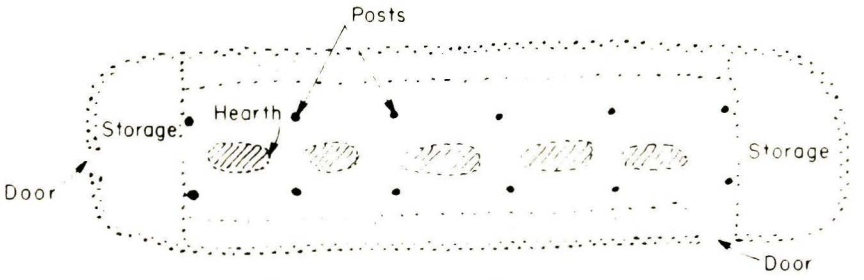


(a) Longhouse from Bressani's Map *Novae Franciae Accurata Delineatio*



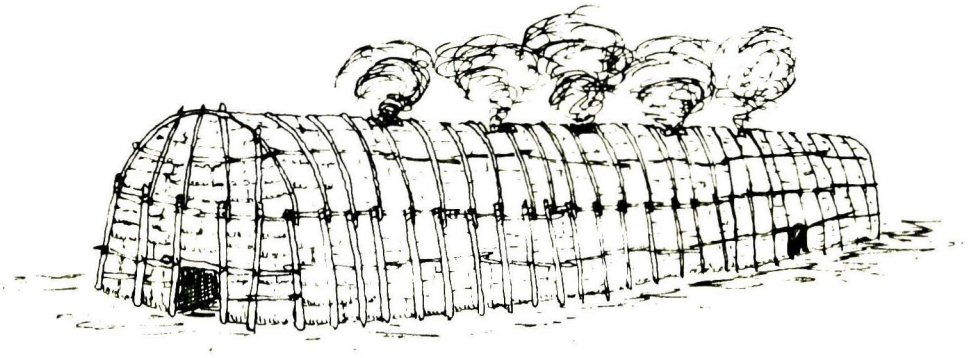
(b) Longhouse from Champlain's *Voyages*, Vol 3, Plate VIII, p 163

FIGURE 4.



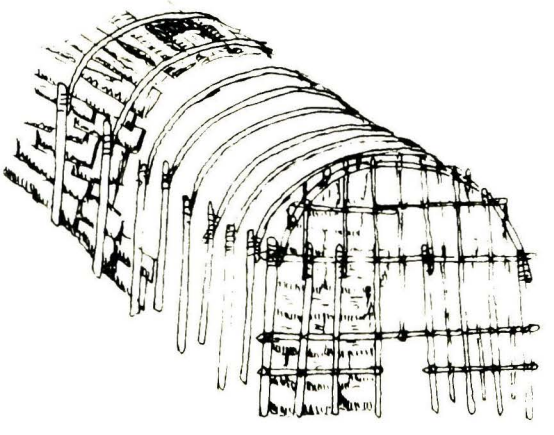
(a) Idealized floor plan of a longhouse

0 10 20 feet



(b) Reconstruction of longhouse from verbal descriptions and archaeology

0 10 20 feet



(c) Details of longhouse construction

0 10 20 feet

construction in the Petun country, but these may have been villages not finished the previous year (Champlain, Vol. 3:96). Late summer and fall were apparently poor construction periods because bark stripped from the trees at that time tended to be dry and crack easily (Sagard:81).

According to Sagard (: 79), the erection of the longhouses seems to have been semi communal affairs much like the "bees" among the 18th and 19th century settlers of Ontario. The decision to help a family, the amount of help and probably the place where the longhouse was to be erected, was decided by the village council. The decision was then advertised throughout the village by a "town-crier" so that all able bodied men could attend. Communal help was apparently extended to a point where it was felt that the family for whom the longhouse was intended, could finish it themselves. The same kind of service was given to the Récollets at Quieunonascaran (Sagard:79) and later to the Jesuits at Ihonatiria (J. R., Vol. 8:107) and Ossossane (J. R., Vol. 12:257). In the case of the Jesuits their Huron help was given presents, while the Récollets were asked to plead with their God to make the rain stop which was threatening the harvest. In both cases then, favours were expected. From the difficulties encountered by the Récollets with some of their help one would gather that aid in erecting a longhouse was usually extended primarily to relatives (Sagard:78).

iv) Functional differences between longhouses

The primary function of all longhouses was to serve as residence for its inhabitants. In addition to this function, at least two structures were singled out for additional functions.

The longhouse of the chief in charge of domestic affairs was built ". . . much larger than the others, sometimes making it as much as twenty-five

or thirty brasses (125-180 feet) in length" (J. R., Vol. 10:181). This structure served as dwelling of the chief and meeting place of the village and other councils (J. R., Vol. 10:233; Vol. 13:59; Sagard:149). The same longhouse may have been used as a place of village entertainment such as feasts and dances (Sagard:115).

A second large longhouse was set aside as residence for the war chief. Here all war councils were held (J. R., Vol. 13:59) and prisoners brought back for torture (J. R., Vol. 13:59; Vol. 15:173).

It is doubtful if every village had such structures. In any case, only the "principal villages" had more than one chief and therefore a need for multi-functional longhouses (J. R., Vol. 10:231). Archaeologically, except on the basis of unusual size, such longhouses may be difficult to define. Judging from a few meagre descriptions the interior of the chief's houses differed little from any other longhouse (J. R., Vol. 13:61). As yet no unusual differences have been noted in the interior arrangement of Huron longhouses that would enable one to classify some as council houses.

v) The quality of life in the longhouse

To most of the Europeans in Huronia, life in a longhouse was an unpleasant experience that took some time getting used to, or had to be endured stoically. The houses were dusty and filled with smoke (Champlain, Vol. 3: 124; Sagard:94-95; J. R., Vol. 10:91-93). The smoke problem was so serious that many Hurons suffered from serious eye troubles. Besides smoke, the interior of the longhouses smelled of rotting fish and urine (Sagard:93, 95, 227). The general hustle and bustle in the cabins and an almost complete lack of privacy made religious instruction difficult, a reason why the Jesuits later insisted on having separate cabins and a church if possible,

outside the village proper (J. R., Vol. 10P79; Vol. 17:197). One of the greatest complaints was that the Hurons, their belongings and the longhouses were infested with fleas (Champlain, Vol. 3:123; Sagard:93, 227-228; J. R., Vol. 10:91; Johnston, 1964:27). Several writers mentioned that unlike some of the other inconveniences, this was one also keenly felt by the Hurons. During the summer months mosquitoes and "sandflies" (probably black flies) were an added problem. Mice abounded in and about the longhouses and were difficult to keep away from stored food and clothing (Champlain, Vol. 3:123; Sagard:227). An added source of annoyment was the freedom exercized by children and their seeming lack of respect for the Jesuits and their own elders. In the winter most of these problems were compounded because all activity was concentrated in the longhouses. Writing in 1639, Jérôme Lalemant stated that to some Jesuits, martyrdom by a hatchet blow might be preferable to spending the rest of one's life among the Hurons. His description of life in a Huron longhouse is worth quoting because it is an excellent example of what a highly educated and refined European thought he had to put up with (J. R., Vol. 17:13-15):

> If you go to visit them in their cabins--and you must go there oftener than once a day, if you would perform your duty as you ought,--you will find there a miniature picture of Hell,--seeing nothing ordinarily but fire and smoke, and on every side naked bodies, black and half roasted, mingled pell-mell with the dogs, which are held as dear as the children of the house, and share the beds, plates, and food of their masters. Everything is in a cloud of dust, and, if you go within, you will not reach the end of the cabin before you are completely befouled with soot, fifth and dirt.

Other descriptions of this sort can be found in Brébeuf's "Important Advice For Those Whom It Shall Please God To Call To New France, And Especially To The Country Of The Hurons" (J. R., Vol. 10:87-115).

As "outsiders" or at best "participant observers," the Jesuits and others were of course primarily aware of the personal discomforts of longhouse life. The Hurons probably saw matters in quite a different light; or, as Champlain put it, their life may seem wretched to a European but the Hurons seemed happy "and believe that none more excellent can be found" (Champlain, Vol. 3:125).

In actual fact, communal life with ones nearest kin in a longhouse offered social and economic benefits that an outsider could only be dimly aware of. These benefits derived mainly from the fact that the members of the longhouse were completely interdependent. Furthermore the system of marriages outside the kin group spread this interdependency to other kin groups, tying longhouses and ultimately villages together. The longhouse was therefore the physical symbol of social and psychological security, not only at the family level, but ultimately at the village and tribal level. No one needed to feel that he was alone in his own house, village or tribe, as long as he met his obligations and responsibilities to his relations and his neighbours.

Communal longhouse life also had obvious economic benefits. Since the extended families of each longhouse shared the larger part of their produce, the aged and the incapacitated were taken care of. Time and again the missionaries stated that as long as some corn was in the village, no one went hungry (Sagard:88-89). A corollary to communal life and food sharing is the sharing of economic risk. A potential disaster such as a crop failure in one part of the village fields was not as severe to any one family as it might have been if the bulk of the corn produce was not shared. One further economic advantage of longhouse life was that it permitted a greater diversity of

activities. No nuclear family could by itself undertake the tasks of agriculture, trading, hunting, gathering and warfare. Job sharing at the family level, and for some activities at the village level, made diversity possible.

vi) Summary and discussion

The average longhouse was about 80 by 28 feet (2,200 square feet) in size. It contained about three central fire places with two families to a fire. Each family had roughly 180 square feet of living space, leaving 45% of the longhouse in storage areas and about 5% taken up by hearths. On the basis of three hearths per longhouse, two families per hearth and six members per family, the average longhouse could have contained about 36 people. Thus each person had about 30 square feet of living space and 45 square feet of longhouse floor area.

In his study on the relation between floor area and settlement population, Naroll demonstrates that an allometric relationship exists between these two traits among prehistoric societies. Taking 18 societies, a loglog regression was run and tested at a .0005 level of significance. The coefficient of correlation was in the order of 0.88 (Naroll, 1962: 588). On the basis of the regression, Naroll concludes that a relationship of one person per ten square meters of floor area is the expected. Unfortunately Naroll made no distinction between hunters and gatherers. pastoralists, specialized gatherers and agriculturalists. His ratios might have been slightly different if societies at various socioeconomic levels and in different environmental areas had been treated separately. Naroll's ratio for the Iroquois (one person to four square meters of floor area) was taken from Morgan (1962:315-319) and probably represents

the Iroquois in the 18th century. On the basis of the preceding discussion an average of one person to six square meters of floor area seems to have been common for the Hurons. This ratio is well within the range of deviations on Naroll's scattergram (Naroll, 1962:p.588, Fig. 1), demonstrating that a ratio of one Huron to 45 square feet of longhouse is a valid estimate in the light of other societies.

In social terms the longhouse represented the physical manifestation of the primary social and economic unit. It was at this level and in these surroundings that the Huron values of family solidarity, economic cooperation and rule by the mutual agreement of adults found their basic expression. The longhouse was in many ways a miniature village because the values of the longhouse were projected to the village level through kinship ties and the necessity for economic and social cooperation. Ultimately the ties binding longhouse to longhouse to village, passed beyond the village level to other villages at the tribal level. It is therefore no accident that the decision-making process at the village and tribal levels were in a sense a reflection of longhouse rules and values. The longhouse was in fact a highly sophisticated reflection of Huron cultural values.

To Europeans, with a value system that placed a premium on the nuclear family, a high degree of privacy, personal comfort, cleanliness and orderliness, life in a Huron longhouse must have seemed chaotic and almost unbearable. Yet in spite of these cultural differences and the obvious repugnance the missionaries felt towards many Huron cultural values, they recognized and commented on such values as family solidarity and charity towards one's neighbours; both of which the Hurons possessed

to a high degree.

b) The Size, Function and Distribution of Settlements

i) The size of settlements

Beyond the longhouse, the basic unit of settlement was the village. Just as the longhouse was the physical expression of the extended family, so was the village the physical expression of a number of closely co-operating lineages. In sociological terms the Huron village is a good example of Murdock's definition of "community," namely ". . . the maximal group of persons who normally reside together in face-to-face association" (Murdock, 1949:79). The village was a place where:

> Every member is ordinarily acquainted more or less intimately with every other member, and has learned through association to adapt his behavior to that of each of his fellows, so that the group is bound together by a complex network of interpersonal relationships. (Murdock, 1949:82).

Spatially the Huron village can be defined as a cluster of longhouses which in some cases were surrounded by a palisade. Since Huron villages were usually some distance from each other due to the intervening agricultural lands and forests, there is little difficulty in defining the extent of a single village. In practical terms a village may be delimited by the distribution of its garbage dumps (middens), which were piled against, or just beyond, the palisades or if palisades were absent, just beyond the longhouses. It is in this manner that the extent of most of the known Huron villages have been defined.

According to the ethnohistoric sources, Huron settlements varied in size from what were loosely described as collections of "poor hovels" (pauvres bicoques) (J. R., Vol. 5:258) and "villages" (village), to

"large villages" or "small towns" (bourgade) (J. R., Vol. 19:126) and finally "towns" (bourg or ville) (J. R., Vol. 19:126; Sagard:319). Most often the term "village" was used; sometimes preceded by the words "large" (grand) or "small" (petit). Although these terms are not very specific, they do point out the fact that Huron villages varied somewhat in size.

The usual practice of early travellers was to give the size of a village in terms of the number of longhouses in it. The largest of the Huron villages were said to have contained ". . . fifty, sixty and one hundred cabins . . ." (J. R., Vol. 10:210); although Champlain relates that one village, Cahiagué, had ". . . two hundred fairly large lodges .. ." (Champlain, Vol. 3:49). Excavations have shown that Cahiagué was a double village composed of five and 9.5 acre segments (Cruickshank and Heidenreich, 1969:39). Future excavations will probably show that two hundred longhouses was an exaggeration. During the Jesuit period St. Joseph II was the largest village with about 80 lodges (J. R., Vol. 15:153). Only one known village exceeded St. Joseph II in size, and that was the ill fated refugee village on Christian Island consisting of slightly more than 100 lodges (J. R., Vol. 35:87). The circumstances under which this village was created and the short term of its existence (1649-1650) would hardly allow one to call this a typical large village. Population estimates for these villages were discussed in Chapter IV; none of the ethnohistoric accounts list any areal measurements for the Huron villages.

More is known about the size of villages among the New York Iroquois. The following table (No. 11) summarizes several of these accounts. Only travellers descriptions of roughly the Huron period were

consulted here. It was felt that the 1677 figures by Greenhalgh were close enough in time to be indicative of the pre-1650 period.

TABLE No. 11

Size of New York Iroquois Villages
Observed by Early Travellers

Tribe	Name of Village	Date of Observation	Size in No. of Longhouses	Palisades	Authority
Mohawk	Onekagoncka	1634	36	?	Jameson, 1909: 140
Mohawk	Canowarode	1634	6	?	Jameson, 1909: 141
Mohawk	Schatsyerosy	1634	12	?	Jameson, 1909: 142
Mohawk	Canagere	1634	16	No	Jameson, 1909: 143
Mohawk	Schanidisse	1634	32	?	Jameson, 1909: 144
Mohawk	Osquage	1634	9	?	Jameson, 1909: 144
Mohawk	Te-nontoge	1634	55	Yes	Jameson, 1909: 145
Mohawk	Cahaniaga	1677	24	Yes	O'Callaghan, 1849: 11
Mohawk	Canagora	1677	16	Yes	O'Callaghan, 1849: 11
Mohawk	Canajorha	1677	16	Yes	O'Callaghan, 1849: 11
Mohawk	Tionondogue	1677	30	Yes	O'Callaghan, 1849: 12
Mohawk	?	1677	10	No	O'Callaghan, 1849: 12
Oneida	Sinneken	1634	66	Yes	Jameson, 1909: 149
Oneida	?	1677	100	Yes	O'Callaghan, 1849: 12
Onondage	?	1677	140	No	O'Callaghan, 1849: 12
Onondaga	?	1677	24	No	O'Callaghan, 1849: 12
Seneca	Canagorah	1677	150	No	O'Callaghan, 1849: 13
Seneca	Tiotohattan	1677	120	No	O'Callaghan, 1849: 13
Seneca	Canoenada	1677	30	No	O'Callaghan, 1849: 13
Seneca	Keint-he	1677	24	No	O'Callaghan, 1849: 13

Three conclusions may be drawn from these figures: a) village sizes varied between members of the Iroquois Confederacy, Mohawk villages being on the average smaller; b) villages rarely exceeded 100 longhouses; c) New York Iroquois villages lie within the size range of Huron villages.

Judging from documented site surveys done in Huronia the average Huron village covered some four to six acres (Table No. 12). Occasionally

a village was as large as eight or ten acres, and at least on two occasions, as large as fifteen acres. Surface finds in Huronia and adjacent areas indicate that some "villages" were smaller than one acre. These may have been isolated cabins or groups of longhouses used during the summer months by the women and children who tended fields too far removed from the main village for daily travel (J. R., Vol. 20:39). It is interesting to note that Neutral villages were roughly in the same size range as the Huron ones. Most Neutral contact sites rarely attained ten acres, five to eight acres appeared to have been common (Noble, W. C., private communication, March 12, 1969). In spite of the data compiled in Table No. 12 the average Huron village may have been somewhat smaller than five acres. A figure of four acres is probably more meaningful. Most of the sites included in the surveys (Table No. 12) are well known sites to archaeologists and farmers and may therefore be large enough to have captured local interest. The impression gained from Hunter's surveys (Hunter, 1898; 1899; 1901; 1902; 1903; 1906; 1911) and field work by the author, is that most of the sites have been obliterated by farming. The data presented in Table No. 12 may therefore be slightly biased in favour of the larger sites, and an average of four acres per site seems more reasonable.

The data in Table No. 12 also indicates that the size difference between pre-contact and contact sites is only slight. Except for a few very large contact sites such as St. Joseph II, there is no size difference at all. This would strongly suggest that economic efficiency and social complexity did not increase enough during contact times to affect village size except in a very few cases. Indeed, as will be pointed out

TABLE NO. 12

Location and Size of Village Sites
by Tribal Areas

a) Penetang Peninsula
Attignaouantan Tribal Area

Concession	Lot	Township	Name of Site	Presence of Trade Goods	Size (acres)	Authority
20	4	Tiny	Gwynne	Present	3.5	Ridley, 1966
2	101	Tiny	Crawford	Present	5	Ridley, 1966
1	97-98	Tiny	Hunter's #39	Present	2	Hunter, 1898:39
9	15	Tiny	Angoutenc	Present	5	Ridley, 1952b:7
12	16	Tiny	Vints	Present	5	Ridley, 1967
2	110	Tiny	Edwards	Present	3.5	Ridley, 1952:198
10	11	Tiny	Santimo	Present	5.5	Ridley, 1952:198
7	16	Tiny	Ossossane	Present	5	Ridley, 1952:198
19	17-18	Tiny	Thunder Bay #1	Present	4	Ridley, 1967
17	10	Tiny	Thunder Bay #3	Present	2	Ridley, 1967
2	109-110	Tiny	Hunter's #25	Present	3	Ridley, 1967
21	19	Tiny	Hunter's #3	Absent	5	Ridley, 1966
1	101	Tiny	Fallis	Absent	4	Ridley, 1952b:7
9	15	Tiny	Lalonde	Absent	5	Ridley, 1952:198
4	20-21	Tiny	Webb	Absent	3	Ridley, 1952:199
17	14	Tiny	Thunder Bay #2	Absent	1.5	Ridley, 1967
18	9	Tiny	Dorion	Absent	2	Ridley, 1967
2	107-108	Tiny	Lalligan L. #1	Absent	1	Ridley, 1967

Average Size of Sites (Trade Goods Present)	4
Average Size of Sites (Trade Goods Absent)	3
Average Size of Sites	3.5

b) Vasey Ridge
Ataronchronon Tribal Area

4	15	Tay	Hunter's #4	Present	4	Hunter, 1899:62
6	11	Tay	St. Louis	Present	7	Jury, 1955: Map
1	87	Tay	Hunter's #14	Present	3	Hunter, 1899:72
1	77	Tay	Hunter's #18	Present	4	Hunter, 1899:73
8	3-4	Tay	Hunter's #25	Present	15	Hunter, 1899:75
9	5-6	Tay	Hunter's #36	Absent	5.7	Jury and Fox, 1947:60
1	91	Tay	Hunter's #13	Absent	3	Personal Observation
3	9	Tay	Hunter's #12	Absent	5	Ridley, 1968
1	85	Tay	Hunter's #15	Absent	7.5	Ridley, 1968

Average Size of Sites (Trade Goods Present)	6.5
Average Size of Sites (Trade Goods Absent)	5.5
Average Size of Sites	6.0

TABLE NO. 12--Continued

c) Vasey Ridge
Tohontaenrat Tribal Area

Concession	Lot	Township	Name of Site	Presence of Trade Goods	Size (acres)	Authority
1	77	Tay	Hunter's #18	Present	8	Ridley, 1966
1	68-69	Flos	Hunter's #19	Present	10	Kidd, 1950:165
Average Size of Sites					9	

d) Mount St. Louis Ridge
Attinguenongahac Tribal Area

4	7	Medonte	Hunter's #23	Present	2	Hunter, 1901:77
4	12	Medonte	Hunter's #26	Present	15	Hunter, 1901:78
6	11	Medonte	Hunter's #33	Present	6	Personal Observation
6	16	Medonte	Hunter's #35	Present	5	Hunter, 1901:86
10	17	Medonte	Hunter's #46	Present	5	Personal Observation
8	20	Medonte	Hunter's #41	Present	5	Ridley, 1968
Average Size of Sites					7	

e) Medonte-Orillia Till Upland
Arendaronon Tribal Area

13	1	Oro	Hunter's #32	Present	4.5	Hunter, 1902:175
1	9	Orillia	Hunter's #11	Present	4	Hunter, 1903:115
3	10	Orillia	Hunter's #14	Present	3	Hunter, 1903:116
6	1	Orillia	Hunter's #8	Present	8	Hammond, 1904:81
12	16	Medonte	Hunter's #73	Present	4	Personal Observation
14	7	Oro	Hunter's #41	Present	2	Personal Observation
14	10	Medonte	Cahiagué	Present	5 & 9.5	Personal Observation
1	2	Orillia	Sopher	Absent	5.5	Hunter, 1903:112
1	8	Orillia	S. O. 8. 1.	Absent	1	Personal Observation
12	4	Medonte	Hunter's #61	Absent	8	Ridley, 1968
13	9	Medonte	M. 9. 13	Absent	2	Personal Observation
Average Size of Sites (Trade Goods Present)					5	
Average Size of Sites (Trade Goods Absent)					4	
Average Size of Sites					4.5	

later in this chapter, large villages even during contact times, tended to be unstable and break up in smaller units.

A further impression gained from Table No. 12 is that there were some differences in village size between the tribal areas. On the whole the Attignaouantan and Arendaronon villages were smaller than those of the Ataronchronon, Tohontaenrat and Attinguenongahac. Some archaeologists have theorized that this size difference may be due to different social conditions between these tribes.[1] There is as yet no evidence that social conditions between the tribes were different but a good case can be made that some villages had more stable social conditions than others. In other words, there may have been village differences but not tribal ones. Another factor permitting larger villages in some areas may be soil conditions. There are no sites larger than five acres in size on any soil type other than the more fertile sandy loams. Since

TABLE No. 13

The Number of Longhouses Per Site

Tribe	Name Village	No. of Longhouses	Size of Site (acres)	Longhouses per acre	Excavated
Huron	MacKenzie	17	4.5	4	yes
	Forget	12	2.5	5	yes
	Hunter's #36	29	5.7	5	yes
	St. Joseph II	80	15	6	no
	Ossossane	40	5	8	no
Oneida	Sinneken	66	9.5	7	no
Seneca	Canagorah	150	20	7.5	no
	Tiotohattan	120	30	4	no

the occupied areas of the Ataronchronon, Tohontaenrat and Attinguenongahac are almost totally composed of the more desirable soils, one would think

1. This hypotehsis was presented by A. Tyyska and W. Hurley at the second annual meeting of the Canadian Archaeological Association, March 14 to 16, 1969.

that these areas offer a greater opportunity for the development of larger villages.

In view of the fact that few villages have been excavated, very little can be said about the average number of longhouses per acre. Some of the sites listed in Table No. 13 have been excavated, the others are known sites whose extent and number of longhouses have been reliably described. Based on this small sample the average village contained only about five to six longhouses to the acre (Figure 5). A high coefficient of correlation of 0.96 was obtained, which is significant at the 0.1% level using Student's test (Figure 5). If five to six longhouses per acre is a reasonable estimate, and the average longhouse covered 2,200 square feet (80 x 28 feet) then only about 25% to 30% of a village area was taken up by longhouses. As a matter of fact in the three excavated villages the longhouses took up 25% to 29% of the village areas. On this basis it is probable that village population densities were in the order of 180 to 220 people per acre, and that each person had about 160 square feet of village space in addition to his 45 square feet of longhouse floor area. This amount of living space seems to be adequate to permit a smooth functioning of Huron social and economic conditions.

It would be interesting to see whether any differences in house density existed between unpalisaded and palisaded villages. Unfortunately there is not sufficient data to allow such comparisons. Except for the two largest villages in the sample (Table No. 13) all the others were palisaded. One might reason that palisaded villages were more tightly build up in order to conserve the labour and construction material that went into the palisade. However Huron social interaction demanded fairly

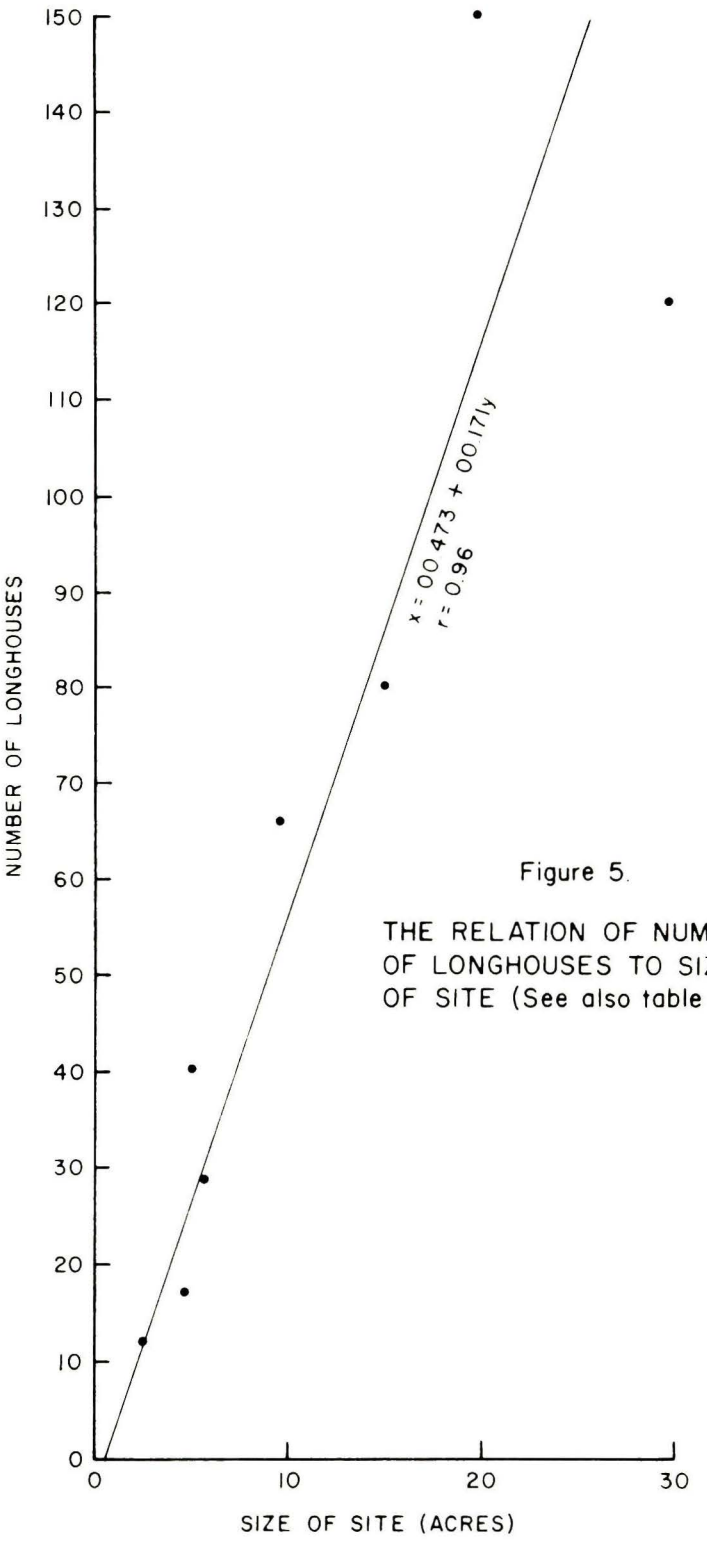


Figure 5.

THE RELATION OF NUMBER OF LONGHOUSES TO SIZE OF SITE (See also table No. 13)

close proximity of all longhouses within a village. It is therefore likely that the difference in house density between villages was not too great, whether they were palisaded or not.

By necessity this discussion was somewhat hypothetical. Only years of archaeological research will allow one to accumulate data which will permit a refinement of longhouse-site densities. These figures do however point out that estimates such as Champlain's 200 longhouses at Cahiagué must be viewed very carefully. Unless this village was totally different from the ones examined so far, it is unlikely that the double village totalling 15 acres now believed to be Cahiagué ever contained more than 100 longhouses unless they were unusually small. Judging from the excavations now being conducted at Cahiagué, 100 longhouses seems to be a much more reasonable figure than 200 longhouses.

ii) Social limitations on the size of settlements

On the basis of the discussion so far is it possible to theorize on the optimum size of Huron villages? Of the 46 sites listed in Table No. 12 only nine were larger than six acres and 13 larger than five acres. Since the sample of 46 sites includes most of the largest sites in Huronia, the number of sites that exceed six acres is very small. Converted into population numbers it seems that few villages exceeded 1,000 to 1,2000 people. This would suggest that village populations reached a certain level and for some reason rarely exceeded this level. Leaving economic and environmental considerations aside until Huron agriculture has been discussed, a fairly good case can be made for an optimum population figure of 1,000 to 1,200 (five to six acre site) on a sociological basis.

A closer examination of some of the larger known villages reveals

two interesting phenomena; 1) large villages tended to be unstable and ultimately split into smaller villages, and 2) large villages were often composed of two or more small villages located adjacent to each other. A few examples can be cited. When Toanche was moved in the 1620's, it was split into two villages, Oenrio and Ihonatiria (J. R., Vol. 14:23). When a proposal was made by the Jesuits to reunite the villages the leaders of the two places could not come to an agreement (J. R., Vol. 14:25,33). Similarly Ossossane seems to have split into smaller villages, or at least lost some of its population prior to their move in 1636. Brébeuf relates that for the "feast-of-the-dead" in 1636, people from ". . . eight or nine" villages returned to Ossossane to bury their dead (J. R., Vol. 10:291). At least Iahenhouton was an offshoot of Ossossane (J. R., Vol. 14:15-17). In the case of Quieunonascaran this does not seem to have been one large village at all, but ". . . three little hamlets. . ." so close to each other that they went by the same name (J. R., Vol. 13:125). The same appears to have been true for St. Ignace I and Arethsi which appear on some maps as separate villages close together, and on the Description as St. Ignace ou Arethsi (Map No. 15b). Perhaps the best example is Cahiagué ("The-places-divided-in-two"), the largest village in Huronia during Champlain's time. Its name suggests that there were two villages going by the same name. This has now been confirmed archaeologically. Sagard stated that when the village was moved sometime prior to his visit, it was split into two separate villages (Sagard:92). The reasons given for the move were soil and wood exhaustion in the vicinity of the village. As a matter of fact, soil and wood exhaustion are given as the major reasons for most shifts in village locale by the early writers (Sagard:93;

J. R., Vol. 11: 7; Vol. 15:153).

While some of the shifts in village locale might be explained in terms of soil and wood exhaustion, these factors do not explain the splitting up of villages or the existence of double and triple villages. As far as agricultural, forest and game resources are concerned it makes no difference whether a village exists as a single large unit or as two units six-hundred feet apart, as was the case at Cahiagué.

The splitting of villages, the existence of double and triple villages and the stabilization of most villages at 1,000 to 1,200 people makes a good deal of sense in the light of Huron social behavior. Since the smooth functioning of a village depended on mutual agreement rather than laws or coercion it follows that the more interrelated the families of a village are, or the smaller the population of a village, the more smoothly it would function. In other words village co-operation increases as population numbers decrease, and lack of co-operation increases when more and more people are involved. This becomes painfully obvious when one examines the behavior of Huron warriors in large scale warfare, such as Champlain's 1615 attack on the Onondaga (Champlain, Vol. 3:72-73) or the behavior exhibited in village, tribal and confederacy councils. Generally speaking the Hurons simply did not have the social mechanisms to cope with large numbers of people if these did not wish to co-operate. The dichotomy between the necessity to co-operate and the tendency towards individual or family action has been described in very lucid terms by Trigger:

> The masculine (Huron) ideal stressed a pride in personal independence which tolerated a minimum of

> coercion. But on the other hand the need for defence, and later trading alliances, had created an area thickly settled with crowded towns. This and the communal life of the longhouse necessitated much cooperation. Huron society was striving for cooperation without organic integration. (Trigger, 1963 b): 166),

In a highly interesting paper Naroll made an attempt to correlate the population of the largest settlements of thirty pre-urban societies with the diversity and complexity of their social organization (Naroll, 1956). His findings suggested among other things ". . . that when settlements contain more than about five hundred people they must have authoritative officials, and if they contain over a thousand, some kind of specialized organization or corps of officials to perform police functions. . ." (Naroll, 1956:690. It is clear that the Hurons had "authoritative officials" in their settlements but specialized police functions were all but absent. The lack of Huron social cohesion once large numbers of people were involved and the fact that few villages were over 1,200 in population seems to suggest that the Hurons followed a pattern similar to the societies studied by Naroll The same factors would account for the splitting of large villages and the tendency for villages to remain separate entities even when they located close tother. Since Huron villages tended to be made up of a number of lineages who united for the duration of the village (Trigger, 1963 b):157), the likelihood of splits occurring between lineages would be greater in the larger villages. Consequently the chances of two or three villages uniting to form one single large village were even more remote.

It would be very interesting to find out how many of the large Iroquoian sites reported for Ontario are in actual fact multiple villages.

The site of Cahiagué for example, was long supposed to be the largest village in Huronia covering some 25 acres. Once the perimeter of the village was excavated it turned out to be two villages of five and 9.5 acres each, with a vacant space of 8.5 acres between them. On theoretical grounds one might expect the larger villages to have been similar to Cahiagué, especially those reported to be over ten acres, but as yet none besides Cahiagué have been sufficiently excavated.

On theoretical grounds those villages containing more than 1,200 people (larger than six acres) must have had a somewhat different social organization than the smaller villages. In some cases these large villages were noted as being the residence of the "great men" of a tribe, and may therefore have been large villages simply because of the more effective leadership qualities of some of its citizens. Cahiagué under Atironta (Darontal) was a case in point (Sagard:91; Champlain, Vol. 3:81), and his successor Atironta (Aeoptahon) at St. Jean Baptiste (J. R., Vol. 20:35; Vol. 23:167; Vol. 27:289-291). Similarly Quieunonascaran under Auoindaon and Onoratandi (Sagard:91, 99, 174), Ossossane under Ontitarac and Anenkhiondic (J. R., Vol. 10:289; Vol. 14:33; Vol. 15:39) and Endahiaconc at Teanaustaye (Sagard:91; J. R., Vol. 13:125; Vol. 28:85-89), were known as powerful men and good leaders. As a matter of fact there does not seem to be any record of any "great men" living in small villages. Highly regarded men such as these did not have to "rule" by advice and persuasion alone, because disruptive elements in a village could be accused of witchcraft and executed (Trigger, 1963 b):166-167).

Theoretically then, Huron villages could reach populations of 1,000-1,200 under normal social conditions. In the case of some villages

larger populations were possible under more effective leadership; leaders who because of the esteem in which they were held could use their talents and socially accepted methods of control to greater effect in permitting larger villages to function smoothly.

Clustering of villages resulting in larger than normal aggregate populations might occur in areas of favourable environmental potential for defensive or social reasons. In at least one case both defensive and social reasons were given to the Jesuits as advantages for combining several villages (J. R., Vol. 10:241). In this case it was pointed out that more warriors would be available to ward off enemy attacks and that a better pool of village leaders would be available to protect the rights of the Jesuits. Clustering of villages or the formation of larger villages may therefore be regarded as a striving for protection from forces outside and within the village. In all of this, multiple villages would have some advantages over single large villages. It is more difficult to attack two villages close together (such as Cahiagué) and they are more easily defended than one large single village. Two villages must be taken separately and can give each other aid, while one large village need only be breached at one point. Clustered villages could also preserve a great deal of village autonomy by each having its own council for domestic affairs, yet drawing on the special talents of a respected chief from one of the village segments in time of war or social tension. In the case of one large village the chances of divisive quarrels arising would be greater simply because of the closer proximity of the village members. The only size limitation to village clusters in which each village is largely autonomous would be set by the quality of the natural environment, while a large single village

would suffer from heightened chances of intra village quarrels.

Social reasons for clustering, other than the presence of an effective leader, are more difficult to envision because none are given in the literature. At least one plausible reason might be advanced. Since the Hurons had to marry outside their lineage it would be to the advantage of lineage dominated villages to locate close together in order to exchange marriage partners. At Cahiagué for example a number of different lineages were represented in each village segment. This observation is based on the difference in pipe styles between the two village segments which Noble feels were representative of lineages (Noble, 1969:24). By necessity the very large villages such as Cahiagué must have been multilineage villages and the discovery of lineage symbols is to be expected.

Since these very large villages seem to be of the contact period one can reason that, other than the factors already discussed, a number of factors may have been operative that are peculiar to the contact period. Growing defensive needs could have been a reason, but this does not seem too likely until the advent of increasing Iroquois raids in the 1640's. Since at least two and maybe three tribes arrived in Huronia at the beginning of the contact period the increasingly closer proximity of villages might have made it easier for villages to join together for brief periods of time. A further cause that might be advanced is that some small villages decided to band together into larger villages in order to better organize and carry out trading expeditions. At first the yearly fur brigades going to the St. Lawrence area seem to have been organized on a village basis. Later, as Iroquois raids and Algonquin tolls increased the village contingents joined together into larger flotillas.

Sagard, for example went to Huronia in the canoes from Ossossane (Sagard: 70) and left in those from Quieunonascaran (Sagard:251), while Brule travelled with those from Toanche (Sagard:246). Similarly the Jesuits mentioned that they travelled with Hurons from a particular village (J. R., Vol. 5:263; Vol. 14:55). At all times, the larger the flotilla was, the safer it was from Iroquois attacks and the more readily it could pass through the toll blockades set up by the tribes along the Ottawa-Lake Nipissing-French River route. Larger villages could therefore organize more successful fur brigades. As French-Huron trade increased it would therefore be advantageous for villages to join together into larger units. It should be mentioned however that if considerations of trade were ever a factor in creating large villages there are no records of it. The largest Huron villages all existed before the arrival of the Jesuits, and some even before the arrival of Champlain and Sagard.

In summary, Huron villages were fairly compact agglomerations of longhouses rarely exceeding six acres in area and 1,200 in population. A strong factor keeping village populations to a level of 1,200 may have been the complexities of village life and the lack of social institutions to cope with them. The existence of a few large and multiple villages, in substantially the same environment as the smaller villages, seems to rule out the quality of the environment as placing limits on settlement sizes well above 1,200 people. Technological limitations and environmental potential probably became more dominant factors in placing a maximum size on the large single and multiple villages.

Perhaps the most plausible explanation for the rise of a few large villages is simply that after the new tribes moved into Huronia in the

latter part of the 16th and early part of the 17th centuries, the closer proximity of the villages and the more restricted area of village movement, made the brief union of several villages more possible. The presence of effective leadership in these larger villages allowed them to function and may have been a strong factor in the original creation of larger villages. As French-Huron trade and Iroquois attacks increased the large villages could assume a greater importance by becoming regional strongholds, mission centres, political foci in their respective tribal areas and more effective trading villages. While the Jesuits were in favour of the creation of larger villages, there is no proof that any of their exhortations were ever accepted. While the Hurons may have accepted Jesuit suggestions on how to palisade their villages more effectively, there is not a shred of evidence that the Jesuits influenced them in a decision to build large villages. It should again be emphasized that if indeed the organization of the fur trade played a role in creating large villages, this seems to have been a factor only in the organization of the trip between Huronia and the St. Lawrence. There is no evidence that some villages became large because they were regional markets for trade goods. Huron economics, as will be discussed later, operated on a different level.

iii) The function of settlements

The primary functions of all Huron villages large or small can be categorized as a residence for the village population, a storage area for food products and a place for social interaction. Some of the larger villages also served as strongholds in time of attack and as a residence for influential men in tribal affairs. During the French period a few

villages had the additional function of serving as a base of operations for mission activities. Economic functions for the villages are difficult to define because the Hurons did not have a market oriented economy. There were, as far as is known, no central places that served as local markets for foreign or domestic goods. Trade and exchange was a function of certain lineages or clans rather than villages. From these families, goods filtered out to other families or individuals in a variety of ways none of them involving fixed or temporary market sites. For these reasons economic functions will be discussed in a later chapter. All of these functions have been mentioned in earlier chapters; the residential and mission functions however, need some clarification.

A frequent misconception about Huron villages is that they served as year-round dormitories for their inhabitants. The truth of the matter was that from spring to late autumn the villages were devoid of most of the men and a large portion of the women, children and old people. It was for this reason that most of the mission activities were concentrated in the winter months.

> . . . during the whole Summer and Autumn, they are for the most part either in their rural cabins, takin care of their crops, or on the lake fishing, or trading; which makes it not a little convenient to instruct them. (J. R., Vol. 8:143).

or

> Their trading expeditions and the farms take everyone, men, women, and children - almost no-one remains in the villages (J. R., Vol. 10: 53).

Similar statements can be found in other parts of the Relations (J. R., Vol. 16:249; Vol. 17: 103; Vol. 19:125). Because some of the

fields were too far from the main village, temporary longhouses were erected (J. R., Vol. 8:143; Vol. 14:49; Vol. 20:39, 45). Similar temporary villages and cabins were erected on fishing expeditions (Sagard:185), hunting excursions (Champlain, Vol. 3:82-83; J. R., Vol. 33:83) and as a base of operation for war parties (Champlain, Vol. 3:74). These are all activities that would take a good portion of the population out of the villages during the spring, summer and autumn. This yearly cycle made the Hurons more vulnerable to attack during the organized Iroquois warfare in the 1640's (J. R., Vol. 33:259). Some of these temporary camps have been archaeologically identified by Pendergast (1962:21-34; 1966; 1969).

In the early 1630's the presence of a permanent Jesuit mission at a village, was regarded by the Hurons as an important function. With the return of the Jesuits to Huronia several villages vied for the privilege of housing them (J. R., Vol. 8:51, 71, 85, 101, 105; Vol. 10:235-249). The reasons for this are not too difficult to determine. The presence of a Jesuit gave a village chief and the inhabitants of a village prestige among their neighbours (J. R., Vol. 10:237). The Hurons also regarded the presence of a priest in their village as a means of gaining favour with French officials and traders in Quebec (Trigger, 1968:120, 125-127). At times such favours were sought overtly (J. R., Vol. 13:25, 125). Champlain had made it very plain to the Hurons that French goodwill depended on how they received the Jesuits in their villages (J. R., Vol. 8:49-51). This threat was reiterated by others in later years (J. R., Vol. 21:143-145). The Hurons therefore thought that the presence of priests in a village would give that village trading advantages. Once in a village the Jesuits were expected to reciprocate Huron hospitality with gifts of

trade goods (J. R., Vol. 8:93-97, 105; Vol. 10:249; Vol. 15:157). Similar gifts, especially tobacco, were made to those who listened to the sermons and became baptized (J. R., Vol. 8:145; Vol. 13:141; Vol. 17:95; Vol. 18: 19-21; Vol. 23:129). In a minor way then, the Jesuits became linked with trade and assured a small inflow of trade goods into a village. The villages in which the Jesuits were located therefore assumed a secondary function some of the other villages did not have. The fact that the Jesuits ultimately settled in the larger more important villages simply strengthened the functional importance of these villages. There were no functional rivals to the large villages until the establishment of Ste. Marie I. By that time of course priests were no longer welcome in any but a few Huron villages.

Ste. Marie I was created in 1639 out of the missions at Ossossane and Teanaustaye (J. R., Vol. 19:133). The original aim was to build a mission from which the total Jesuit effort could be co-ordinated. The location was deliberately chosen for its central position in Huronia (J. R., Vol. 19:133), some distance from the nearest Huron villages. It was easily accessible to all Parts of Huronia and Georgian Bay, yet was far enough from the neighbouring villages to escape the daily interruptions and "impertinences" the Jesuits had had to deal with at the Huron villages. While originally Ste. Marie I was only intended to be the administrative centre of the Huron and Petun mission, it quickly assumed a larger regional role. As a physical outpost of France it became a disseminator of French culture. Here the Hurons could see French architecture, fortifications and craft specialists at work. Kidd states that some effort was made to introduce the Hurons to European agricultural methods at Ste. Marie I

(Kidd, 1949:12). While this may be true, there does not seem to be any corroborating evidence. With the building of a hospital in 1642-43, Ste. Marie I assumed regional medical functions, absent from the other villages. By 1643 Jérôme Lalemant was calling Ste. Marie I ". . . the continual resort of all the neighbouring tribes. . ." (J. R., Vol. 26:201). It was especially for the Christian converts that Ste. Marie I assumed a dominant role. For them the complex on the Wye River became a place for devotion, handouts in time of need, and a refuge from persecution (J. R., Vol. 21:141-143; Vol. 23:41; Vol. 26:201, 211; Vol. 27:65; Vol. 33:77). By 1647 Ste. Marie I had in fact emerged as the functional nucleus of the country with the Jesuits as the most effective leaders (Trigger, 1960:39).

Whether Ste. Marie I served as a trading post is doubtful. Earlier experiences had shown the Jesuits that the presence of French traders in Huronia was not desirable from a religious point of view (J. R., Vol. 6: 83; Vol. 14:19; Vol. 17:45; Vol. 22:311). To the Jesuits it was preferable that they themselves would seek to encourage Huron-French trade, but that the actual trading be carried on at the posts on the St. Lawrence. As far as is known, French traders did not come to Ste. Marie I, and the place was never used as a trading post. Therefore, like the Huron villages, Ste. Marie I did not serve any commercial function.

In summary one can fairly state that functional differences between Huron villages were slight. What functional differences there were rested on the fact that some villages were regional strongholds and a few were the residences of the tribal leaders. French trade could have made the Arendaronon villages, particularly Cahiagué, centres for the distribution of French trade goods. It was the Arendaronons who had pioneered

French-Huron trade and consequently to them that this line of trade properly belonged under Huron law (J. R., Vol. 10:223; Vol. 20:19). It was however decided that French-Huron trade was so important that all villages were given the right to participate in it (J. R., Vol. 20:19). This development, plus the absence of a market oriented economy ruled out economic functions as a basis for differentiating villages.

iv) The distribution of settlements.

Theoretically the distribution of Huron villages is dependent on the distribution of agriculturally usable soils, water resources and other site requirements discussed in Chapter VI, part 1. If these site requirements are more or less equally available, villages can only be as close together as the size of the agricultural umland necessary to support them and the area available for periodic shifts in village locale. The size of the agricultural umland and the area available for shifts in village locale would in turn be dependent on the population size of the villages, the natural productivity of the soils and the density of settlement. Because Huron villages varied in size and periodically shifted their site one could not expect a uniform distribution of sites even if site requirements were evenly distributed or village territories became formalized due to population pressure. In other words an even distribution of villages could only result if villages became fixed in their location. This would involve fundamental changes in the nature of Huron agriculture, village life and economy. An even distribution of villages in Huronia could only occur by chance. If site requirements had a clustered or random distribution, an even distribution of settlements would be even less likely.

Whether site requirements were clustered, evenly or randomly distributed, villages could only be as close together as the extent of their village umland. The spatial relation of villages would change periodically as village sites shifted. In all cases, the site to which a village shifted would be dependent on the availability of the right site requirements as close as possible to the old site to minimize the work involved in moving the village. Because distances were short within each tribal area, and because each village was virtually independent of every other village, distances between villages need not be a factor in a new location. Since only land under active cultivation was regarded as the private property of village families (Sagard:103), a relocated village could go anywhere within the tribal territory just as long as it did not encroach on the cultivated lands of another village.

On the basis of this reasoning, whether the major site requirements were evenly or randomly distributed, one would expect an almost random distribution of villages in Huronia. During the Jesuit period villages varied in size up to about 3,000 people and with them the size of their agricultural umland. Villages shifted about every ten to thirty years (Champlain, Vol. 3:124; Sagard:92), although every eight to twelve years seems more likely (J. R., Vol. 10:275; Vol. 11:7; Vol. 15:153; Vol. 19:133). Finally and most importantly, water resources and soil conditions, specifically the more desirable soils, were neither evenly distributed (except in the tribal area of the Attinguenongahac) nor clustered. Consequently one would expect that Huron villages had a more or less random spatial pattern even though the overall population of the occupied area may have reached an optimum level.

Keeping the limitations of the data on the distribution of Huron villages in mind (Map No. 23), an attempt was made to derive a quantitative description of the distributional pattern. Using a standard method of Nearest Neighbour Analysis (Duncan, 1957:33; Haggett, 1965:232) an index of 1.22 was obtained for all villages west of the Coldwater River for whom the data was more complete. Since index values using this test can range from zero (clustered distribution) to 1.0 (random distribution) an index of 1.22 would seem to indicate an almost random distribution of villages, which is what was expected. There is little doubt that this randomness is a reflection of the random to uniform distribution of site requirements.

The most striking thing about the location of the functionally more important villages, Ossossane (La Conception), Scanonaenrat (St. Michel), Teanaustaye (St. Joseph) and Contarea (St. Jean Baptiste), is that they are all on the periphery of their respective tribal areas and along the southern frontier of Huronia. This is to be expected in view of the fact that the major regional function served by these villages was as stronghold against enemy attack and seat of the influential war and tribal leaders.

The location of Ste. Marie I could not have been better chosen. As mentioned earlier, its principal function was administrative centre for the missionary activity to the Huron villages. The major locational requirements were access to Georgian Bay, peace and quiet from the nearest Huron village, but above all minimum travel distance to the largest number of people. With these criteria in mind, the only site the Jesuits could have chosen was in fact the site they did choose. Any site along the Wye

River, between Wye Lake and Midland Bay is the point of minimum travel time to the maximum number of villages. Only the thinly populated Arendaronon mission lies outside of this area (Map No. 23). Maximum travel time to the farthest villages (except St. Jean Baptiste) was only four leagues or about four hours.

C.) Morphology of the Village.

i) The palisade.

Unlike European Neolithic societies such as the Danubians where the palisade was as much a defensive measure as a cattle enclosure (Piggott, 1965:85, 102, 202; Hawkes, 1963:358, 396), or Neolithic African groups where the palisade or thorn hedge was a cattle enclosure as well as protection against marauding carnivores (Rapoport, 1969:57-58), the Huron palisade served only one function; a defensive measure against enemy attacks. The Hurons did not have any domesticated animals except the dog and there were no wild animals in Ontario that might pose a threat to humans.

The fact that not all villages were palisaded has already been observed (Chapter V, 1, c). As far as can be determined only the more important villages were protected or those closest to the frontier. In case of an attack the inhabitants from the smaller villages or those villages that could not be fortified, destroyed their villages and fled to the larger palisaded villages where they would build lodges for themselves and help in further fortifications (Sagard:92, 155; J. R., Vol. 10:51). Those that could not make it to a larger village hid in the forest (J. R., Vol. 10:51). It can be reasoned therefore, that the presence or absence of a palisade was a function of need ballanced against the

availability of building supplies and labour. Frontier villages undoubtedly had a greater need for defences than villages further removed from the frontier (as events in the 1640's demonstrated).

The descriptions of palisades in the ethnohistoric sources are fairly uniform:

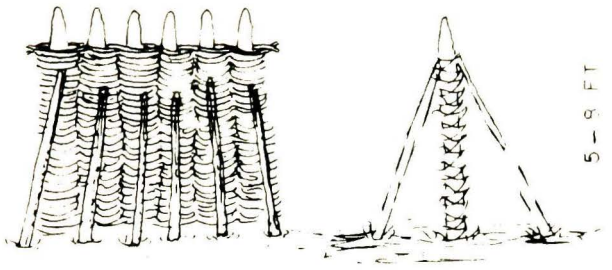
> . . . fortified by wooden palisades in three tiers, interlaced into one another, on top of which, they have galleries which they furnish with stones for hurling, and water to extinguish the fire that their enemies might lay against their palisades. (Champlain, Vol. 3:122).

or

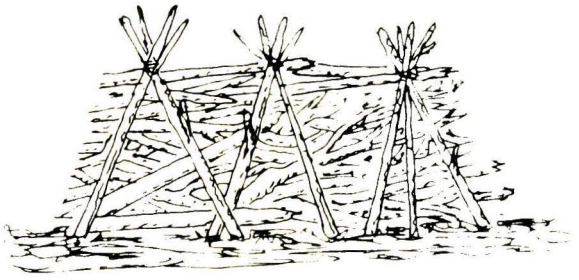
> Some of these (villages) are not shut in, while the others are fortified by strong wooden palisades in three rows, interlaced into one another and reinforced within by large sheets of bark to a height of eight or nine feet, and at the bottom there are great trunks of trees placed lengthwise, resting on short forks made from tree trunks. Then above these palisades there are galleriees or watchtowers, which they call Ondaqua, and these they stock with stones in war time to hurl upon the enemy, and water to put out the fire that might be laid against their palisades. The Hurons mount up to them by means of a ladder, very ill made and difficult to climb, and defend their ramparts with great courage and skill. Śagard:91-92).

More specifically, Carhagouha had a ". . . triple wooden palisade thirty-five feet high" (Champlain, Vol. 3:48). St. Ignace II was ". . . surrounded with a stockade of pine-trees, from fifteen to sixteen feet in height . . ." J. R., Vol. 34:123-125), and St. Louis was ". . . fortified with a fairly good stockade" J. R., Vol. 34:125; Vol. 39-249). A few contemporary drawings mirror these descriptions (Figure 6).

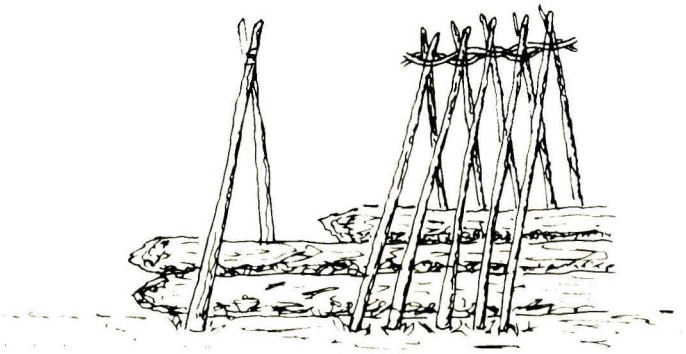
Archaeologically as much is known about the palisades as about the longhouses. In general the palisade followed the edge of the slope



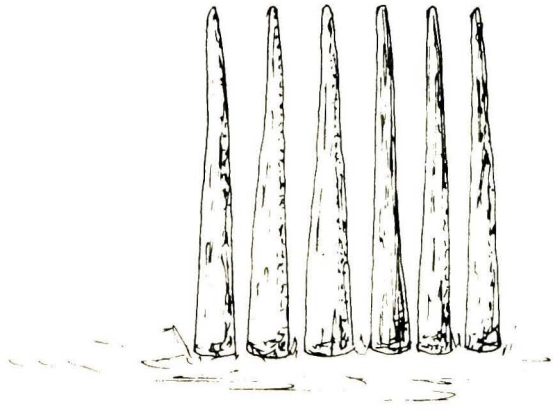
(a) Palisade of a temporary League Iroquois encampment From Champlain's *Voyages* vol 2, Plate V.



(b) Palisade of a temporary League Iroquois encampment. From Champlain's *Voyages* Vol. 2, Plate VI



(c) Palisade from Bressani's Map *Novae Franciae Accurata Delineatio*.



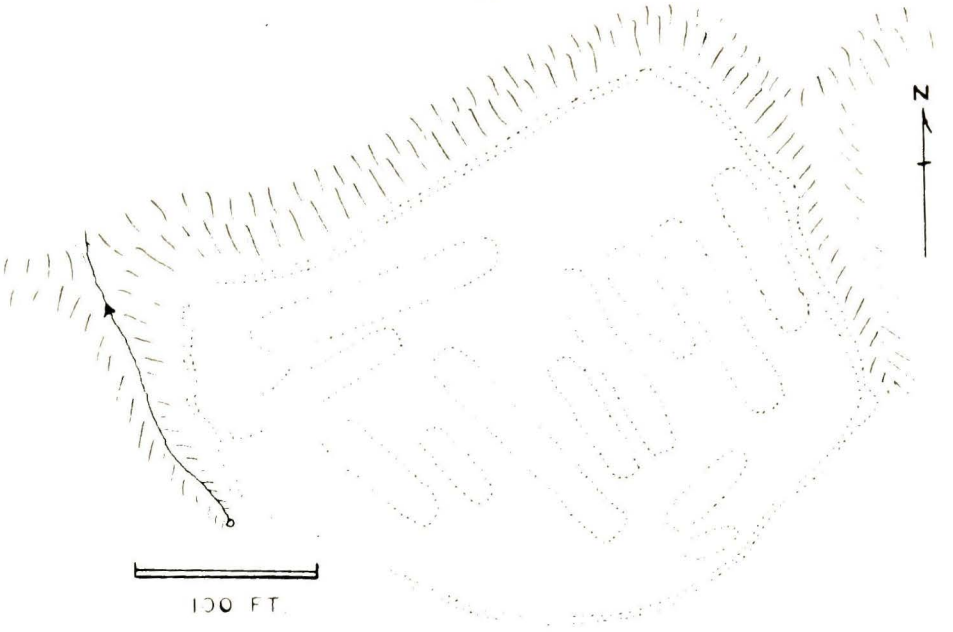
(d) Palisade of *Hochelaga* from Lescarbot's Map of *Nouvelle France*

on which the village was situated. To the rear of the slope the palisade was built in an arc encircling the village into a rough oval. If the village stood on an interfluve the palisade was built along the break of slope. In no case was a palisade constructed in the form of a recognizable straight line geometrical figure. Since palisades enclosed the occupied portion of a village, Huron villages were roughly oval in shape (Figure 7).

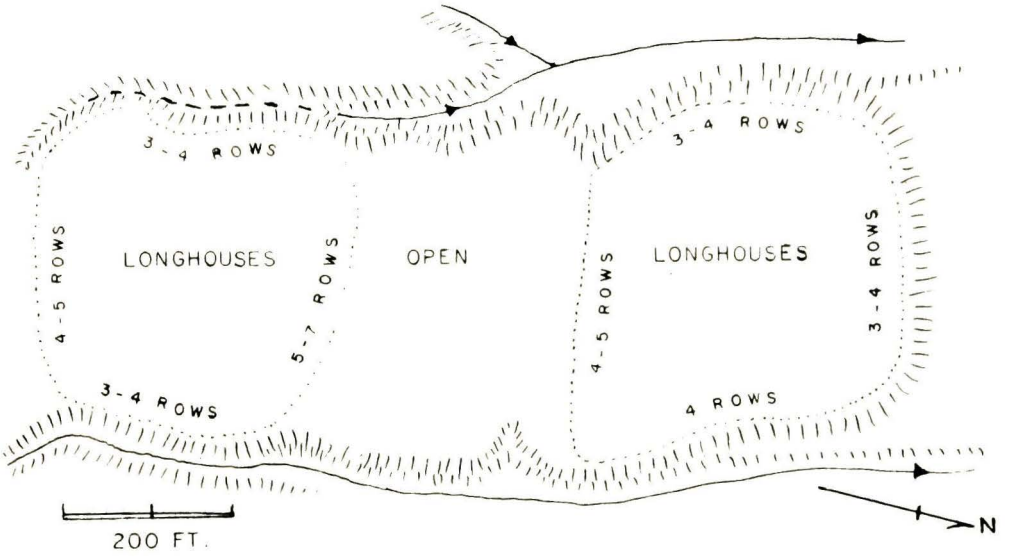
Of the palisades, or portions of palisades, excavated so far, most consisted of single to double rows of staggered posts. Individual posts usually varied from three to five inches in diameter and were spaced six to twelve inches apart. A second row, when present, was usually placed two to two and a half feet from the first row (Figure 8, a) Judging from various excavations the base of the posts was roughly tapered and driven into the ground anywhere up to twenty inches. Presumably branches were woven between the uprights and logs and bark placed between the rows.

The most detailed work on Huron palisades has been done at Cahiagué (Emerson and Russell, 1965). This was a massive enclosure varying between three and seven rows of posts. At the northern village segment three to four rows were built along the brow of the slopes and four to five rows along the flat southern approaches. The southern village segment was protected by five to seven rows along the unprotected northern perimeter, four to five rows on the unprotected southern perimeter and three to four rows along the east and west ravines (Figure 7). This general pattern is repeated at other sites, namely that the flat approaches to a village were more heavily fortified than the perimeters

FIGURE 7

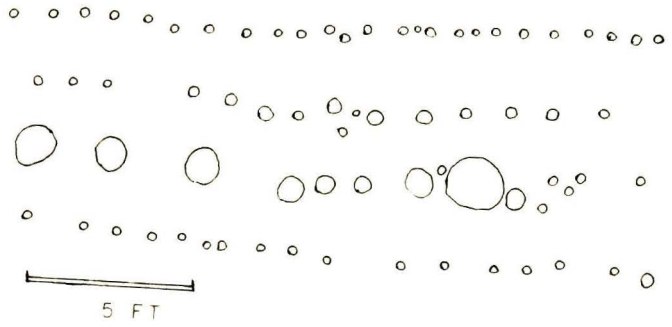


(a) Palisade and house pattern at W ury's Forget site.

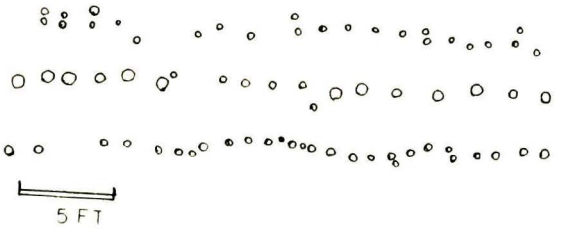


(b) Palisade pattern at *Cahiague*.

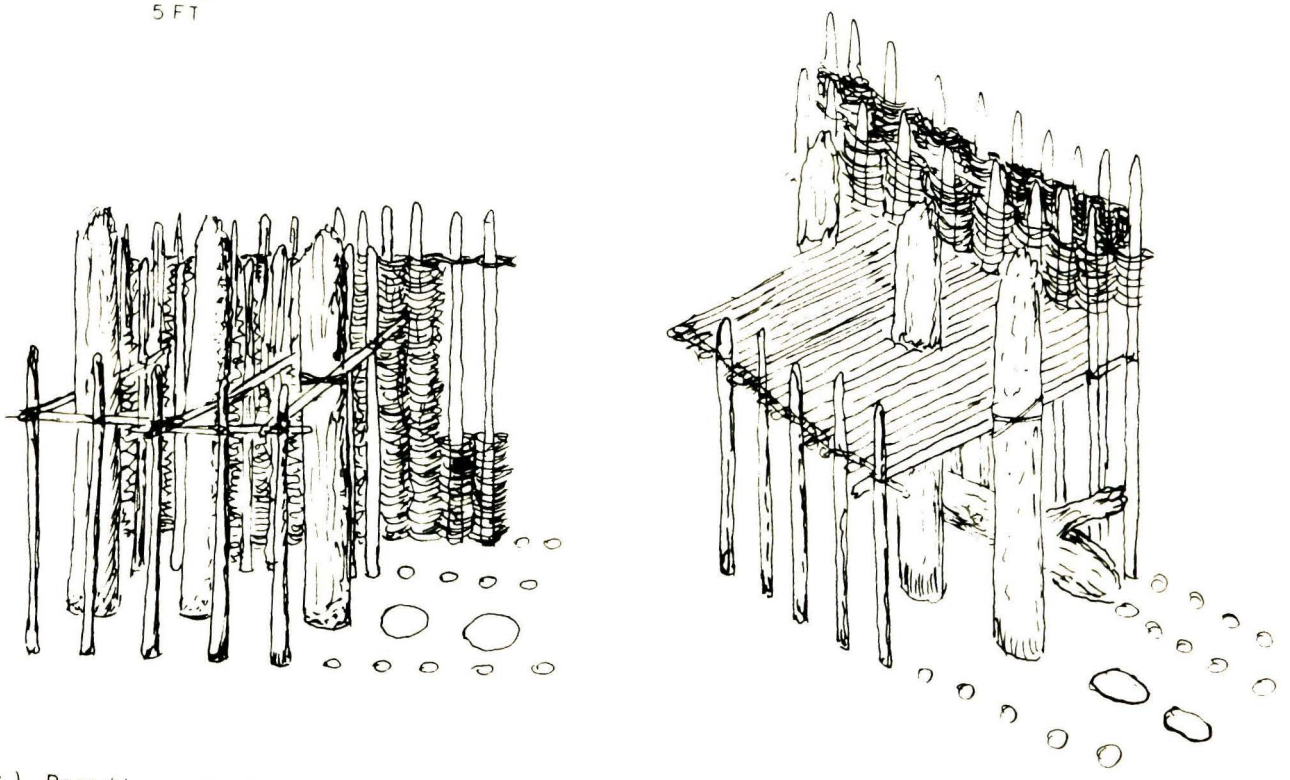
FIGURE 8



(a) Post hole pattern at *Cahiague*, south wall of northern component. (From Emerson and Russell, 1965 Fig V)



(b) Post hole pattern at *Cahiague*; west wall of northern component (From Emerson and Russell, 1965 Fig VIII)



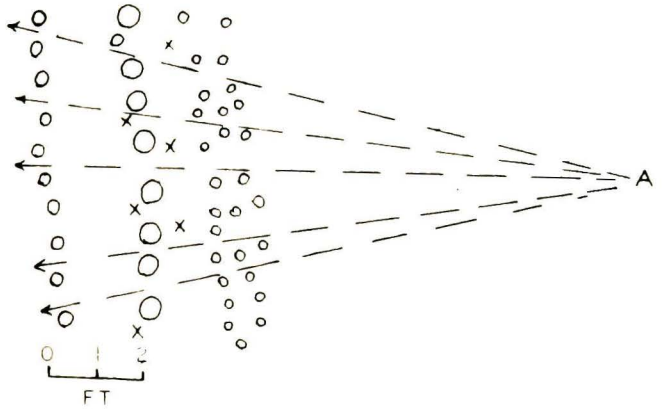
(c) Possible reconstruction of a four rowed palisade at *Cahiague*

along breaks in slope. The Cahiagué palisades also show that when more than two rows of posts are present one of the interior rows is composed of heavier logs up to ten inches in diameter, spaced some two to three feet apart.

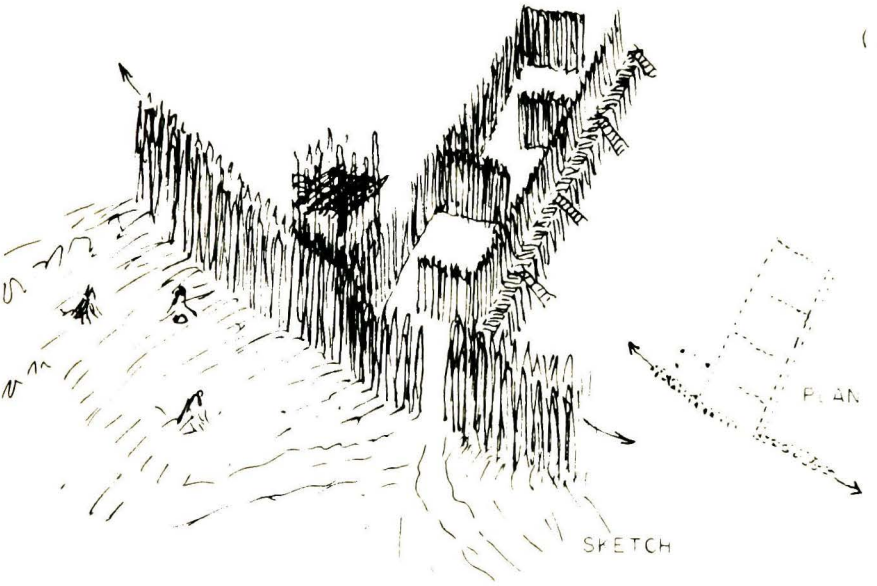
As yet there is no evidence from any excavated site that posts were driven into the ground at an angle, as pictured on Bressani's map (Figure 6, c). The usual type of construction seems to have been a tightly interwoven series of uprights with each row about two and a half feet apart. The standard four row palisade at Cahiagué was therefore some 7.5 feet thick (Figure 8, a).

As yet no "galleries" or "watchtowers" have been described in the archaeological literature. This does not mean that they were a figment of Champlain's and Sagard's imagination. In all probability galleries and watchtowers were built on top of the five to seven feet of space between the outer and inner walls of the palisade (Figure 8, b). There is no reason why a separate structure should be erected to serve these purposes. On one or two rowed palisades such superstructures may have been absent.

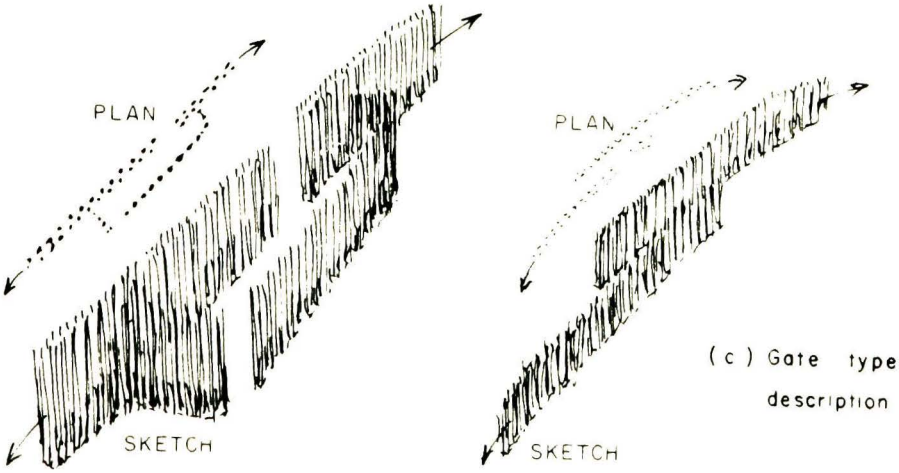
In their discussion on the Cahiagué palisade, Emerson and Russell (1965:16-18) proposed a type of palisade that differs radically from the standard descriptions. In view of the fact that Emerson and Russell's interpretation is becoming widely accepted, it bears a brief examination. Basically their conception of a palisade is a series of palisade lines consisting of staggered uprights with no interwoven branches, logs, galleries or towers. Because the rows were staggered an arrow would have trouble penetrating the defenses and a defender could simply step between



(a) Attack potential of Emerson-Russell palisade. Arrows (broken lines) shot from point (A) would only have five chances of penetrating palisade line, while a defender would return fire from behind the front two rows (X). (Emerson and Russell, 1947: Fig. XVIII, XIX).



(b) Type of gate found by W. Jury at Hunter's Site # 36, Tay Twp. (Jury and Fox, 1947: 66).



(c) Gate types fitting Sagard's (: 92) description

the rows and fire back (Figure 9, a). This "open" type of palisade would also make gates unnecessary. The trouble with this theory is, that such a defensive system would only work if the attacker was content to stay at a distance and shoot arrows at the palisade. It would be absolutely useless in a surprise attack (the usual method of warfare), or once the enemy had reached the first palisade line. Interwoven branches, the interlacing of the various rows, logs and sheets of bark are not the type of evidence one could expect to find archaeologically. It is therefore difficult to say that they did not exist. The ethnohistoric descriptions and the rather obvious defects in the Emerson-Russell palisade would seem to mitigate against its existence in that form.

Not enough village sites have been dug to say anything definite about the number and construction of village gates. Sagard stated that the "gates and entrances" could be "closed with bars." One could not enter a gate "striding straight in," but was "forced to pass turning side ways" (Sagard:92). Two gates answering this description were apparently found by Jury at Hunters Village Site No. 36, Tay Twp. (Jury and Fox, 1947:61, 66). Preliminary analysis of the post hole patterns at the north central palisade segment of the southern village component at Cahiagué strongly suggests a similar structure to the ones found by Jury and described by Sagard (Personal observation). Apparently the outer opening of the gate led into a walled passage at right angles to the main palisade. At intervals barriers were erected across the passage all but closing it (Figure 9, b). Such a passage would have to be negotiated in a zig-zag pattern and could easily be blocked, as described by Sagard. Another possibility arising out of Sagard's description would be simply

to build a second palisade system behind and parallel to an opening in the primary palisade system (Figure 9, c). This would be a simpler but equally as effective a gate as the ones found by Jury.

The number of gates at a village is in doubt. Jury's village had two; other villages have not been sufficiently excavated. The Jesuits describe the presence of two gates at St. Joseph II (J. R., Vol. 39:239-241). The existence of two gates allowed a part of the population to escape after the Iroquois attackers had taken possession of the main gate during the attack of the village in 1648. The difficulty met by the Hurons in attempting to escape from villages that had been surprised and breached by attackers suggests that gates were a necessary means of getting out of a palisaded village. It was not a mere matter of walking between rows of stakes as suggested by Emerson and Russell. This is further illustrated by the fact that the Iroquois armies had to dig and chop their way into St. Louis after several other attempts at storming the place had failed (J. R., Vol. 34:127).

There is little evidence that the Hurons built earthworks or ditches around the perimeter of their palisade as added defensive measures. This practice has been reported at some of the League Iroquois villages (Houghton, 1916:513; Parker, 1920:120-122). Only one site in Huronia was reported to have had a defensive ditch; the large contact site of St. Joseph II on lot 12, concession 4, Medonte Township. Hunter reports that he, and others, managed to define a trench about 50 yards in length running between the heads of two ravines thus providing added defences at the only part on the village perimeter that was not adjacent to a ravine. The ditch was slightly curved with the concave side facing the interior

of the village (Hunter, 1901:78-79).

On the whole, Europeans were not impressed by Huron fortifications. Champlain for example, remarked that the fortifications of the League Iroquois were considerably better (Champlain, Vol. 3:70), and as early as 1636 the Jesuits were instructing the Hurons in the basic principles of European fortifications (J. R., Vol. 10:53).

Against Iroquois method of warfare the usual Huron single or double palisade was probably reasonably effective. Its principal drawback was that it could be set on fire. Unless the village was attacked by surprise it could withstand an attack by any small, disorganized groups of warriors of the size that Huron and Iroquois war parties participated in up to the 1630's. As the League Iroquois armies got larger and better organized the traditional Huron palisade proved to have additional weaknesses, the main one being that the palisade lines were curved instead of straight. It was this weakness that the Jesuits were trying to rectify at Ossossane:

> We have told them also that henceforth they should make their forts square, and arrange their stakes in straight lines; and that, by means of four little towers at the four corners, four Frenchmen might easily with their arquebuses or muskets defend the whole village. They are greatly delighted with this advice, and have already begun to practice it at la Rochelle (Ossossane). . . . (J. R., Vol. 10:53).

The extent to which this advice was followed is unknown. The Jesuits themselves state that they had a hand in fortifying St. Ignace II (J. R., Vol. 39:247), the village on Christian Island (J. R., Vol. 35:85), and Jury appears to have found a palisade at St. Louis showing a strong French influence (Jury and Jury, 1965:28).

ii) The distribution of longhouses within the village.

One of the really surprising things about the extent of Iroquoian archaeology is the lack of any studies on the total layout of villages. At least something is known about every aspect of a village (houses, palisade, middens, cemeteries, etc.), but virtually nothing about the internal arrangement (morphology) of the village. In one of the few statements on the subject Ritchie (1956:78) wrote that Iroquoian towns:

> . . . would probably equate rather closely in size and general arrangement with the Late Mississippi towns of the Southeast, except that the former lacked the temple mounds, chief's houses, charnel houses, and other elements of the southeastern ceremonial complex. The council house of the Iroquois - the focus of political and religious activities - affords the closest parallel. Even at the present day, Iroquoian houses on the reservation tend to cluster around the council house.

In the meantime little additional work has been published to gain a deeper insight into Iroquoian village morphology. Recently some anthropologists have drawn attention to the general lack of prehistoric settlement pattern studies (Chang, 1967:15-17; 1968:2-4) and Iroquoian settlements in particular (Trigger, 1967b:153). During the mid 1960's settlement studies were launched by the University of Western Ontario at the Forget site and the University of Toronto at Cahiagué and the Maurice, Robitaille, Charleboix and Lichtenfeldt sites, all in Huronia. As yet no results have been published from these sites.

For the Hurons, the ethnohistoric sources are of little use. Beyond stating that houses were usually placed three to four yards apart ". . . for fear of fire which they greatly dread"(Champlain, Vol. 3:125), and that the villages had "streets" and "public places" (correfours)

(Sagard:203; J. R., Vol. 15:157; Vol. 16:247), nothing else has been written.

Slightly more is known about the village morphology of other Iroquoian tribes, and there is no reason to believe that they were substantially different from the Hurons. During his visit to Hochelaga (1535-St. Lawrence Iroquois), Cartier describes a typical Iroquoian village, roughly circular in shape, surrounded by a strong palisade with one gate, containing fifty longhouses (Lescarbot, Vol. 2:116-117). On his arrival at the village he was taken to:

> . . . the middle of the town, where between the houses is an open square, a stone's throw or thereabouts in breadth. (Lescarbot, Vol. 2: 112, 443).

The use of this square was evidently for public meetings and festivals. A picture of Hochelaga appeared in Ramusio's Delle Navigationi et Viagi (Figure 10, a), but is probably nothing more than a graphic rendering of Cartier's description, heavily influenced by 16th century European ideas in town planning.

Much the same could be said about Champlain's celebrated picture of the Onondaga village he attacked in 1615 (Figure, 10b), where it not that unlike the drawing of Hochelaga, which cannot be attributed to Cartier, Champlain refers to the picture of the Onondaga village in his text. In view of the accuracy of Champlain's maps it is difficult to dismiss his drawings entirely. In view of other descriptions of Iroquoian villages some of the essentials of Champlain's picture are probably correct. What he appears to have seen was a heavily fortified village built close to the edge of two parallel creeks and a larger body of water. The

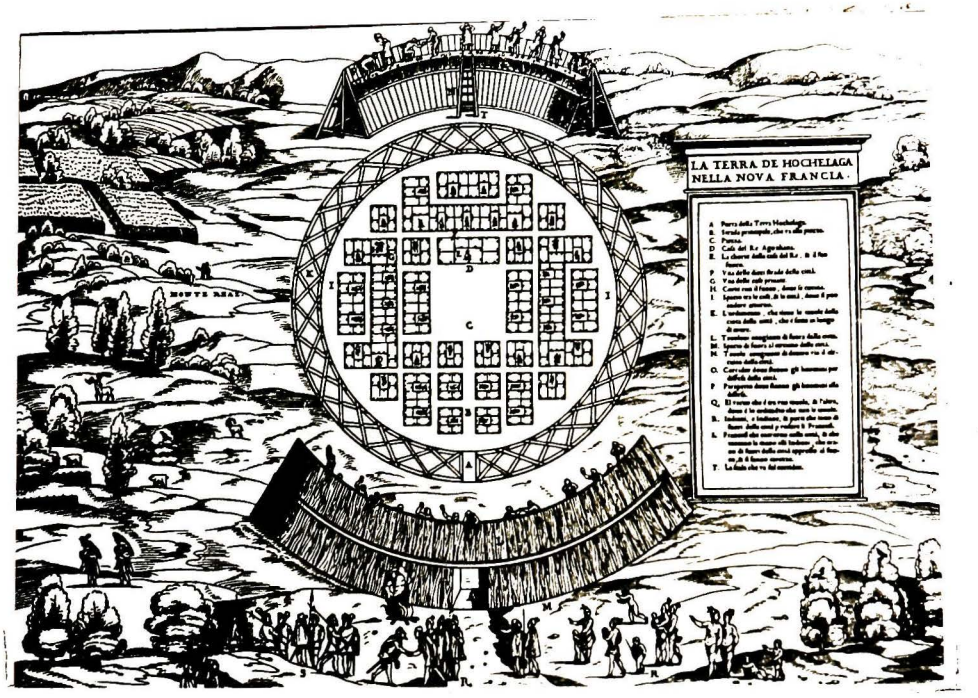


Figure 10 a). Plan of the Laurentian Iroquois Village of Hochelaga (1535) by Ramusio, from a description by Cartier.

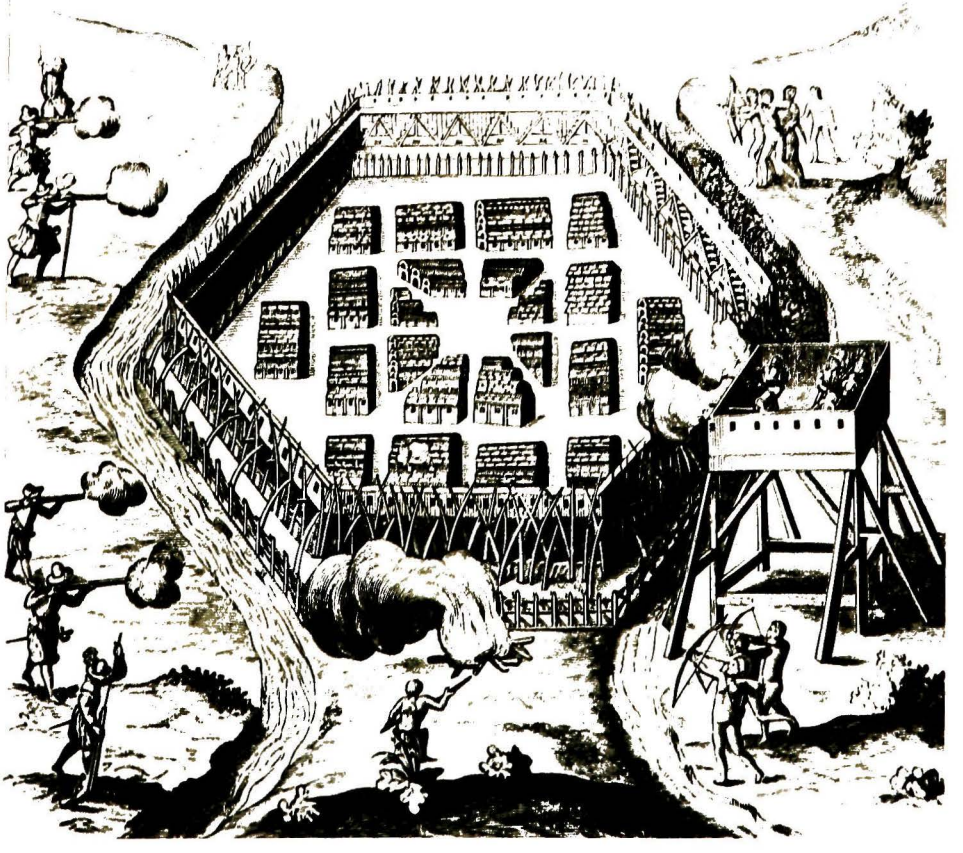


Figure 10 b). Plan of an Onondaga village (1615) by Champlain.

centre of the village had an open area around which the longhouses were placed in groups. The space between the grouped longhouses he interpreted as "streets." Similar to other illustrators of his time, Champlain made the village rather spacious and the morphology more geometric than it probably was. Nineteen years after Champlain a Dutch traveller visited a Mohawk village with ". . . thirty-six houses, in rows like streets, so we could pass nicely." (Jameson, 1909:140-141).

Among the very few illustrations of Iroquoian villages is one that is supposed to represent the chief village of the Susquehanna (Andastes) (Figure 11). It appears on a map engraved in 1720 by H. Moll (A New Map of the North Parts of America Claimed by France - Public Archives of Canada, Ottawa). The problem with this picture is that it seems to be a reverse image of John White's well known sketch of the North Carolina Powhatan village of Pomeiock, visited by the English in 1585 (Figure 12). Over the years Pomeiock has been copied and re-copied so often that it has become generally accepted as a standard illustration of any eastern woodlands village. Like the Iroquoian tribes, the Powhatan lived in communal longhouses and in palisaded and non-palisaded villages (Birket-Smith, 1963:157-178; Morgan, 1965:119-124). The village of Secotan, also illustrated by John White, is an example of the latter (Figure 13). In the case of the palisaded village the essential characteristics are an open central area and a loose arrangement of houses about it, while the unpalisaded village is simply a random agglomeration of longhouses. Other illustrations and verbal descriptions of Iroquoian villages and those of neighbouring groups show similar characteristics.

Thus far only two Huron villages have been more or less

Figure 11. Picture of the village Sasquesahnok among the Susquehana Iroquois by H. Moll (1720).

completely excavated; Forget (unpublished), and Hunter's No. 36 in Tay Township (Jury and Fox, 1947). Both of these villages were excavated by W. Jury, whose work, as mentioned earlier, must be viewed with some caution. Be that as it may, one can at least say that both villages have open areas. In the case of Hunter's No. 36 an unusually large longhouse is situated on the edge of an open central area (Figure 14). The other longhouses are loosely spaced about the open area much like the village depicted in Figure 11. One is tempted to visualize related groups of longhouses within the total village pattern, and it is unfortunate that the original excavations were not exact enough to permit one to do this. In the case of Forget (Figure 7a), at least one open area is present. However as yet no report on the village has been published.

Personal observations from numerous field seasons at Cahiagué and conversations with archaeologists Dr. J. N. Emerson and Mr. A. Tyyska, leaves one with the firm conviction that longhouses were deliberately placed parallel to each other and were interspersed with small open areas. On the basis of the distribution of pottery types, pipe styles and trade goods, Mr. Tyyska feels that the inhabitants of the longhouses surrounding each open area had close relations and may have belonged to the same lineage or "clan." A great deal of further study at Cahiagué and other sites will be needed to validate these early observations.

On the basis of the little that is known about the morphology of the Huron village and a body of theory built up from cross cultural studies among American Neolithic societies one can at least hypothesize what the Huron village may have been like. Basically there seem to be three morphological types; the dispersed village with no palisade, compact

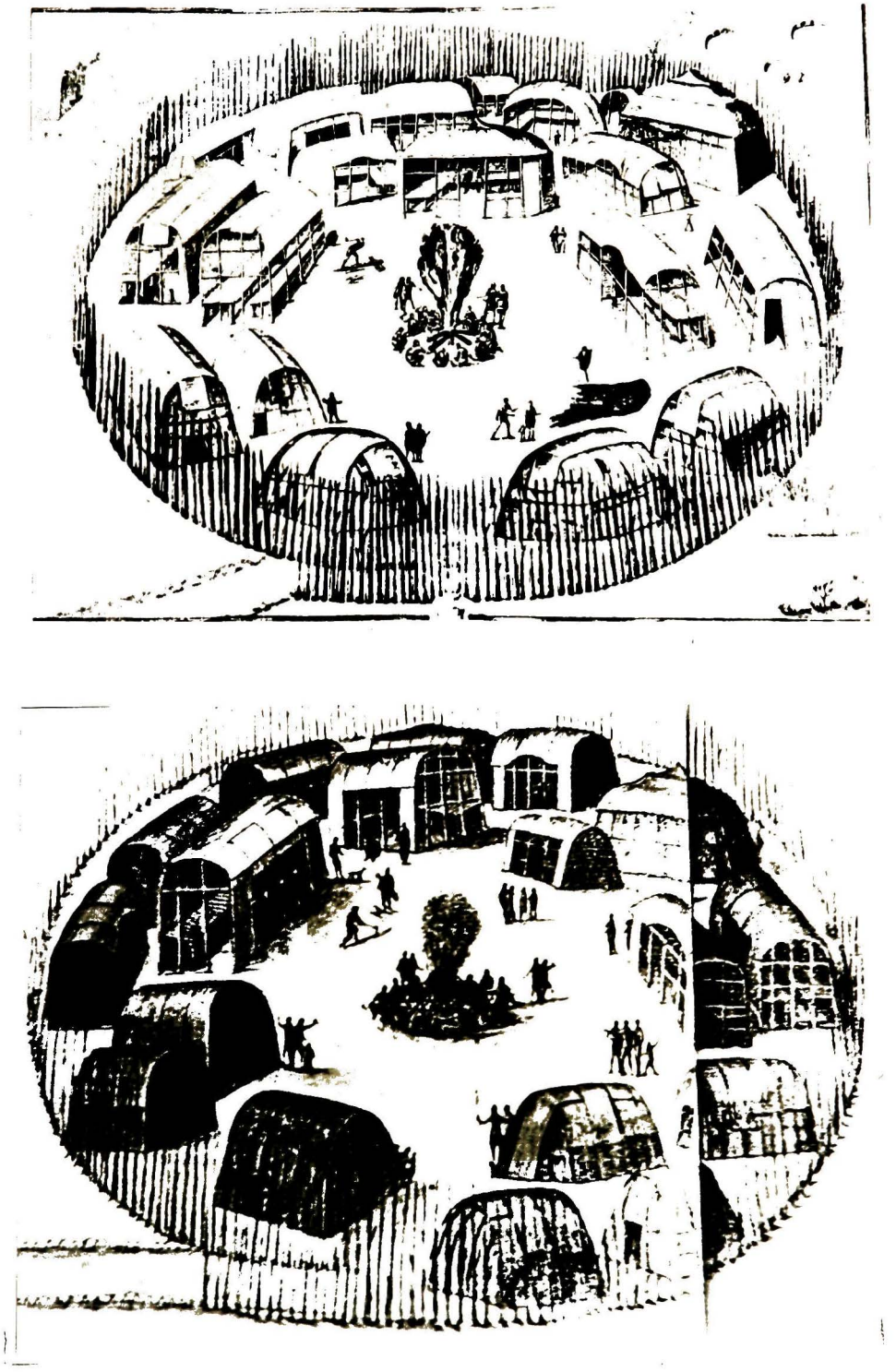


Figure 12. Two pictures of the Powhatan village of Pomeiock (1585) by John White.

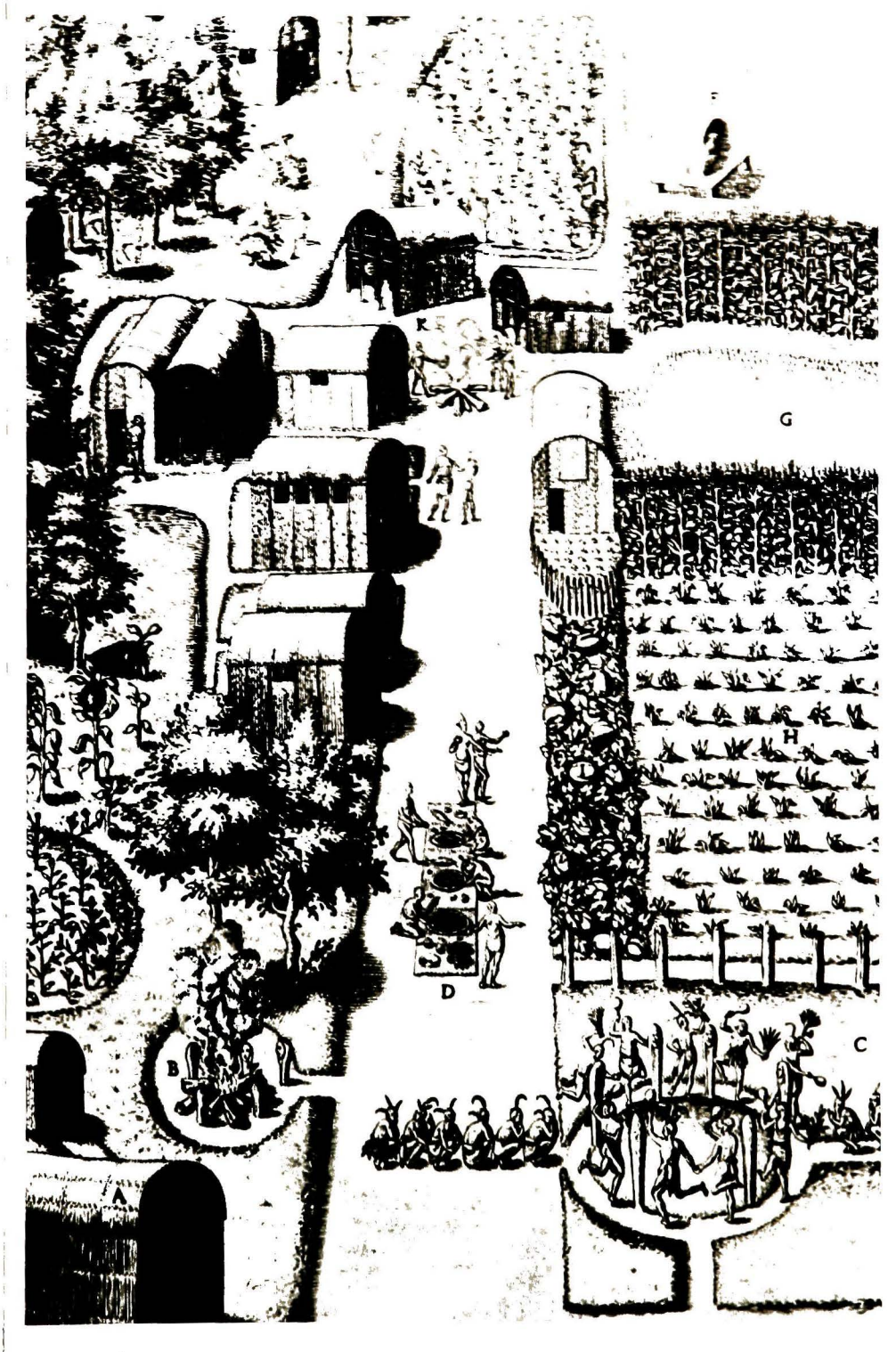


Figure 13. Picture of the Powhatan village of Secotan (1585) by John White.

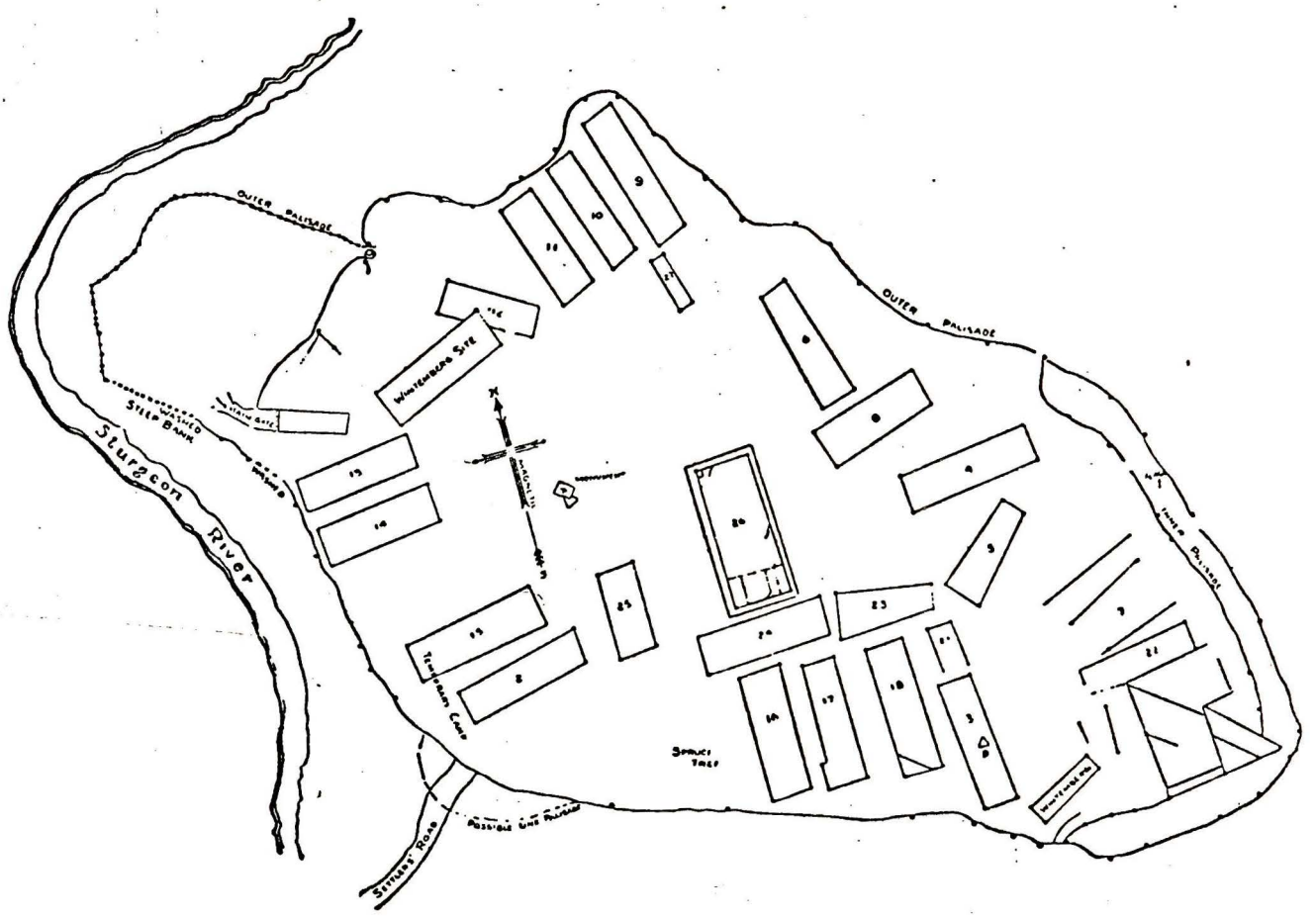


Figure 14. Plan of a Huron village excavated by W. Jury; probably wrongly identified as St. Ignace II (Hunter's No. 36, Tay Township).

palisaded villages and multiple villages.

The dispersed village was simply a loose agglomeration of longhouses along the edge of a watercourse without any particular plan. Villages such as these have been observed in Huronia, but none have been excavated. Judging from its name, Arethsi ("The straggeling village") seems to have been such a place, perhaps much like Secotan (Figure 13). In Chang's (1958:306) classification of Neolithic villages this type would come most closely to his unplanned village.

In Huronia as elsewhere compact palisaded villages varied in size and complexity. The main determinant was probably whether one or more lineages were present. Chang (1958:306) found that monolineage communities were ". . . often composed of houses arranged in a circle around a small plaza which sometimes contains a men's house or the chief's house." When more than one lineage was present,

> . . . each localized in one segment of the community. The segments are in effect small, planned, sometimes fenced villages with dwelling houses arranged in a pattern, centering on a plaza, a men's house, or other special buildings; in many cases, each segment is a communal house. The segments are further arranged either regularly or irregularly into a community, which sometimes has an additional common plaza and some community buildings or, occasionally, a big enclosure. The segmented community pattern seems to indicate the existence of several lineages, each occupying a segment. (Chang, 1958:306-307).

Since both monolineage and multilineage villages existed among the Hurons, the chances are that morphological patterns will be found corresponding somewhat to Chang's definitions. Forget for example is probably representative of the smaller monolineage communities, while Hunter's No. 36, with its central open area and large centrally located

house, as well as some indication of longhouse grouping, seems to have been one of the more complex multilineage villages. This was certainly the case at Cahiagué, where there is evidence of grouping of longhouses about open areas. In addition of course, Cahiagué was a multiple village and therefore represents the ultimate in the organizational complexity of Huron villages.

At present little more can be said about Huron village morphology. This is one area of Iroquoian research that shows great promise for the future. In all likelihood however, it will be a long time before anything definitive is known simply because a number of whole villages must be carefully excavated; and that is an enormous task.

iii) The disposal of garbage

The most distinctive archaeological feature of Huron village sites are its garbage dumps (middens). Since they are the only visible surface feature at a site it is virtually impossible to locate a site where the middens are indistinctive or absent. Middens contain most of the artifact material of a site; they can be used to delimit the extent of a site; they furnish information on the diet of the inhabitants, and because they were deposited on the land surface they sometimes cover undisturbed soil profiles dating to the period of Indian occupation. In view of the importance of middens to archaeologists it is surprising that none has ever attempted an analysis of them. As yet the archaeologist has been solely concerned in extracting artifact material from the middens; layering in middens, the material itself, the position of middens in relation to each other and the longhouses, differences in the artifactual material between middens (often as high as between contemporary sites); all of these have

been almost entirely ignored. An analysis of midden material is beyond the scope of this thesis, but future work should prove this to be a fruitful area of research.

In appearance middens vary from low mounds up to four feet in depth to scattered surface deposits only a few inches deep. The area covered by the deposits can vary up to several hundred square yards. The interior of some middens is layered in a series of lenses of varying thickness. In colour the lenses vary from light grey to black depending on the type of ash and the amount of charcoal present. The predominant material in the middens is woodash mixed with small amounts of fine sand and silt. The consistency of the midden material is therefore light, and when dry, easily becomes windborne. Besides the usual artifact material, carbonized cultigens, fishbones and animal bones are also present in varying amounts. The pH of the bulk of a midden varies between 7.0 and 8.5, usually increasing with depth. A few areas within a midden can be as low as pH 4.5. In general the black layers with a high percentage of charcoal and the light grey layers of almost pure woodash have the highest pH readings.

From the position of the middens one would gather that in most cases garbage was simply dumped on the periphery of the village; only in the case of large villages can middens be found within the village proper. As a matter of fact the writer has never seen a village in which a person had to walk more than one hundred feet to the nearest garbage dump. It would therefore be more correct to say that garbage was simply dumped within a convenient distance of a longhouse. This does not mean that garbage disposal was a random process. The middens are well defined areas and the space between them almost free of any refuse. The sum total of

which the east-west trails comprise 92 miles and the north-south trails 108 miles. Although there is no evidence for it, small trails probably connected every village to its nearest neighbour (dotted lines, Map No. 31). If this was the case, these trails would add only 20 miles to the known 200 mile trail network.

The picture thus presented, while it is probably incomplete, represents a very efficient trail network. A few of the trails may not have been Huron, particularly the ones on the west banks of the Coldwater and Sturgeon Rivers, which do not pass by any late Huron villages. Similarly the trail from St. Joachim to Matchedash Bay is probably Algonquin because the area about Matchedash Bay was an Algonquin camping area well into the 19th century. The other trails appear to be reasonably accurate. Most follow "natural routes of travel" to anyone acquainted with the area. On the whole it is difficult to see how this map could be improved upon unless more detailed 17th century maps are found. Such a discovery is however most unlikely.

the evidence seems to be that longhouses, including the hearth areas, were cleaned out periodically and the garbage disposed of in predetermined places. The layering in the middens may represent such periodic house-cleaning.

There is little indication from archaeological or ethnological sources how villagers disposed of human waste. Sagard (93, 227) noted that Huron children, and no doubt the many village dogs, urinated on the longhouse floors. While neither Sagard, nor anyone else, commented on the behavior of adults around the village, he did note that while travelling the Hurons,

> . . . used to stoop down in some place apart with a decency and modesty that were anything but savage. (Sagard:60).

If the Hurons behaved differently around their villages it was not mentioned in the ethnohistoric sources. Soil chemical analysis at the Maurice and Robitaille sites in the Penetang peninsula indicate a high phosphorus content throughout the village and especially in the middens (Hurley and Heidenreich, 1969:145). While the phosphorus content of an undisturbed soil was in the neighbourhood of 400 to 500 ppm. (depth 10"), in the village it would vary between 700 and 2,000 ppm and in the middens up to 4,500 ppm. Since excrement is high in phosphorus, the high values within the village might be due to an indiscriminate disposal of human waste. Further chemical analysis in the future will hopefully solve the problem.

On the whole the middens, composed primarily of ash, charcoal and rotting vegetable remains, need not to have been either offensive or a health problem to the villagers. Few animal and fish remains found their

way into the middens, and what little was thrown out was probably eaten by the dogs. There is no reason to suppose that the accumulations of garbage ". . . rendered it impossible for them (the Hurons) to remain long in one place" (Hunter, 1948:4); at least this was never cited as a cause for shifting a village. As a matter of fact the subject of refuse is never mentioned in any of the ethnohistoric sources. In all probability Huron domestic habits were not too different from those in rural France of the 17th century. At any rate the total lack of any references to waste disposal and accumulation seems to indicate that the early writers did not observe anything unusual or particularly offensive about Huron habits.

iv) The cemetery.

The disposal of the dead formed an extremely important part of the Huron cultural system and the size, location and types of cemeteries were an important aspect of any settlement. The social, religious and ceremonial aspects of death and burial were minutely described by Champlain (Vol. 3:160-163), Sagard (205-214) and in various parts of the Relations. These aspects have been summarized by Tooker (1964:128-140). Although most Huron ossuaries have been dug and looted, only three contact ossuaries have been excavated by archaeologists (Maurice Site, Tiny Twp.; Cahiagué, Medonte Twp.; Ossossane, Tiny Twp.). The Ossossane excavation was published by Kidd (1953:359-379), and a part of the Cahiagué report exists in manuscript form (Harris, n. d.:17pp). Notes on less scientifically excavated ossuaries can be found scattered throughout Hunter's reports on the townships in Simcoe County. For the purposes of this thesis the ossuary will be treated as much as possible as an aspect of settlement, without the accompanying social, religious and ceremonial ramifications.

Basically the burial of the dead seems to have been a two stage affair. Upon the death of a villager his family put the body on a mat in a flexed position (J. R., Vol. 10:267) and wrapped it in a robe (Sagard: 205). A feast was prepared and residents from the village of the deceased as well as neighbouring villages invited (J. R., Vol. 10:269). Those present at the feast were most likely relatives or close friends. After these ceremonies and a lengthy funeral oration the body was placed in a temporary grave. In most cases the grave consisted of a platform raised on posts over six feet above the ground (Sagard:207; Champlain, Vol. 3: 160). On occasions the body was interred in a grave below ground level (Champlain, Vol. 3:160; Sagard:208). In the latter case a shrine was built over the grave and the whole encircled by a fence. The usual distance of the cemetery to the village was ". . . a harquebus-shot . . ." away, or some 300-400 yards (Sagard:207).

Periodically all the bodies were disinterred and reburied in a mass grave during the "Feast-of-the-Dead." Champlain (Vol. 3:161) and Bressani (J. R., Vol. 39:31) stated that this event occurred every eight to ten years. Sagard (211) put the time at every ten years, while the Jesuits mention a time span of about twelve years (J. R. Vol. 10:143, 275, 281). On most occasions this seems to have been a tribal affair (J. R., Vol. 10:261, 279). A tribal council was held and the representatives from various villages would decide which village would be chosen for the honour of holding the "Feast" (Champlain, Vol. 3:161; Sagard:211; J. R., Vol. 10:261). The actual spot where the mass grave was dug was usually anywhere from 200 yards to half a mile from the designated village. On some occasions, when the tribal council could not arrive on a compromise

site, each group of dissident villages would hold their own "Feast-of-the-Dead" (J. R., Vol. 10:279). Judging from the number of contact ossuaries in Huronia such disagreements were either more numerous than the ethnohistoric sources seem to imply, or burial practices changed somewhat after the mid 1630's when the Jesuit observations were made. It is however safe to say that not every village had a "Feast-of-the-Dead" and therefore an ossuary connected with it.

Prior to the "Feast" the bodies were taken from the temporary graves and stripped of all remaining flesh. The bones were then bundled up and transported to the designated site, where among much feasting, dancing and speeches they were placed into a mass grave. The whole ceremony could on occasions last up to two weeks. The final mass grave was usually a round pit varying in size with the number of bodies and grave goods to be placed in it. The one at Ossossane for example, was some 20 feet in diameter and five feet deep (Kidd, 1953:365), containing about 1,000 skeletons. When the ceremony was finished the pit was covered with skins, logs, tree bark and finally earth. The grave was then marked with a solid wooden fence (Sagard:212).

Judging from the "Feast-of-the-Dead" witnessed by Brébeuf at Ossossane, the village at which the "Feast" was held was moved after the ceremonies were completed (J. R., Vol. 10:291-293, 299). Although concrete evidence that the "Feast-of-the-Dead" was accompanied by village movement is lacking, it seems more than a coincidence that the time interval given for the "Feast" (every eight to twelve years) was the same as the usual period of village movement (every eight to twelve years) (J. R., Vol. 15: 153; Vol. 16:229; Vol. 19:133). In one passage, Brébeuf discusses both

the "Feast" and village movement, but does not make it clear if the two events coincided:

> The graves are not permanent; as their villages are stationary only during a few years, while the supplies of the forest last, the bodies only remain in the Cemeteries until the feast of the dead, which usually takes place every twelve years. (J. R., Vol. 10:275).

One further piece of supporting evidence is that the souls of those who were too weak to undertake the long journey to the village of the dead after interment in the ossuary, used the abandoned cornfields of the living to plant their corn (J. R., Vol. 10:145). This they could hardly do if the village cornfields were still in use after the "Feast-of-the-Dead." Whether villages other than the one at which the "Feast" was held were also moved is doubtful. At least there is no evidence to warrant such a conclusion.

People who did not die a natural death, or infants, were buried separately from the others (Tooker, 1964:132; J. R., Vol. 39:31); but there does not seem to be any point in discussing these practices here. An interesting possibility is that the growth of the Huron Christian community in the 1640's some Christian burial practices may have been carried out. Even the Jesuits were astonished when in 1643 a council of Christians at St. Joseph II decided that it was not proper that they be buried with their pagan relatives. (J. R., Vol. 23:31). Patches of single burials are quite common in central and eastern Huronia, but generally absent in the west (Hunter, 1901:71; 1902:161). In some cases these may be Christian burials, but judging from the age of some of the sites it is more likely that ossuary burial was originally not common to all the Huron tribes but a practice that became more common with residence in Huronia. It seems

unlikely that the large numbers of single burials reported at some sites were the result of forgetfulness or village movement prior to the "Feast-of-the-Dead." Ossuaries appear to be rare, and single burials the rule, in the areas east of Lake Simcoe (Hunter, 1901:71; Laidlaw, 1899, 1901, 1903, 1912, 1917). The most likely explanation for the single burials in central and eastern Huronia seems therefore that this was a practice introduced to Huronia through pre-contact tribal migrations, but proceeded to be replaced by ossuary burial.

In summary, care for the dead was highly developed among the Hurons. A special area was set aside a short distance from the village as a temporary, and in some cases permanent, graveyard. The graveyard was held in deep respect and was often frequented by mourners (J. R., Vol. 39:31). If a fire broke out in the village and threatened the graveyard, the graves were protected first (Sagard:209; J. R., Vol. 39:31). Among some of the Huron tribes, certainly among the Attignaouantan and Attinguenongahac, the villages of each tribe got together every eight to twelve years and decided on a place to bury their dead in a common grave. Not only was this a religious ceremony but also an occasion to symbolize tribal union through common burial, renew friendships and act as a general catharsis of personal grief (Sagard:213-214). In all likelihood the village at which the "Feast-of-the-Dead" was held, was moved to a new location just before or immediately after the ceremonies were completed.

v) Labour and Time Involved in Erecting a Village

The clearing of land, the construction of longhouses and the erection of a palisade were all properly speaking, men's work. The

amount of work involved and the length of time taken to complete it would depend on the size of the village to be constructed, the urgency of the job, the quantity of materials available and the number of men in the community. Assuming that the number of available men is directly related to the size of a village, and that the erection of a village was a matter of high urgency, the major variable influencing the amount of work put into the job and the length of time taken to complete it was the availability of building materials.

Judging from archaeological investigations and contemporary descriptions the universal construction materials were posts from three to ten inches in diameter up to thirty feet long, and sheets of elm and cedar bark. With a polished stone axe or adze of the type used by most Neolithic peoples (including the Hurons), a man could remove a conifer some seven inches in diameter in about five to seven minutes (Clark, 1945:68), and a hardwood about twelve inches in diameter in thirty minutes (Iversen, 1956:38). The maximum amount of time spent on cutting a tree of the type used in Huron construction should therefore not take more than twenty minutes. Since the vast majority of the posts used were in the order of four to five inches in diameter, an average cutting time of ten minutes is fairly realistic.

During contact times the iron axe became immensely popular and must have reduced the work of tree fellings. The popularity of the axe as a trade item is attested to by the literature of the period and also by the fact that in the latter part of the 19th century iron axes were found in such quantities that scrap iron dealers thought it worth their while to make regular visits to Simcoe County farmers (Hunter, 1889:1;

1901:73). Even though the standard French trade axe was made of soft iron and not parlicularly well constructed, it would be fair to say that it enabled the Hurons to cut their tree felling time by at least one half. Providing that enough building material was available, the iron axe probably enabled the Hurons to construct such strong and massive palisades like the ones at Cahiagué, which apparently are not found at pre-contact sites.

The amount of wood needed for a large village of, for example, six acres, housing 1,000 people in 36 longhouses surrounded by a single palisade, can be roughly calculated:

Palisade - 3,600 stakes 5" diameter; 30' long).
Longhouses (exterior walls) - 16,000 poles (4"-5" diameter; 10'-30' long).
Longhouses (interior support posts) - 250 posts (10" diameter; 15'-20' long).

Longhouses (elm or cedar bark) - 4,500 sq. ft. per longhouse, or 162,000 sq. ft. for 36 longhouses.

In examining this list the immediate problem that comes to mind is that these materials are not readily available in a mature forest. All the necessary building materials came from logs under twelve inches in diameter. Even the bark for the longhouses could be obtained from small trees, since an elm or cedar ten inches in diameter could furnish a piece of bark 30" by at least five to eight feet. A mature forest might furnish enough building material if only the branches from large trees are used, but the job of first cutting down the large trees and then stripping them of their branches would be an almost impossible task. Moreover the bark from a mature elm or cedar is difficult to remove, not very pliable and tends to split; while branches, often being crooked,

are definitely inferior to young trees and saplings as palisade and longhouse material. The chances therefore are that the Hurons located their villages in areas of secondary forest growth; areas of long abandoned cornfields that contained a good stand of trees under ten inches in diameter. Because Huronia was fairly densely settled, and had been occupied by agriculturalists well before the beginning of the 17th century there should not have been any dearth of areas in immature forest growth.

In an immature forest, containing primarily trees under ten inches in diameter, one might expect a density of about one tree per hundred square feet or 435 trees per acre. Proximity to swampy depressions, creek beds and the better drained upland areas in Huronia would assure a variety of habitats in which immature cedar, elm and the other tree types can be found. At any rate, the wood required for a six acre site could be found on about 46 acres surrounding a village, or within a 800 foot radius. If the village was in the centre of the area, the farthest limits of the area necessary to furnish the building materials are no more than a thirty minute walk.

Out of a population of 1,000 people one might expect 200 able bodied men. The amount of time taken to cut a tree under ten inches in diameter, transporting it to the construction site and placing it into position, should not take on the average more than one hour. If 200 men are engaged in this task, working in teams of three, for only six hours a day, the entire village could be built in fifty days. Placing the stripped bark on the longhouse frames might take another twenty days, but a village could be finished for occupation well within three months. Starting in the spring a village could be finished by mid summer. At

the same time as the land was being stripped for building materials it could be burnt over and the women start the planting. The late summer and fall would therefore be free for the traditional seasonal activities of hunting, fishing and harvesting.

There is of course no reason why the beginning of construction should wait until spring. This was the best time for obtaining bark for roofing and siding the longhouses (Johnston, 1964:25), but the actual clearing of the land and cutting of timber could take place in the late winter. In at least two instances this seems to have been the case (Champlain, Vol. 3:96; J. R., Vol. 12:77).

Actual references to the time it took to erect a village are almost nonexistent. Ste. Marie II on Christian Island comprising about 100 longhouses (probably small ones) was completed during the spring and summer of 1649 (J. R., Vol. 34:215, 225; Vol. 35:27, 83-87), but because of the circumstances surrounding the creation of this village it could hardly be called a typical example. In another reference we know of one longhouse being constructed in three days (J. R., Vol. 10:249).
In view of the considerable work involved in building a new village it is possible that palisade posts and other materials which were still in good condition were moved from the old village and reused at the new one. Observations at several archaeological sites of post holes seem to indicate that sometimes posts were simply left to rot in the ground but often were pulled out prior to a move. For example in places at Cahiagué the remains of cedar palisade posts have been found, in other places post hole patterns consisted of a very light humic soil (completely decayed posts), but most often the post patterns were simply an infill from the upper four to five

inches of the soil section. Where palisades ran through midden areas post holes are often filled with midden material. In the latter two cases the presence of "topsoil" or midden material in the post holes can be interpreted as the removal of posts during the relocation of a village.

A great deal of work must be done before anything definite can be stated how common a practice the physical moving of a village actually was. It stands to reason however, that whenever possible previously utilized building materials were treated economically, especially when a village move was only over a short distance.

In the building of very large villages the amount of work involved must have been somewhat greater than in the case of the hypothetical six acre village discussed above; in spite of the proportionally larger population. This is primarily because the wood must be brought in from a greater distance and because these villages were often more heavily fortified. Supposing for example that the double village of Cahiagué comprising a total of 15 acres, contained about 100 longhouses and a combined total of 3,600 people of whom 700 were men. On the basis of several seasons excavations Emerson and Russell (1965:5) calculated that the palisade was composed of about 24,000 posts. The hundred longhouses could take up roughly 50,000 posts and 450,000 square feet of elm and cedar bark. On the basis of the previous estimates about 170 acres of young trees would be needed to furnish enough wood for such a village. Due to the greater travel time and the fact that an average of four rows of palisade were erected, the completion of the village would now take about 100 days (three men per post working six hours per day, at 1.75 hours per post). Added to that the time taken to cover the longhouses with bark, and in

spite of the extra men, the village must have taken more than a normal working year to complete. In all probability the longhouses and one palisade row (or section of palisade) were completed first, the rest being finished the following year. This might account for the irregularities in the Cahiagué palisade found by Emerson and Russell (1965:15).

The hypothesis that any average village could be largely, and in most cases completely built in three to five months rests rather heavily on the existence of a good stand of immature trees in the vicinity of the village site. The existence of numerous pre-contact and early contact sites in Huronia seems to justify the opinion that large areas of secondary forest growth must have been in existence. For example, Ossossane is surrounded by three sites predating it by 60 to 80 years; Cahiagué is very close to a Lalonde site some 70 years earlier; St. Joseph II is near two sites predating it by some 40 years. An inventory of all sites is not possible because the archaeological record is not complete; but in many cases such as the ones cited above, the existence of timber of the kind hypothesized is not only possible, but under local soil conditions more than highly probable.

3. Communication between Villages

All communication between villages in Huronia was by foot over a network of narrow trails. There is no evidence that canoes were used for any other purpose than fishing or long distance trade. Even to the Neutrals or Petun, travel was overland (J. R., Vol. 18:39; Vol. 20:45; Vol. 21:205). According to the French, all trails, whether they ran between villages in Huronia or to points outside Huronia, were difficult to negotiate (J. R., Vol. 13:181; Vol. 17:17; Vol. 20:99). Until one

found out through experience exactly where a trail led to, it was easy to get lost on the many forks and branches (Sagard:69).

If Huron trails were difficult to negotiate at the best of times, they were almost impossible in the winter because the snow tended to obliterate them (J. R., Vol. 20:45). Snowshoes and toboggans eased the difficulties of travel somewhat (Sagard:83, 93), but by and large winter travel was avoided as much as possible (J. R., Vol. 20:45). The difficulties of winter travel are illustrated by Le Mercier's rather graphic description that it took a group of Jesuits the better part of a December day to cover the four leagues (twelve miles) between Ihonatiria and Ossossane (J. R., Vol. 13:181). In his statement he also points out that this travel time was not unusual for winter months. Except for occasional hunting and ice fishing or socializing with neighbouring villages, there was really no reason why the Hurons should have indulged in much winter travel.

The amount of regular intervillage travel is difficult to estimate. During the spring, summer and fall, most of the travelling seems to have been to the village fields or points outside of Huronia. Travel between villages was primarily for socializing or political activities which took place mainly in the fall.

While travel between villages may not have been very frequent, a network of trails did exist. In the opinion of A.F. Hunter some of the main Huron trails were kept open by Algonquin hunters after the fall of Huronia and were used by European settlers in the 19th century (Hunter, 1948:5-6). During his research into the history of Simcoe County, Hunter took considerable pains to map existing Indian trails from settlers'

accounts and his own observations (Map No. 31).[1] His belief that at least some of these trails date back to the Hurons, finds strong support in that most of them connect major contact sites or lie along routes mentioned by the Jesuits (Map No. 31).

Incomplete as Map No. 31 must be, a few general observations can be made: (a) Wherever possible the trails followed the high ground avoiding swamps or crossing them at their narrowest extent. (b) Three of the four frontier villages lie at points where a number of trails intersect. In each case it is likely that the villages generated the trails rather than the trails attracting the villages. Ossossane was the major connecting point between Huronia and the Petun (J. R., Vol. 20:45) and on a major trail to the Neutrals (J. R., Vol. 17:27). St. Joseph II was the principal point of departure to the Neutrals from central and eastern Huronia (J. R., Vol. 21:205), while St. Jean Baptiste on the "Narrows" of Lake Couchiching was the last village to all points east of Huronia. (c) On the whole, the network of trails has a marked north-south orientation. This is to be expected in view of the shape of Huronia. Of the east-west trails, one ran along the southern frontier connecting Ossossane to St. Jean Baptiste. At St. Joseph II the frontier trail met a major one coming from the farthest north western extremity of Huronia, the Pagus Etondatrateus ("Land's End"), opposite Christian Island. The northern trail, and probably one of the most important, ran from Toanche and Ihonatiria to St. Jean Baptiste.

In all, there seem to have been about 200 miles of trails, of

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1. The map was compiled from Hunter (1898; 1899; 1901; 1902; 1903; 1906), and from the routes taken by the Jesuits on their travels.

Chapter VI

The Huron Subsistence Economy

Introduction

The Huron economy can be divided into two aspects; those that relate directly to subsistence and contribute the largest part to the Huron diet, agriculture, fishing, hunting and gathering; and those that relate to trade. Huron trade will be treated in a separate chapter for two reasons: first, the contribution of trade to the diet can be regarded as a supplement which increased during times of famine, but was never too important in feeding the bulk of the Huron population; second, Huron trade is inseparable from Huron external politics and the two must be treated together in assessing the wider impact of Huronia. The term "subsistence economy" is therefore taken as relating to those activities other than trade that are concerned with the production of sustenance from the natural environment. By necessity the separation of trade from other subsistence activities is somewhat artificial because Huron food surpluses formed a part of the Huron export. Trade must therefore be kept in mind in assessing Huron agriculture. Since the Hurons themselves seem to have regarded trade primarily as an aspect of external politics and intertribal relations it seemed to be convenient to treat the subject in the same manner.

Huron subsistence activities revolved primarily around the growing of corn and catching of fish. The primary importance of corn and fish were illustrated to Ragueneau when the Hurons told him of the existence of:

> . . . a phantom in the woods of prodigious size, who bears in one hand ears of Indian corn, and, in the

> other, a great abundance of fish; who says that it is he alone who had created men, who has taught them to till the earth, and who has stocked all the lakes and the seas with fish, so that nothing might fail for the livelihood of men. (J. R., Vol. 30:27).

This was the Hurons' answer to the Jesuit's claim that their God had created man and provided for his livelihood. A multitude of other references attest to the fact that the Hurons had a well-developed agricultural economy, supplemented largely by fish and lesser amounts of meat.

Even though the Hurons practiced slash and burn agriculture in the true sense of the word, svedjebruk (Mead, 1953:44) or swedje-land (Büsching, 1787, Vol. 1:449), the productivity of this system should not be underrated. "Primitive agriculture" is definitely a misnomer. Even though the Hurons did not know the science behind what they were doing, they utilized virtually every known means of producing good yields that are possible without manuring, crop rotation and agricultural machinery. The net result was an economy that was able to feed some 21,000 people on a territory of 340 square miles.

By necessity some aspects of this chapter are highly speculative. Years of experimental agriculture would be necessary to test some of the estimates made about soil productivity, the effect of burning, yields and forest regeneration. As a matter of fact it would be an interesting experiment to test the Huron agricultural cycle. At the moment too little is known about soil and crop behaviour under an agricultural system such as that of the Hurons.

1. Composition of the Diet and Health

In order to gain some understanding of the degree to which the Hurons relied on certain foods, it is necessary to make an estimate of the composition of their diet. Such an estimate is also fundamental to any

discussion of village fields, agricultural techniques and yields. Due to the nature of the evidence any estimates of diet are open to some argument, and the literature on the subject has varied widely. Kroeber (1939:146) for example wrote that the Hurons probably obtained about 50 per cent of their diet from agricultural products, while Popham (1950: 88) estimated that corn alone supplied 75 per cent of the total diet. Neither author attempts to justify his estimates or shows how they were derived. It is therefore necessary to quote at some length from the diaries of contemporary observers before any estimates can be justified.

If there is one thing that the ethnohistoric sources describe adequately it is the Huron diet. The reason for this is of course a natural curiosity in other peoples food habits, but also because the French travellers had to subsist on the same diet and it was a diet that took some time getting used to.

The unanimous opinion was that corn formed the overwhelming staple in every season. Champlain (Vol. 3:125) called corn " . . . their principal food and usual sustenance . . . ", an observation with which Sagard concurs (Sagard:80; 105-106). The Jesuits without exception mirror the observations of Champlain and Sagard in describing corn as the "chief of their riches", and "the sole staff of life" (J. R., Vol. 10:93, 101; Vol. 11:7; Vol. 15:153, 159; Vol. 19:129; Vol. 27:65; Vol. 29:247; Vol. 33:77; Vol. 35:153). Corn formed the basis of anything that was eaten. All the other foods, with rare exceptions, were mixed into the ubiquitous corn soup (sagamite) or baked into the occasional corn bread. The dependence on corn was so complete that a crop failure meant starvation.

Champlain considered beans almost as important as corn (Champlain,

Vol. 3:125), however, the Jesuits and Sagard scarcely mention them. Sagard wrote that beans were added to the corn bread or soup " . . . if they have any . . . " (Sagard:105). His only other mention of beans was that he saw a field full of them on his arrival (Sagard:70). There is however a possibility that these were wild beans, which, like the wild peas he saw, fooled him at first sight (Sagard:90-91). The Jesuits in all their discussion of Hurons diet mention beans only three times (J. R., Vol. 15:153; Vol. 21:195; Vol. 38:245). As a matter of fact Bressani was under the impression that beans were introduced by the French (J. R., Vol. 38:245). In the middens carbonized beans are by no means rare. They turn up about as frequently as squash and pumpkin remnants, but are outnumbered by carbonized corn fragments by at least 100 to one.

During the late summer and fall, members of the curcubita family (pumpkins, squashes and gourds) were as important as beans and perhaps more so. They are mentioned by Champlain (Vol. 3:47, 50, 31), Sagard (72, 107, 240) and the Jesuits (J. R., Vol. 10:103; Vol. 11:7; Vol. 13-41, 47; Vol. 15:153; Vol. 20:81; Vol. 21:195). Brébeuf went so far as to write that:

> . . . the squashes last sometimes four and five months, and are so abundant that they are to be had almost for nothing, and so good that, on being cooked in ashes, they are eaten as apples in France (J. R., Vol. 10:103).

It is not always certain whether the writers were referring to pumpkins or squashes because they used the same term, citrouille, to describe both. Boucher (1896:144) describes the citrouille as:

> . . . of a species different from those of France; they are smaller, and not so unsubstantial; their flesh is firmer and less watery, and of a better flavour.

This is a description of squash. One might also gather from Brébeuf's statement that it was squash that he was describing because of the long

period of availability. Both squash and pumpkin remnants have been found on Huron sites.

The only other cultivated plants mentioned were tobacco and sunflowers. Champlain (Vol. 3:50) relates that the sunflower was mainly used for hair and body oil. From the only reference to sunflowers in the Relations (Vol. 37:105) one would gather that they were gathered wild rather than grown purposefully. Tobacco was only grown in limited quantities by the Huron, most of it seems to have been imported from the Petun.

Except in times of famine, gathering does not seem to have been very important. Various fruits formed the bulk of the gathered vegetable products (Champlain, Vol. 3:50-51; Sagard:72, 74, 83, 238, 239; J. R., Vol. 10:103; Vol. 13:13, 41, 47, 85; Vol. 35:87). These were often backed into the cornmeal or mixed with the corn gruel. Acorns, roots and herbs were eaten only rarely (Sagard:108) although there were plenty about (Sagard:237-241). The few references to gathered vegetable foods in the Relations definitely associate them with times of famine (J. R., Vol. 27: 65; Vol. 35:87).

One of the really startling facts about the Huron diet is the lack of meat. This was first observed by Champlain and reiterated by every writer after him (Champlain, Vol. 3:126; Sagard:82, 106, 107; J. R., Vol. 7:223; Vol. 13:109, 113; Vol. 17:17, 143; Vol. 38:245). Bressani, for example, was of the opinion that the Hurons " . . . hunted only for pleasure or on extraordinary occasions . . . " (J. R., Vol. 38:245). About the only time of the year that meat seems to have been generally available was during the fall and early winter (J. R., Vol. 13:109, 113; Vol. 17: 141-143). In a sense this is an expected pattern. During the spring and

summer the men were either preparing the fields or were away on trading expeditions and in the winter travel was difficult. Late fall was the traditional time for hunting and about the only time, apart from winter, that enough men were about for the task. The reported lack of meat is certainly mirrored by the lack of animal bones in Huron middens. This could be partially accounted for by butchering practices if the animals were cut up before the meat was brought to the village. But in that case at least some bone should be present. Yet the few scraps of bone that are found can in no way be related to any selective process such as butchering practices would imply.

Fish and other aquatic animals such as turtles and clams seem to have been considerably more important than meat. Fish were easier to catch and could be stored longer by reducing them to oil, smoking or drying them. Where fish is mentioned, it is mentioned as a major addition to the usual corn gruel (Champlain, Vol. 3:127, 129; Sagard:71, 106-107; J. R., Vol. 10: 93, 101; Vol. 15:159; Vol. 21:195; Vol. 30:27; Vol. 33:77; Vol. 35:175). Clams and turtles could be gathered along the lakeshores and streams during the summer but regular expeditions were not undertaken to obtain them. While bone material is scarce at all sites and fish bones fairly plentiful, turtle bones and clam shells are more variable. An impression gained by the author is that clam shells for example are more plentiful on precontact sites, and on contact sites near favourable aquatic habitats. This impression would have to be supported by future field work.

Apart from the occasional feasts or in times of overabundance, the Hurons ate regularly twice a day; in the morning and late afternoon to early evening (Champlain, Vol. 3:130; J. R., Vol. 8:113; Vol. 15:183).

The same eating pattern was observed when travelling (J. R., Vol. 7:223). The amount of food consumed must have varied widely, but Sagard relates that the usual meal was about the amount one could get into an alms-dish (Sagard:72). As the amount of food intake must have varied from day to day, so it did with the seasons. Corn and beans were dried, stored and eaten the year round. Squash, pumpkins and wild fruits were available from mid summer to the fall. Fish was caught the year round, but most often in the spring, fall and early winter. Meat was available only sporadically but most often in the fall. The preceeding discussion might be summarized in the following way:

TABLE NO. 14

Seasonal Availability of Main Food Sources

	Spring	Summer Early	Summer Late	Autumn	Winter
Corn	x	x	x	xx	x
Beans	x	x	x	xx	x
Cucurbits	-	-	x	xx	-
Fish	x	x	x	xx	xx
Meat	-	-	x	x	x
Gathered Food	-	-	x	x	-

Note: - denotes generally absent
x denotes generally available
xx denotes an abundance

From the preceding descriptions a hypothetical daily diet has been constructed which it is felt is representative of the yearly food intake (Table No. 15). The percentage figures given are a balance between calorie values and relative weight of the food source. In their descriptions the Jesuits were of course describing bulk. In order to make a more accurate assessment of dietary intake and food value, the bulk estimates must be

compared and adjusted to calorie values. Popham (1950:88-89) estimated the dietary intake of the Hurons (men, women and children) to be about 3,500 calories per day. Wolf (1966:4-5) puts the average daily caloric intake for Neolithic societies at about 2,500. Considering the figures compiled by Rose (1939:54) for work expended by men, women and children, 3,000 calories per day for the Hurons seems more realistic. During some parts of the year the calorie intake would probably be higher and during other times, particularly during spring and winter, the calorie intake could be expected to be lower.

TABLE NO. 15

The Average Daily Huron Diet Expressed in Calories and Weight Equivalents

Food	% cals. in diet	Calories*	Wt. in ounces*
Corn	65%	1,950	19.3
Cucurbits	2%	50	4.6
Beans	13%	400	4.0
Fish	9%	300	5.8
Meat	6%	150	3.2
Gathered Fruits	5%	150	7.8
Totals	100%	3,000	44.7

*Note: Calorie values and weight equivalents have been compiled from Rose (1939:542-591). Corn was calculated as "yellow uncooked cornmeal"; beans as "dried kidney beans"; cucurbits as "steamed pumpkin"; fish as "steamed white fish"; meat as "cooked round beef"; gathered fruits as "blueberries". It was felt that these came closest to the foods used by the Hurons. Caloric loss due to cooking would be kept to a minimum because the Hurons ate most meals in soup form.

Of the total diet 65% was assigned to corn. In view of Popham's (1950:88) estimate of 75% this figure might seem too low. If more than 65% of the diet was corn it becomes difficult to account for the other food products the Hurons ate. An intake of 65% seems therefore a bit

more reasonable. In terms of weight this would mean that the Hurons had a daily consumption of 1.3 lbs. of corn. In view of other corn growing Neolithic societies this figure is eminently reasonable. Cowgill (1962: 277) for example quotes averages from Central America ranging from 1.3 to 2 lbs. per person per day.

Other cultivated vegetables were given 15% of the daily diet, of which 13% was assigned to beans and 2% to the cucurbits. Beans were available most of the year while squash and pumpkins were primarily eaten during their season. From the descriptions of the way in which the cucurbits were eaten one might gather that they supplemented the usual diet rather than being an integral part of it. Squashes and pumpkins are also bulky foods with a relatively low calorie value. In the light of the descriptions one third of a pound of squash or pumpkin per day seems about right. All of this would of course be eaten during the season when it is available, thus accounting for the descriptions of large amounts.

Fish and meat were given a value of 15%. Because fish was listed as being more important than meat, it is given 9% and meat 6%. Fish was available during the larger part of the year in dried or fresh form. It could also be obtained in larger quantities than meat. Meat is more difficult to dry and there is no evidence that the Hurons stored it for any length of time. In a sense meat can be regarded in somewhat the same way as the availability and consumption of the cucurbits. When a bear, deer or moose was caught the whole animal was eaten almost at once (J. R., Vol. 8:127; Vol. 10:179-191, 213; Vol. 15:113; Vol. 17:163; Vol. 23:63). This was usually an occasion for a feast, or at least made a feast for some other purpose possible. During these occasions a large number of people

in addition to the family of the hunter were invited. The feast would then go on until the animals were consumed. During these occasional periods of plenty considerably more than the normal amount was eaten. Like the figures for the cucurbits the figures for meat therefore represent an average for the year. The daily meat intake therefore fluctuated between zero on most days and well above the combined calorie intake of the other foods on a few days.

The 5% estimate for gathered foods is the most problematical. During times of famine this figure could be expanded to take the place of corn and beans. Under no circumstances however could a Huron population of 21,000 subsist very long on gathered produce. Judging from the few records of severe famines an attempt was made to purchase food from neighbouring villages or tribes, (J. R., Vol. 8:97; Vol. 15:157; Vol. 35:99) or the men had to make a greater effort at hunting (J. R., Vol. 26:311). Regular gathering seems to have been largely confined to wild fruits and berries. Long lists of edible wild plants could be compiled but their significance in the regular diet seems to be small. It is also doubtful if much time was available from the tending and harvesting of the cornfields for extensive gathering. Berries were of course dried and stored for the winter.

On the whole the Hurons seem to have been remarkably healthy. The most complete descriptions of Huron health and disease are given by Champlain (Vol. 3:135-136), Sagard (192-204), Ragueneau (J. R., Vol. 33: 199-209) and Bressani (J. R., Vol. 38:257-259). Du Peron (J. R., Vol. 15: 155) described them as " . . . robust, all are much taller than the French", while Bressani (J. R., Vol. 38:257) wrote that " . . . they are more

healthy than we". In none of these writings are any descriptions of diseases that are attributable to undernourishment or vitamin deficiencies.

The most complete studies done on contact Huron skeletal material are those by R. I. Harris (n. d.; 1949:71-75) on the 250 skeletons from the Cahiagué ossuary. His conclusions are that there is no evidence of either scurvy or rickets, both caused by vitamin deficiencies (Harris, R. I., n. d.:11). Caries are almost absent (Harris, R. I., n. d.:10). Some tooth crowns show a great deal of wear, and many jaws have missing teeth; both can be attributed to old age and abnormal tooth wear due to a gritty diet (Harris, R. I., n. d.:10-11). One skeleton had evidence of tuberculosis and many suffered from osteo-arthritis of the spine. Tuberculosis Harris feels, must have been contracted from the French, while arthritis, although only present in the spine, may be a symptom of old age (Harris, R. I., 1949:74; n. d.:14). Another common ailment were squatting facets, a deformation in the foot caused by spending a great deal of time in a squatting position (Harris, R. I., 1949:74-75). Some of the skeletons showed evidence of flat feet (Harris, R. I., n. d.:9).

Clearly much more work must be done and published on Huron skeletal material. For the present though it seems that the Hurons were a remarkably helathy lot. Using Rose's (1939:542-591) tables of the nutritive value of various foods an attempt was made to calculate whether there were any serious deficiencies in the Huron diet (Table No. 16). According to the system used by Rose, a helathy 3,000 calorie diet should include 30 shares of each of the elements listed in Table No. 16. On the basis of this evaluation the Huron diet is slightly below normal in calcium and Vitamin C (ascorbic acid).

TABLE NO. 16

Nutritive Value of Huron Diet

Food Material	Nutritive Value of Food in Shares							
	Calories	Protein	Calcium	Phosphorous	Iron	Vitamin A	Vitamin B	Vitamin C
Corn	1,950	19.0	3.8	18.6	11.4	32.3	67.3	-
Cucurbits	50	0.8	2.2	2.3	4.0	trc.	trc.	7.5
Beans	400	9.2	7.6	12.8	18.4	0.8	29.2	-
Fish	300	26.7	6.6	15.6	4.2	-	trc.	-
Meat	150	12.0	0.8	7.4	9.0	trc.	trc.	-
Fruit	150	0.6	2.4	1.1	4.1	0.6	-	16.5
Totals	3,000	68.3	23.4	57.8	51.1	33.7	96.5	24.0

Using a different method for assessing the nutrient value of Huron foods, somewhat similar results were obtained (Table No. 17). This assessment was based on Bogert, Briggs and Calloway (1966:556-579) and Wilson, Fisher and Faqua (1967:535-559). Again, the Huron diet is apparently low in calcium and Vitamin C (ascorbic acid).

Additional calcium was probably obtained by gathering calcium rich foods such as clams, nuts and crabs. In some areas of the world it has been shown that calcium is also unintentionally added to food through the local water supply and grain milling practices (Bogert, et. al., 1966:154). The water supply in Huronia is high in calcium carbonate, in addition "stone powder" found its way into the diet from milling stones and clay vessels, both with high contents of calcium carbonate. A third source of calcium, and perhaps the most obvious, is the utilization of calcium in producing Vitamin D from sunlight. People who are exposed to sunlight most of their lives can adjust to a much lower total intake of calcium (200-400 mg. daily), because Vitamin D (synthesized by sunlight) improves the body's efficiency in calcium absorption when concentrations of available calcium

TABLE NO. 17

Recommended Daily Intake of Nutrients Compared with Huron Intake

	Calories	Protein gm.	Calcium mg.	Iron mg.	Vitamin A I.U.	Thiamine mg.	Riboflavin mg.	Niacin mg.	Ascorbic Acid mg.
Recommended Intake									
Daily Food	3,000	70	800	10	5,000	1.2	1.7	19	70
Huron Intake									
Corn	1,950	55.0	120	14.0	3,000	2.25	0.7	12.0	-
Cucurbits	50	1.4	38	0.6	9,723	0.05	0.8	0.9	8
Beans	400	6.0	38	2.0	220	0.14	0.1	1.0	14
Fish	300	40.0	-	1.8	240	0.24	0.1	14.7	-
Meat	150	25.0	11	3.2	10	0.06	0.2	4.5	-
Fruit	150	1.6	34	2.3	224	0.06	1.0	0.8	32
Totals	3,000	129.0	230	23.9	13,417	2.80	2.9	33.9	54

are low (Bogert, et. al., 1966:154; Wilson, et. al., 1967:140). Since pregnant and nursing women and young children need more than a normal amount of calcium and Vitamin D, the average amounts in the Huron diet may be a bit low. There is however as yet no evidence of calcium deficiencies or rickets in Huron skeletal material.

A lack of Vitamin C (ascorbic acid) is a prime cause of scurvy. As is well known, scurvy was a disease the Indians knew about and were able to cure. Both Cartier (Lescarbot, 1911; Vol. 2:153) and Champlain (Vol. 3:264-265) were taught by Indians along the St. Lawrence how to treat scurvy by preparing a drink from spruce and hemlock boughs. A daily intake of 30 mg. of Vitamin C is usually enough to cure and prevent scurvy

(Bogert, 1966:217). The slightly lower than recommended intake among the Hurons probably posed no serious problems to the average person because the onset of disease was noticeable and could be cured. For pregnant and nursing women however, the lower than normal dosage might be serious because during this time they need a larger than normal dose. While the intake of Vitamin C might be high enough to prevent scurvy in the mother the child could be affected. This was particularly true during the latter part of the winter and early spring when normal Vitamin C bearing foods were not generally available (Champlain, Vol. 2:59-63). Again, it must be pointed out that as yet there is no evidence from Huron skeletal material that they suffered from Vitamin C shortages.

A disease that often afflicts people with a high maize diet is pellagra (Bogert, 1966:254; Wilson, 1967:272-275). The symptoms of the disease are severe skin disorders, diarrhea, insomnia, irritability, depression and finally dementia, paralysis and death (Wilson, 1967:273). The cause of the disease is an absence of niacin and one of the amino acids, tryptophan. Corn is low in both niacin and tryptophan. From the Relations it is not possible to detect the disease because the descriptions are poor and some of the symptoms are similar to those described by the Jesuits for smallpox. Insomnia, irritability, depression and dementia were all reported for the Hurons, but it is more than probable that these were culturally induced. Theoretically the Huron intake of meat and especially fish should contain more than enough niacin to prevent pellagra. This is especially true since the Hurons had the habit of eating the whole fish or animal including entrails, liver and kidneys, which are all rich in niacin. Turkeys and other fowl are an added source of niacin.

On the whole the theoretical daily diet, in spite of its high corn content, seems to have been adequate enough for the Hurons so that they did not suffer any observable dietary diseases. If dietary problems existed the most likely areas of the population so affected were probably infants, pregnant women and their fetus. The degree to which Huron children suffered from malnutrition and the magnitude of the infant mortality rate can only be guessed at. On the whole children were highly desired, especially girls (J. R., Vol. 15:181), and well cared for. None of the early writers mention a high infant mortality rate among the Hurons although they reported high infant mortality rates among the Algonquins (J. R., Vol. 1:259). Instead of a high infant mortality rate Sagard: (127) describes a birth rate lower than that of France. While the good friar attributes the low birth rate to sexual license a more probably explanation was the fact that the Hurons abstained from sexual intercourse during the nursing period which, according to Brébeuf, could last as long as two to three years (J. R., Vol. 10:127).

On the basis of the preceding pages one might argue that malnutrition and infant mortality were not serious during normal conditions. As far as can be determined the usual Huron diet was healthy, if a bit low in calcium and Vitamin C. In times of famine however, one could expect serious dietary deficiencies. These would probably effect pregnant women and infants more than the rest of the population. Rather than overall dietary deficiencies or a high birth and mortality rate, the natural population increase was probably controlled by factors such as sexual abstinence during the nursing period and high infant mortality rates during famine periods. On the whole, there does not seem to be any reason to suppose

that the Hurons suffered from any illnesses attributable to their normal diet.

2. Agriculture

a) Land Ownership

References regarding Huron practices of land ownership are few, and in some respects inconclusive. The most complete description is by Sagard (103):

> It is their custom for every family (mesnage) to live on its fishing, hunting and planting, since they have as much land as they need; for all the forests, meadows and uncleared land are common property, and anyone is allowed to clear and sow as much as he will and can, and according to his needs; and this cleared land remains in his possession for as many years as he continues to cultivate and make use of it. After it is altogether abandoned by its owner then anyone who wishes uses it, but not otherwise.

Champlain (Vol. 3:155-156) describes a similar practice:

> Their custom is that each household lives on what it can get by fishing and sowing, having as much land as it needs.

On the surface these references seem to be fairly straightforward. The problem is that Champlain and Sagard were using the word mesnage which could mean "family" or "household". Since several nuclear families comprising an extended family lived together in one longhouse; it is important to know which meaning of the word was used to describe landownership. Herman (1956:1045) pointed out the same dilemma in determining the ownership of other aspects of Huron property. From the passage by Sagard one would think that land was owned by individuals or the nuclear family to which the individual belong. In another passage Sagard (94, 321) definitely refers to the nuclear family by the name mesnage. The few references in

the Relations seem to suppost Sagard's inferences that individuals owned their own fields which they cultivated for their families (J. R., Vol. 20: 79; Vol. 38:271). Several references allude to women working in their fields (J. R., Vol. 13:11). Whether it was the women who actually owned the land they were working or the men is not known.

If one takes the point of view that land was individually owned it becomes difficult to explain why other practices related to the land were longhouse (extended family) affairs. Land clearance for example, was carried on by groups of people (Champlain, Vol. 3:156), and as mentioned in a previous chapter, the bulk of the produce was stored in bins shared by the entire longhouse. Similarly other subsistence activities such as fishing, hunting and gathering firewood seem to have been largely group activities. Individual ownership of land is also difficult to explain in terms of the strong feelings of communal responsibility and the fact that a disinterested attitude towards ownership per se was encouraged (Herman, 1956:1057).

Among the New York Iroquois it was the women who owned the land (Tooker, 1964:60).[1] Two classes of landownership were recognized; individually owned fields which the women worked for their families (Parker, 1910: 29, 92), and communal fields worked by the women for the whole village under the supervision of a senior matron (Parker, 1910:29-30). Participation in working of the communal fields was not mandatory, but the results were only shared by those who had contributed to the labour (Parker, 1910:29).

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1. For a full description of League Iroquois concepts of land ownership in the 18th and 19th century see Snyderman (1951:15-34).

Morgan (1962:326) relates that similar to the Hurons all unused land among the Iroquois was common property and abandoned land reverted to common property that anyone could take up. Land under active cultivation belonged to an individual whose rights to that land was protected by common consent.

While most of the references regarding Iroquoian property rights seem to imply individual ownership, Driver (1964:255) feels that agricultural land was not individually owned, but that each field was owned and operated by the extended family of a longhouse. In view of the close cooperation between members of the extended family and their sharing of other tasks, Driver's suggestion has some merit. At the moment however, there does not seem to be any evidence that the Hurons operated in this manner. Moreover there are no references that any fields were owned and operated in common, either on a village, clan or extended family basis.

Going strictly by the available evidence for the Hurons, however little it may be, one must come to the conclusion that all land under active use for agricultural purposes was the property of the person or nuclear family that used it. The land continued to remain a persons property until he gave it up by ceasing to cultivate it, whereupon anyone could take it over. All land not actively cultivated was common property. Commonly operated fields either on a village or extended family basis may have existed as among the League Iroquois, but if they did there is no record of it. Feelings of communal responsibility toward the extended family were satisfied by giving mutual aid in clearing the fields, sharing a large portion of the produce and probably in weeding the fields and harvesting crops. Part of the agricultural produce had to be pooled in

any case for use in trade, since trade was an affair involving the larger family rather than just an individual.

Several important implications can be drawn from the preceding discussion and the reference from Sagard. Because only land that was actually being used could be considered a persons property and unused land reverted to the "public domain", vacant land could not be accumulated as wealth, sold or inherited. It would therefore be impossible for a landed class to exist or even come into being. The size of individual fields would therefore vary according to the needs and initiative of a person and his family. The entire village lands should be a fairly close reflection of the size of the village population and the quality of the natural environment. Ultimately the result of such landholding practices would be an equitable distribution of land, closely adjusted to the needs and initiative of a family. It would also be difficult to envision a regular cycle of field rotation related to some sort of fallowing system, since the fallow land, not being actively used, could be considered abandoned land and therefore free for anyone to use. Wealth and status while not measured in terms of land, could accrue from land by the accumulation of a surplus. The surplus could then be disposed of by giving feasts, gifts to the not so fortunate, community payments and for trade. Prestige and social status was therefore measured in terms of generosity, and as often happened, the most industrious were the most wealthy, the most generous and the most respected men in the community (Herman, 1956:1054-1055). It should be added that community feeling assured that the system of generosity and prestige operated the way it did. The industrious, fortunate or wealthy were expected to be generous, failure to do so could result in jealousy

and ill will (J. R., Vol. 8:95). But by and large public pressure to share wealth did not seem to be necessary for " . . . every man taxes himself freely with what he can pay and without any compulsion gives of his means according to his convenience and goodwill" (Sagard:267). In another passage Sagard (89) observed that gifts and food were given to such an extent that no one ever went hungry. Champlain (Vol. 3:164-165) and the Jesuits (J. R., Vol. 8:95, 127; Vol. 10:213, 215, 303-305; Vol. 28:49-51; Vol. 33: 207) made similar observations.

Land therefore seems to have been individually owned and partially operated by the larger family through mutual aid. The products of the land however were shared either with the extended family or with the larger community through gift giving, feasts or other institutionalized methods. The results of such generosity were prestige in the community and any honours such as official appointments that the community might wish to bestow. In a sense therefore it was necessary for individuals to own their own fields and produce the surplus necessary for gift giving in order to gain public standing. Besides prowess in hunting, fishing and war, a disposable agricultural surplus was the only other means of achieving personal standing in a community, either by giving the surplus away or by trading it for other products that could be redistributed. Such a system would be difficult to envision if land was owned and operated communally and all the prcceeds shared directly. It is possible therefore to reconcile individual ownership of land and feelings of communal responsibility. As a matter of fact individual ownership of land seems to be necessary in order to exercise communal responsibility as the Hurons saw it and reap the benefits of generosity.

b) Major crop types

The most complete description of Huron corn is given by Sagard (104):

> . . . there comes up from a single grain only one shoot or stalk, and the stalk bears two or three ears, each ear yielding a hundred, two hundred, sometimes four hundred grains, and there are some that yield more. The stalk grows as high as a man and higher, and is very thick. It does not grow so well and so high, nor is the ear so big or the grain so good, in Canada [Quebec] or France as there [Huronia]. The grain ripens in four months, or in three in some places.

From the Relations one would gather that corn was planted sometime during the latter part of May (J. R., Vol. 13:251) and harvested in the beginning of September (J. R., Vol. 13:85), lending support to Sagard's growing period of about three months.

The earliest and most complete description of Iroquois maize grown in Canada was made by Peter Kalm between 1748 and 1751 (Kalm, 1935:98-117). Kalm describes two main varieties grown in Canada; a small three month variety (Kalm, 1935:104) which prefers sandy soils (Kalm, 1935:116), and a larger variety taking up to six months to ripen (Kalm, 1935:103). The Indians seemed to prefer the three month variety (Kalm, 1935:104) which was also the one most often grown in Canada (Kalm, 1935:103). He also observed that commonly each stalk produced two to three ears, each ear containing about 300 kernels (Kalm, 1935:109). On the whole the larger variety produced greater yields, but because the smaller variety could be planted closer together, per acre yields were similar (Kalm, 1935:104). As one proceeded north, the differences between the two major varieties became less (Kalm, 1935:103). Similar observations to Kalm's were made by other early travellers (Anderson and Brown, 1952:2-8).

According to a number of studies done on Indian corn varieties from the Great Lakes are, which botanists feel have not been appreciably altered by the great experiments in hybridization during the last hundred years, two main varieties were present; Zea mays amylacea (flour or bread corn) and Zea mays indurata (flint or hominy corn) (Anderson and Brown, 1952; Brown and Anderson, 1947; Hill, 1952; Parker, 1910; Waugh, 1916; Will and Hyde, 1917; Zirkle, 1969). Some other varieties may have been present such as pop corn, but never in appreciable quantities. The Indians subdivided the two main varieties according to colour and slight differences in the hardness of the kernels. From the studies cited above the main morphological distinctions of the two principal varieties can be tabulated as follows:

TABLE NO. 18

Morphological Differences Between Flint and Flour Corn

Morphological Distinctions	Zea mays amylacea (Flour Corn)	Zea mays indurata (Flint Corn)
Number of rows	8	8
Length of cob	4" to 8"	4" to 11"
Number of kernels per row	20 to 45	25 to 60
Number of kernels per cob	160 to 360	200 to 660
Number of cobs per stalk	2 to 3	2
Length of growing period	130 days	100 days

This tabulation comes close to Kalm's observations, but Sagard's description indicates that the average cob may have been somewhat smaller. A point to notice is that corn matured in the time given by the early writers and usually had two cobs per stalk.

Detailed studies on Huron corn remains have not been published.[1] Personal observations, principally at Cahiagué, would lead one to the

1. Noble's (1968) thesis is the only work that attempts a detailed study of corn remains from Ontario archaeological sites.

conclusions that the average corn cob was about three to five inches long, eight rowed, though occasionally reaching ten rows. A four inch cob with about 200 kernels seems to be the average, confirming Sagard's observations. Although the length of the cob is considerably shorter than modern varieties the size of the kernels is the same. From the charred remains only two varieties could be distinguished, flour and flint corn. Of these, the latter outnumbered the former about three to one. The larger proportion of flint corns is probably accounted for by the fact that it is a hardier variety than flour corn. Since the average length of the frost free period in Huronia is about 130-140 days, a predominance of flint corn would be expected (Chapman and Brown, 1966; Figure 12).

Less is known about Huron beans and squashes. Champlain (Vol. 3: 125) mentions the febues du bresil (red beans) while Boucher (1896:144) identifies Huron beans as haricots (kidney beans). Beans found on Huron sites tend to be kidney shaped and about one quarter inch long. Being charred their colour is impossible to determine. Most likely the main variety was the kidney bean (Phaseolus vulgaris). Judging from Boucher's (1896:144) description of squash, the Hurons grew the summer squash (Cucurbita polymorpha). This fits with a Jesuit description that some squash was available in early August (J. R., Vol. 20:79).

c) Preparing the land, planting and taking care of the fields.

i) Preparing the fields

Huron agricultural methods were fairly typical of swidden farming. Champlain and Sagard provide the most complete descriptions on the manner of field preparation and planting:

A party of them will strip the trees of all their

> branches which they burn at the foot of the said tree to kill it. They clear up the ground thoroughly between the trees and then sow their corn a pace apart putting in each spot about ten grains, and thus continuing until they have enough for three or four years provision, for fear lest they should have a bad year (Champlain, Vol. 3:156).

Sagard's statement adds some information not mentioned by Champlain:

> They cut down the trees at the height of two or three feet from the ground, then they strip off the branches, which they burn at the stump of the same trees in order to kill them, and in the course of time they remove the roots. Then the women clean up the ground between the trees thoroughly, and at distances a pace apart dig round holes or pits. In each of these they sow nine or ten grains of maize, which they have picked out, sorted, and soaked in water for a few days, and so they keep on until they have sown enough to provide food for two or three years, either for fear that some bad season may visit them or else in order to trade it to other nations for furs and other things they need; and every year they sow their corn thus in the same places and spots, which they freshed with their little wooden spade, shaped like an ear with the handle at the end. The rest of the land is not tilled, but only cleansed of noxious weeds, so that it seems as if it were all paths, so careful are they to keep it quite clean; and this made me, as I went alone sometimes from one village to another, lose my way usually in these cornfields more often than in the meadows and forests (Sagard:103-104).

Only one point must be added, and that is that the Hurons had no knowledge of fertilizers. Sagard for example, stated that the villages had to be moved periodically when the local wood resources were exhausted or when:

> . . . the land is so exhausted that their corn can no longer be grown in the usual perfection for lack of manure; because they do not understand cultivating the ground nor putting the seed anywhere else than in the usual holes. (Sagard:93).

These observations were echoed by the Jesuits (J. R., Vol. 11:7; Vol. 15:153).

From the foregoing descriptions, later accounts and early settlers observations, a fairly detailed reconstruction of Huron agricultural

procedures is possible.

The first step was the removal of trees and brushwood. As mentioned in a previous chapter, it is more than highly probable that areas of young trees were sought, not only because they were easier to remove, but also because that kind of wood was needed in large quantities. Clearing a virgin forest must have been a terrible job which was rarely attempted. A good indication of the difficulties involved in clearing a virgin forest is the description of the abortive settlement on Christian Island. Ragueneau described it as: "These grand forests, which, since the Creation of the world, had not been felled by the hand of any man" (J. R., Vol. 35:85). Later in the same passage he blames the lack of corn in the village partially on the Hurons inability to clear enough land in " . . . a thick forest unprepared in any way for tillage" (J. R., Vol. 35:87).

The usual procedure in land clearing was to chop down the smaller trees, stripping the larger ones of their branches and girdling them. The ground was then thoroughly cleaned of grass, weeds and shrubs. This debris was then piled against the stumps and larger trees that could not be felled, and burned. There is no evidence that the Hurons, or for that matter any of the Iroquoian groups simply set the forest on fire to clear land for agriculture. Such a procedure would have been disastrous in view of the fact that nearby villages were built of wood and the Hurons did not have the ability to control large fires. The time of year when most of the clearing operations went on, was apparently in the spring, just before the seed was planted. This coincided with the period (March and April) when the women gathered their supply of firewood, and it is not unreasonable to suppose that the two tasks, land clearance by the men and firewood

gathering by the women, were related (Champlain, Vol. 3:156; Sagard:94). One last aspect of forest clearance may have been the removal of the smaller stumps and large dead trees. Parker (1910:22) stated that dead trees in the cornfields were not regarded safe and were removed as soon as possible.

ii) Preparing the seed and planting

The second step was the preparation of seeds for planting. Several authors noted that corn seeds were first soaked in water or a bed of moist bark (Sagard:103; Lafitau, Vol. 2, 1724:76-78; Kalm, 1935:107). Kalm observed that this practice made the corn come up several days earlier. In fact soaking the corn in the warmth of a longhouse would cause the kernels to germinate. The fact that the kernels used for seed were carefully selected beforehand shows that the Hurons had a good working knowledge of crop improvement or at least crop maintainance practices. If, as is probable, the larger seeds were selected for seed, the Hurons, consciously or unconsciously, selected for quality and yield. It is therefore not really surprising that corn culture was so highly developed. The really great improvements in corn breeding in Ontario came when Europeans introduced fertilizer and began to understand the mechanisms of hybridization through seed selection and cross pollination.

After the seed was soaked in water, the women departed into the fields and began the actual planting. Both Sagard and Champlain related that up to ten grains were placed into the ground at distances about a pace apart. DeRasieres (Jameson, 1909:107) among the New England tribes in 1628 mentioned that about five to six seeds were planted in each spot about two and a half feet apart. Kalm (1935:105-106) among the Iroquois

in 1748-51 reported that four to five kernels were planted in one spot usually three to four feet apart for the variety of corn grown in Canada.

As the corn grew, earth was carefully hoed up around the plants. Parker relates that the first hoeing occurred when the corn was a "span high", with a second final hoeing when the plants were "knee high" (Parker, 1910:29). The same practice was later copied by Europeans who used both the hoe to heap earth around the growing corn, and the plough (Kalm, 1935: 105, 107). As late as 1954, the old Iroquoian method of corn growing was still recommended to Canadian farmers:

> Planting [of corn] is done either in hills or rows. Hills are usually spaced three or three and a half feet apart. Usually four or five seeds are sown and when the young plants emerge the three strongest plants are left to grow, the others are pulled out. (Ferguson, 1954:24).

Kalm (1935:106, 107) also reported that the usual number of stalks per corn hill was about three to four.

Once the corn hills were established, it was the universal practice to use the same hills over and over again until the land was exhausted. (Sagard:104; Waugh, 1916:17).

Because the same hills were reused year after year, they became a remarkably persistent feature in the landscape of the North Eastern United States and Canada. Corn hills have been described and measured in every State from Massachusetts to Michigan (Delabarre and Wilder, 1920; Hinsdale, 1928). In Ontario they were described by Hunter (1898:13, 37, 41; 1899:58, 65, 67, 69, 73-74, 75, 76, 77, 78; 1910:76, 85, 87), Wintemberg (1930) and Lee (1958:10-11). Hinsdale (1928:32, 36) and Delabarre and Wilder (1920: 213, 221) observed that corn hills were both regularly and irregularly

distributed. The latter authors postulated that the irregularly distributed corn hills were on land that had not been cleared of tree stumps, but that after the stumps had been removed, the cornhills were placed in regular rows (Delabarre and Wilder, 1920:225). None of the corn hills seen in Ontario have been described as having any regularity in the manner of their distributional pattern.

Unfortunately most of the corn fields reported by farmers in Huronia have been obliterated during the last hundred years. After repeated attempts to relocate such fields, one has been found on lot 17, concession 20, Tiny Township. The original extent of these fields is impossible to estimate. The mounds tend to be about four to eight inches high, about three feet across and slightly over four feet apart. Their spacing is quite irregular. On the surface there is nothing striking about these slight mounds, and they might be easily overlooked. However, the soil differences between the mounds and the slight depressions adjacent to the mounds are nothing less than spectacular. The soil between the mounds tends to be a deeply developed podzol typical of the sands in the area, with leached A_2 horizons up to 2.5 inches thick and well developed reddish B horizons. In the mounds there has been virtually no soil development. The sands are loose; there is no leached A_2 horizon; the A_1 horizon is very thin and the B horizon is an undifferentiated yellowish orange sand. As yet no chemical tests have been performed on these materials.

On Table No. 19 the observations by various authors have been summarized regarding the size and spacing of corn hills. In a later chapter this information will be used to attempt a reconstruction of Huron

TABLE NO. 19

The Size and Spacing of Corn Hills

Authority	Diameter of corn hills (feet)	Dist. between centre of corn hills, (feet)
Kalm, 1935:105-106	?	3-4
Sagard:103	?	(1 pace)
Champlain, Vol. 1:328	?	3
Champlain, Vol. 3:156	?	(1 pace)
Jameson, 1909:107	?	2.5
Wintemberg, 1930	3	3
Lee, 1958:11	2.5	5
Delabarre and Wilder, 1920:214	2+	4±
Hinsdale, 1920:31	1.5	3
Hinsdale, 1920:36	2	4
Aller, 1954:68	4	6
Personal Observation	3	4

corn yields. Only one contemporary picture exists of Iroquoian corn hills (Lafitau, 1724, Vol. 2:155). The spacing between the hills as pictured by Lafitau is about three to four feet.

If the spacing of corn hills is taken at three to four feet, theoretically there could have been as many as 2,500 to 4,700 corn hills to the acre. Most of the best documented sources, including the Ontario ones, seem to settle on a figure of slightly less than four feet between corn hills. If 3.75 feet are taken as a reasonable average, a completely utilized field would have about 3,000 corn hills to the acre. Of course, not all the land could be used because of stumps, rocks and other debris. In the previous chapter an average of 435 trees per acre was considered a reasonable estimate for a youthful forest. If each of these takes up the area of a potential corn hill and a few more are taken up by rocks and other obstacles, a final figure of 2,500 corn hills per acre does not seem unreasonable. This figure is fairly close to the 2,600 corn hills per acre counted by Delabarre and Wilder (1920:213).

After the corn had been planted and grown up to about two inches (Jameson, 1909:107), one or two weeks according to Kalm (1935:106), beans were planted in the same hills. Corn, beans and squash were always grown together. This practice was sanctified in Iroquoian mythology (Waugh, 1916:3, 103-104; Parker, 1910:27, 38; Tooker, 1964:60). The extent to which beans were interplanted is not known. In New England both Champlain (Vol. 1:328) and De Rasieres (Jameson, 1909:107) observed that three to four beans were planted in every hill. Among the Iroquois, Parker (1910:27) noted that beans were planted in every seventh hill. In view of the relative importance of beans to corn among the Hurons it is not likely that beans were planted in every hill. The actual fact beans in every seventh hill is extremely close to the ratio of beans to corn in the Huron diet discussed earlier.

Among the Iroquois squash was also planted in the corn hills (Parker, 1910:91; Waugh, 1916:113). The number of corn hills involved and the extent to which the Hurons practiced this is not known.

iii) Tending the fields and common pests.

After the planting was finished and the corn hill hoed up, the women and children spent the bulk of their time up to harvest tending the fields (J. R., Vol. 8:143; Vol. 10:53; Vol. 13:11). Most of their time was spent on weeding (Sagard:104) and chasing birds away (Sagard:220; J. R. Vol. 10:145). The Hurons considered birds such a pest, that they even asked the priests how they could get rid of them (Sagard:220). Particularly troublesome seem to have been "cranes", "geese" and "crows". The "cranes" mentioned by Sagard could have been the migratory sandhill crane

(Grus canadensis) now extirpated from the area (Devitt, 1943:285).[1] Sagard's geese were probably the canada goose (Branta canadensis). Crows (Corvus brachyrhynchos) were a serious pest not only among the Hurons, but also among the Iroquois (Kalm, 1935:106, 114-116). Kalm devoted several pages to descriptions of ingenious ways the Iroquois had of getting rid of them. Grasshoppers and caterpillars were also considered pests (J. R., Vol. 10:195; Vol. 14:105; Vol. 18:85). One woman even came to Le Mercier with a grasshopper she had caught begging him " . . . to teach her some contrivance for killing the little creatures that eat the corn . . . " (J. R., Vol. 14:105). According to Kalm (1935:115-116) one of the worst pests the Iroquois had to contend with were squirrels. Waugh (1916:36-37) adds blackbirds, the raccoon, woodchuck and jay to the list of pests feeding on corn. Blackbirds (Euphagus carolinus and Quiscalus quiscula) and jays (Cyanocitta cristata) are extremely common in Huronia (Devitt, 1943:45-46; 1944:90-91), as are raccoons (Procyon lotor) and woodchucks (Marmota monax). Among the squirrels, Sagard mentioned several varieties, but none in connection with corn growing. Of the squirrels most damaging to corn, the eastern fox squirrel (Sciurus niger), is absent in Huronia, but common in the Iroquois country (Martin, et. al., 1951). A list of animals was prepared whose diet shows a marked preference for corn.

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1. The editors of Sagard's Long Journey (220) state that Sagard's "crane" was the Great Blue Heron (Ardea herodias). This is very unlikely for two reasons; the heron subsists on a diet of fish, insects, mice, amphibians and the like and does not usually move in large flocks as described by Sagard. Cornfields are definitely not it's habitat (Martin, et. al. 1951:78-79; Taverner, 1919:82; Devitt, 1943:257). The sandhill crane on the other hand, although now rare in Ontario flocks in fairly large numbers and is known to have a high corn diet when he can get it. (Martin, et. at., 1951:80, 81; Taverner, 1919:85-86; Walkinshaw, 1949:38-42, 44-48).

This list was checked against the occurrence of birds and mammals in Huronia. Only those animals common to Huronia in the past and present were retained on the list (Table No. 20). The result is a formidable

TABLE NO. 20

Common Animal Pests in Corn Fields

Animal	Amount of Corn in diet	Reference (Martin, et al, 1951)
Sandhill crane (Grus canadensis)	25%-50%	:80-81, 465
Mourning dove (Zenaidura macroura)	10%-25%	:111-112, 465
Bobwhite quail (Colinus virginianus)	25%-50%	:100, 465
Rusty blackbird (Euphagus carolinus)	10%-25%	:173, 465
Crow (Corvus brachyrynchos)	25%-50%	:135, 465
Grackle (Quiscalus quiscula)	50%+	:174, 465
Blue jay (Cyanocitta cristata)	10%-25%	:131, 465
Raccoon (Procyon lotor)	25%-50%	:221, 466

array of potential pests the Hurons had to deal with. Of these, the crows, blackbirds, grackles and raccoons are considered the most injurious (Martin, et. al., 1951:465-466). Sagard's mention of crows probably includes blackbirds and grackles. Raccoons were also considered injurious to corn by Kalm (1964:243). That this animal was not mentioned by the Jesuits or Sagard is unusual except that perhaps, due to its nocturnal habits, the priests were not aware of it.

The extent to which these animals damaged a corn crop is difficult to estimate. Judging from Kalm's (1935:115) descriptions and the fact that the Huron women spent the entire summer in the fields, damage could have been considerable.

iv) Harvest.

By early August corn was well advanced (Champlain, Vol. 3:46(and by the end of August and early September it was ready for harvesting (J. R.

Vol. 13:85). Like other agricultural work, harvesting was the responsibility of the women (Champlain, Vol. 3:136; Sagard:101, 104). The ripe corn cobs were picked in the fields and taken back to the long house. There the husks were pulled back exposing the grain. The next step was to tie several cobs together into a large bunch and hang them on the longhouse walls and ceiling to dry. When dry the grain was shelled, cleaned and stored in the bark casks discussed in the previous chapter. In addition to the harvesting procedure just described, the Iroquois, and perhaps also the Hurons, sometimes pulled up the stalks with the cobs attached, tied them into bundles and propped them up in the field to dry (Parker, 1910:31; Waugh, 1916:39).

Once out of the fields and in the bark casks, the corn was subject to the onslaughts of mice, who were there " . . . in thousands . . . without number" (Sagard:227). Sagard lists two common mice in and about the longhouses; one about the size of the common European mouse (probably a species of Peromyscus) and the Tackro, " . . . twice as big as the common mouse and not as big as rats" (Sagard:227). The ubiquitous meadow mouse (Microtus sp.) well known as a corn eater, fits the description of the latter. Both of these rodents were eaten by the Hurons.

Among the Iroquois the end of the harvest was marked by thanksgiving ceremonies (Waugh, 1916:38-39). The Hurons had thanksgiving ceremonies (J. R., Vol. 10:177), but none of the ones described can be specifically associated with the corn harvest.

d) The effects of Huron agriculture on the land.

All of the early writers were in agreement that Huron agricultural practices were deleterious to the soil, forcing abandonment due to soil and

wood exhaustion after a number of years of continuous cultivation. Both Sagard:92 and Champlain, Vol. 3:124) wrote that abandonment took place after ten, fifteen or thirty years. The Jesuits who were no doubt better informed, having lived longer among the Hurons, stated that the land held out for twelve years at the most (J. R., Vol. 15:153), but most often only for eight to ten years (J. R., Vol 15:153; Vol. 19:133). In view of the soils chosen by the Hurons for corn culture, eight to twelve years of continuous croppin on the same cornhills seems like an exaggeration. Most farmers in the area today estimate that a sandy loam or loamy sand would not support a corn crop for more than four to six years without fertilizer. Since the Hurons did not fertilize their fields or practice any recognizable form of crop rotation or purposeful fallowing, other answers must be found for an observed period of cultivation up to twelve years. Essentially the answer must lie in a combination of factors chief of which are Huron agricultural practices, the effect of burning on the soil, demands placed by corn on soil and the natural fertility of the soil itself.

i) The demands of corn on soil

Except for periodic droughts, moisture and temperature requirements for corn growing are adequate anywhere in Huronia. As a matter of fact in the first half of the 17th century some corn was grown as far north as Lake Nipissing and adjacent areas (Champlain, Vol. 2:275, 276; Sagard: 66-67; J. R., Vol. 21:239-241; Vol. 23:255).

The literature on corn-soil relationships is vast. For the purposes of this chapter only a brief summary is given. Corn grows best on deep, moisture retentive, yet well drained loams. Providing the proper nutrient levels can be maintained it also grows well on sandy loams and sands. Corn

grows best in soils with a pH range of 5.5 to 7.0 (Thompson, 1952:110), therefore podzols tend to be slightly too acidic especially in the upper horizons. Both on the Vasey and Tioga series in Huronia, especially the latter, the soil pH must be raised for maximum corn production.

Good corn production is heavily dependent on available nitrogen, phosphorus and potassium, all of which are deficient in the Vasey and Tioga sandy loams and loamy sands used by the Hurons (Canada, Department of Agriculture, 1962:33, 45). It was on the basis of this information that farmers in Huronia today estimated that the Hurons would not get a crop off their fields after four to six years unless they used fertilizer. A deficiency in any of these elements causes discolouration of the leaves, reduction in the growth rate and small imperfectly shaped ears. Yields will drop markedly as these symptoms appear and finally the fields will cease to be productive (Sprague and Larson, 1966:3-4).

One of the major problems with the sandy soils in Huronia is that they are not particularly rich in organic matter. Since organic matter is the major supplier of soil nitrogen any process that removes organic matter from the soil is ultimately deleterious to corn growing. The same is true for available phosphorus which is present in the mineral content and organic matter of the soil. Phosphorus can be depleted extremely quickly if organic matter and fine soil particles are somehow removed as through erosion of the surface layers of a soil (United States Department of Agriculture, 1938:383). Unfortunately the parent materials of the sandy soils in Huronia are deficient not only in organic matter but also in the fine soil particles and therefore low in phosphorus to begin with (Chapman and Putnam, 1937:178). Potassium is present in the soil minerals,

particularly feldspar, and is released to plants through the slow process of chemical weathering. Corn places fairly heavy demands on available potassium and the amount of corn that can be grown without potassic fertilizers is limited. Because soil development is very slow in Huronia, potassium is not replaced very quickly.

The rate at which corn removes nutrients and the rate of nutrient replacement through natural agencies must be established experimentally for a particular locality. Even if absolute amounts of necessary nutrients are known for a soil, danger points are reached long before total amounts have been removed by a corn crop. Danger points and rates of removal have not been established for soils in Huronia. However, the statements by local farmers that the loamy sands cease to be productive after four to five years, the sandy loams after five to six years and the sands after about three years of continuous corn culture, seem to be fairly reliable indicators of rates of nutrient loss. The Simcoe County Soil Survey rates the Vasey sandy loam as "fair" for corn and the Tioga sandy loam and loamy sand as "fair to poor" (Canada, Department of Agriculture, 1962:84-85). Both need yearly applications of nitrogen, potassium and phosphorus.

ii) The effect of burning on soil fettility

Since the Hurons burned their land to remove brushwood, weeds and probably the previous years corn stalks, an assessment must be made of what burning does to the soil.

All authors who have written on the subject agree that burning raises the pH of a soil (Fowells and Stephenson, 1934:175; Ahlgren and Ahlgren, 1960:495; Vogl, 1969:253-254; Kivekas, 1941:194). Wood ash is rich in magnesium, calcium and potassium and phosphorus in addition to

which ashes from corn cobs and stalks are very high in potash (United States Department of Agriculture, 1938:518-519; Ahlgren and Ahlgren, 1960: 517; Vogl, 1969:254). Studies done by Vogl (1969:253) in Wisconsin indicate a raise in soil pH from 5.5 and 6.0 to as much as 8.0 and 8.5 after burning. Studies done in Sweden under similar leaching conditions as Huronia show that the increased pH is still detectable after ten years (Ahlgren and Ahlgren, 1960:495). Potassium has been shown to increase after burning by over 150% in Oregon and Washington, dropping to about 100% after two years; calcium increased by 300% to 800% and phosphorus increased by "marked amounts" (Ahlgren and Ahlgren, 1960:499-500). Both Oregon and Washington have climatic conditions promoting higher rates of leaching than in Huronia.

The effect of burning on the production of available nitrogen is less specific. Some authors report a significant loss in nitrogen, others report a significant gain (Ahlgren and Ahlgren, 1960:497-498). The differences between these studies seem to be largely a result of how soon the study was done after a burn and how severe the burn was. A severe burn destroys soil organic matter and with it available nitrogen. The result is a net loss if tests are made immediately after the burn (Fowells and Stephenson, 1934:175). In the longer run however, because burning increases the pH of the soil, it stimulates bacterial activity and therefore increases nitrification (Ahlgren and Ahlgren, 1960:498-499; Fowells and Stephenson, 1934:181; Kivekas, 1941:194; Vogl, 1969:254). The net result is a rise in nitrogen well above the original levels. Some authors report detectable increases in soil nitrogen five to twenty-five years after a burn depending on the soil type.

In general most authors agree that the immediate effect of burning is a rise in soil fertility (Fowells and Stephenson, 1934:181; Kivekas, 1941:194; Ahlgren and Ahlgren, 1960:493-494). Some studies cited by Ahlgren and Ahlgren (1960:493, 498) mention specifically thatyields from corn and legumes increased after burning. In the long run however, the effect of continuous burning cannot be anything but detrimental. Continued productivity of forest soils is dependent on organic matter which is reduced by each successive burning. In the meantime little organic matter is added to the soil. The short term result of fire is therefore increased fertility due to the release of plant nutrients, an increased soil pH and a stimulation of nitrification. The long term result is a thorough depletion of a given soil and a long period of recovery. A further long term danger of burning is that because organic matter is destroyed the soil surface becomes more succeptible to erosion.

The length of time during which soil fertility is increased after burning is impossible to estimate and must be derived experimentally. About the only thing that could be stated with certainty is that burning enabled the Hurons to cultivate their soils longer than the four to six years estimated by present farmers in the area. At the same time the soil recovery rate would also have been longer than soils that had not been repeatedly burned.

iii) Other Huron farming practices related to crop productivity.

Besides burning unwanted brush and crop residues the Hurons also spent a great deal of time weeding their fields (Sagard:104). Weeding was a common practice among all the Eastern Woodland Indians (Jameson, 1909: 107; Waugh, 1916:20). Weeding is of great importance to corn growing not

only because weeds affect yields, but also because they could conceivably make a corn field unfit for crop growing by becoming so firmly established that it is difficult to get rid of them with crude hoes and digging sticks. The Ontario Department of Agriculture (n. d. - a)) has estimated that losses in corn yield from an unweeded field could be in the order of ten to thirty per cent. Because the Hurons weeded their fields diligently they were probably aware of the adverse effects of weeds.

A second practice that served to increase yields was the growing of beans and corn together in the same corn hill. The role of nitrogen fixation by bacteria at the roots of leguminous plants is well known. This accounts for one of the greatest supplies of fixed nitrogen available to plants (United States Department of Agriculture, 1938:364). Whether the Hurons knew that the interplanting of beans was beneficial to corn growing or just a convenient method of providing a prop for the bean vines, is not known. One would think that generations of experience and observation had shown that corn hills with beans gave better yields for a longer period of time. The very fact that at least the Seneca considered beans and corn inseparable, believing that a spiritual union occurred when the two were planted together, indicates as awareness of the beneficial effects of planting these crops together, (Parker, 1910:27). If, as among the Seneca, beans were planted in every seventh corn hill, the effect would be to slow down soil nitrogen exhaustion. Since it is unlikely that the same corn hills were planted with beans in succeeding years the beneficial effects of nitrogen fixation would be spread over the entire corn field. Except to say that bean planting is beneficial to corn growing and would set back nitrogen exhaustion, it is not possible to estimate an exact number

of years over which corn growing could be extended.

One last Huron agricultural practice that had potential benefits to corn growing was the method of planting corn, beans and squash in hills. Any removal of the natural vegetation cover through burning exposes the soil on the resulting clearings to the dangers of erosion. Because the Hurons did not have the plough, soil disturbance was kept at a minimum. In spite of that however, sheet wash could ultimately destroy a field in very short order. The amount of soil that can be removed by erosion from an unprotected field is staggering Experiments conducted by the Ontario Department of Agriculture (1952:23-24) demonstrate that 90 to 100 tons of soil can be removed from an acre of silt loams with a 14%-16% slope in one year. Similar experiments in the United States on a silt loam under corn, not contour ploughed,with a 12% slope, demonstrated a soil loss of 99 tons per acre including 40% of the yearly rainfall of 38 inches lost as runoff (Russell, 1961:630). At the same time yields dropped 20% with three inches of surface soil removed and 88% with all of the surface soil removed (Ontario Department of Agriculture, 1952:21). Contour ploughing on a 10% slope reduced soil loss from 77 tons per acre to 29 tons per acre (Ontario Department of Agriculture, 1952:23). It is inconceivable that the Hurons would have obtained even three successive crops from a field had they not practiced soil conservation procedures. The actual village sites, particularly on sloping ground, often show signs of considerable erosion (Cruickshank and Heidenreich, 1969:46). At the Robitaille site (lot 17, concession 20, Tiny Township), sheet erosion on parts of the site has lowered the soil surface by approximately ten to twenty inches to the transition zone between the B and C horizons, creating aluvial fans in

adjoining creek valleys. The adjoining corn fields show strong evidence of soil depletion in the corn hills, but otherwise no evidence of erosion except where the fields adjoin steep slopes. Observations will of course vary with the slope on which the corn hills were planted, but the net effect of irregularly spaced mounds over a sandy surface should be almost as effective as contour ploughing thus reducing soil loss. Along with a reduction of soil loss one could also except a reduction of surface run-off and therefore maximization of available moisture.

The fact that the Hurons did not have the plough or indeed any animals to pull a plough, meant that surface soil disturbance was kept at a minimum. The digging stick was merely used to poke a few holes into the ground to receive seeds, and the crude hoes were used to heap up a small mound around the growing corn. Apart from these hills the remainder of the soil was not loosened. As a matter of fact the areas between the hills became hard packed paths as the women walked between the hills tending the corn (Delabarre and Wilder, 1920:211).

The minimization of soil surface disturbance due to the use of the digging stick probably had one further effect besides reducing the danger of erosion. Ploughing tends to loosen the soil to a depth of about ten inches thus increasing the rate of soil leaching. By comparison leaching should not be as rapid in the top layers of a soil profile under Huron methods of agriculture.

A further effect of hilling up corn during the period of early growth is a reduction of the effect of late frosts. The area between the hills would act as a pocket to trap cold air. In later years, after the hills were well established, being up to a foot in height, none but severe

frosts need to have affected corn growth.

iv) Estimates of the length of time fields could be used under Huron agricultural practices.

Although there seems to be little doubt that Huron agricultural practices prolonged soil fertility, it is difficult to estimate by how much. Most studies done on other shifting cultivators in temperate forest lands either avoid a discussion of cultivating periods (Narr, 1956:134-151) or assume that such periods were similar to cultivation cycles in the tropics (Guyan, 1954:123). In parts of the Soviet Union where slash and burn agriculture was carried on up to the 19th century, guesses as to the length of time a piece of land was cultivated, range from three to six years, depending on the soil type (Smith, 1959:53). Accurate records were apparently not kept and as usual authors reverted to guesses. Only a few scholars have attempted to estimate cultivation periods from empirical observations in northern latitudes. Using strictly archaeological evidence, Piggott (1965:52) estimated that the Neolithic Danubian settlements of south central Germany occupied an area for about ten years, returning after a fifty year fallow period during which the land had recovered. In Finland, Mead (1953:46) has documentary evidence of continuous cultivation on the same plot up to ten years. On the basis of his work on early European agriculture in Ontario, which was in some respects strikingly similar to Huron methods, Schott believed that the Jesuit estimates of cultivation periods up to 10 or 12 years were reasonable (Schott, 1936:47). On the better soils early Ontario farmers used Indian methods for two to four years until the stumps were removed and then the plough for up to twenty-five years without fertilizer, manure or fallowing (Schott, 1936:

169-171).[1]

There are several problems in using examples from European cultures. In some respects the Danubians come closest to the Hurons because both were digging stick and hoe cultivators. However, the Danubians also had domesticated animals and may have abandoned land earlier than the Hurons in order to create grazing areas. In the case of the examples from Finland and the Soviet Union, not only were domesticated animals present but also the plough. In both cases rotation patterns existed where continuous cultivation was followed by an equal number of years of grazing. The use of the plough may have led to more rapid soil exhaustion. The Hurons of course did not have the plough nor the necessity of creating grazing areas.

In the light of the discussion on Huron farming methods and Schott's observations, the Jesuit observations of cultivation periods ranging from eight to twelve years seem to be valid. One might conclude therefore that the effect of Huron clearance and farming methods served to double the time span one could expect from continuously cultivated land. Sands might therefore have been cultivated for five to six years, loamy sands from six to eight years and sandy loams from eight to twelve years.

v) Rates of forest regeneration.

Rates of forest and soil regeneration vary principally with the type of soil involved, the size of the area to be recolonized and the amount of previous disturbance. Among the Hurons we are dealing with thoroughly depleted sandy soils that have been burned regularly, and fields probably

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1. For a discussion of corn culture in 19th century Ontario see also Traill (1969:110-115).

ranging in size from small patches of several acres to fields several hundred acres in size. Since the Hurons were selective in their use of construction materials and firewood, potential seed sources in the form of residual stands between the fields and in poorly drained areas, would have undergone selective cutting. In each of the tribal areas small poorly drained patches, creek valleys and other uncultivatable land are quite common over short distances. Tree stands among the corn fields would therefore have been frequent.

Several of the early writers noticed that Huronia abounded in open grassy areas (Sagard:90; J. R., Vol. 8:115). Unlike other parts of Ontario none of these grassy areas could be considered "natural". Eight years after Huronia was abandoned, when Radisson paddled along the shore of the Penetang peninsula, these open areas were still visible (Adams, 1961: 86-87). There can be no doubt that the early explorers were referring to abandoned corn fields that had been recolonized by grasses and weeds. By 1820, a closed forext extended over the entire area previously cultivated by the Hurons.

Plant succession on abandoned farmland in Huronia can be easily observed; actual rates of succession are more difficult to establish. By the time of field abandonment the initially beneficial effects of burning would have passed and can therefore be ignored in this discussion. As mention earlier, in the long run repeated burning had a detrimental effect because by the time of abandonment dormant seeds would have been destroyed as well as any small amounts of organic matter normally remaining in the soils of an abandoned field.

The first plants to enter a sandy soil in Huronia are annuals and

biennials commonly called "weeds" by farmers. These are followed two or three years later by a few species of grass and other perennials. It was this stage that was observed by Sagard, Radisson and others. After a number of years colonies of sumach (Rhus typhina), hawthorn (Crataegus sp.), poison ivy (Rhus radicans), various raspberries (Rubus sp.) and cherries (Prunus pennsylvanica, P. virginiana) begin to appear from the edge of the woods. Just preceding these shrubs, and intermingled among them on most sites, one of the most common plants is bracken fern (Pteridium aquilinum). Some trees begin to appear during the early stages of shrub growth; notably the elm (Ulmus americana). The next trees to follow are all fairly intolerant species such as poplar (Populus tremuloides, P. grandidentata and P. balsamifera), birch (Betula papyrifera) and white pine (Pinus Strobus). Judging from the Forest composition in 1820, the last species to become re-established are maple (Acer sacchurum), beech (Fagus grandifolia) basswood (Tilia americana) and hemlock (Tsuga canadensis). Because of its greater need for sunlight and greater drought resistance, oak (Quercus alba, Q. rubra and Q. macrocarpa) could be expected to colonize some areas before the more tolerant species arrive.

Studies done on the rates of succession on abandoned farmland are fairly numerous. One of the best for the purposes of this thesis was conducted in Michigan involving a variety of soil conditions including depleted sandy loams (Beckwith, 1954:349-376). The successional stages observed by Beckwith are in every way comparable to those observed in Huronia. On sandy loams, abandoned after having been repeatedly planted with small grains, grasses and other perennials begin to appear after two to three years (Beckwith, 1954:365). Prior to that time the abandoned

fields were dominated by annuals and biennials. Grasses may predominate on the poorer soils for 15 to 20 years after abandonment (Beckwith, 1954: 367). Shrubs may make an appearance as early as 10 to 15 years after abandonment but do not form a conspicuous part of the vegetation until 15 to 20 years after abandonment (Beckwith, 1954:368). Intolerant trees became dominant 20 to 25 years after abandonment (Beckwith, 1954:370). After a similar successional pattern in Huronia one might expect an immature forest composed of trees four to ten inches in diameter after 35 to 40 years.

Since the plant succession described above was that on a sandy loam, 35 to 40 years must be regarded as a minimum time span for a plant succession useable by the Hurons. On a loamy sand such a succession could take 50 years or more. All the soils used by the Hurons therefore need a fairly long period of recovery before they could be used again. Unfortunately there is no information on the early survey records of northern Simcoe County that would allow one to reconstruct the density and basal diameters of tree stands at the time of European settlement. With such information it might have been possible to detect former areas of Indian clearance. Without such data one can only say that 180 years were long enough for a closed forest to have become re-established.

vi) Potential of preferred soils for Huron agriculture: a summary.

In the preceding pages a case was made for the accuracy of the Jesuit observations that some of the better soils supported agriculture for up to twelve years, and some of the poorer soils up to five or six years. These estimates and estimates for soil recovery rates are listed in Table No. 21. The implication to be drawn from this table is that

TABLE NO. 21

Cultivation Periods and Recovery Rates of Preferred Soils in Huronia

Soil Textural Type (Well drained)	Length of Cultivation Period (years)	Length of Recovery Period (years)
Gravel and sand	5-6	60+
Loamy sand	6-8	50+
Sandy loam	8-12	35+

a sandy loam for example, was cultivated for about eight to twelve years. During this time yields declined steadily, until by the end of the period the originally cleared fields ceased to be productive. After the sandy loams were abandoned it took at least 35 years for trees with a basal diameter of four to ten inches to become re-established. On the poorer soils cultivation periods were shorter and recovery periods longer.

Theoretical as the figures in Table No. 21 may be, it is felt that they are reasonable in the light of present knowledge. A refinement of these figures, particularly the length of the cultivation periods should someday be attempted experimentally.

e) Corn Production in Huronia

i) Estimates of corn yields.

Only two authors who have written on the Hurons have given what they believed were reasonable estimates for Huron corn yields. Both estimates can be described as educated guesses. Kroeber, whose interpretation of Huron agriculture must be considered problematical, gave a figure of about 15 to 20 bushels per acre (Kroeber, 1939:146).[1] Popham (1950:88)

1. All figures on yield in this discussion are in bushels of shelled corn per acre at a moisture content of 15%; one bushel equals 56 lbs.

thought that 30 to 35 bushels per acre would be reasonable yield, but because the Hurons could not clear and plant a complete acre they probably only got 20 bushels per acre. Neither author discussed declining yields on partially exhausted soils. Both probably regarded their figures as averages rather than highs or lows.

Two authors have calculated actual yields from 19th century Indian corn fields. In 1878 the Sioux at the Crow Creek Reserve in South Dakota got 20 bushels per acre (Will and Hyde, 1917:142). One corn variety on the same reserve got yields as high as 40 bushels per acre. The Sac and Fox got 20 bushels per acre in 1874; the Yankton Sioux, 30 bushels per acre in 1867 ("a good year") and the Santee in 1878, 25 bushels per acre. Will and Hyde (1917:298) felt that the Iroquois yields were similar to the Mandan at 40 bushels per acre.

In view of the fact that early colonists in New England and Ontario used methods similar to those of the Hurons some of their yields might be examined. Using documentary evidence Bidwell and Falconer (1925:101) gave average yields for Connecticut and New York in the early 19th century as 25 bushels per acre. The following average yields were reported for some Ontario Counties between 1847 and 1852 (Table No. 22). In the case of Hastings County the yields in some townships were unusually low due to late frosts (Upper Canada, Board of Agriculture, 1856:234). The yields in Bruce County were considered low because the farmers " . . . did not take good care of their crop . . . " (Upper Canada, Board of Agriculture, 1856:647). The average for Upper Canada in 1852 was 24 bushels per acre (Upper Canada, Board of Agriculture, 1856:441, 459).

The problem with the figures listed in Table No. 22 is that we are

TABLE NO. 22

Average Corn Yields in Ontario Counties, 1847-1852
(Taken from: Upper Canada, Board of Agriculture, 1856)

County	Year	Yield (bu/acre)	Page Ref.
York, Ontario & Peel	1847	27	:331
York, Ontario & Peel	1849	27	:331
York, Ontario & Peel	1851	33.5	:331
Peel	1851	31	:363
Hastings	1851	17 (8.7-23.7)	:237
Prince Edward	1852	31	:363
Carleton	1852	22	:459
Bruce	1852	18	:647

not told how many years the fields from which the figures have been derived had been under cultivation. Several references show that the methods employed were similar to those of the Hurons (Upper Canada, Board of Agriculture, 1856:371, 646). Because these figures are County averages one must assume that fields in various stages of land exhaustion were represented. In that case yields averaged 24 bushels per acre with a maximum of about 33 bushels and a minimum of about 9 bushels per acre.

An interesting point to notice, which can be used as a warning in using comparative material across different environments, is that according to figures compiled by Cowgill in the Yucatan and Watters in Mexico, Venezuela and Peru average corn yields were considerably lower than in Ontario. Both gave average yields of about 14 to 18 bushels per acre (Cowgill, 1962:276, 277; Watters, 1966:5). In both cases fields were abandoned when yields dropped by 50 to 75% or five to nine bushels per acre (Cowgill, 1962:276-277; Watters, 1966:9-10).

In the whole of the Jesuit Relations there is only one reference that gives any indication of Huron yields. Du Peron wrote that the Huron

corn " . . . sometimes yields one hundred grains for one" (J. R., Vol. 15:157). One hundred grains for one must refer to yield as related to the amount of seed used and not yield as related to the number of seeds that produced plants because considerably more than one hundred grains were carried by one corn plant. The amount of seed used can be calculated by multiplying the weight of the number of seeds usually placed in a corn hill by the number of corn hills per acre. The result is 15 pounds of seed per acre.[1] If, as Du Peron stated, the Hurons got a yield one hundred times greater, then the final yield was 1,500 pounds or 27 bushels to the acre. This figure compares favourably with yields obtained by early Ontario settlers.

Yields may be calculated in another way. As previously discussed, the average corn cob was about four inches long, containing 200 kernels which weighed about 2.0 ounces. If the average corn hill produced three stalks with two ears each, the resultant yield would be 33 bushels per acre.[2] This figure must be considered somewhat high because spoilage due to birds, insects and rodents would take a toll before the corn could be harvested. The amount lost before harvest is difficult to estimate. Rather arbitrarily a figure of 20% has been taken, bringing average yields

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1. The average number of corn hills per acre was previously estimated at 2,500 and about ten seeds were placed into a corn hill. The weight of 200 corn kernels at a moisture content of 15% was calculated experimentally at about 2.0 ounces.

2. Yield (bushels) = number of corn hills per acre (2,500) x number of plants per corn hill (3) x number of cobs per plant (2) x weight of kernels per cob (2.0 oz.) divided by the number of pounds of corn in a bushel at a moisture content of 15%. The numerator of the fraction must first be converted to pounds.

down to 26 bushels per acre of harvestable corn and in line with Du Peron's estimate.

Sagard's statement that the Hurons sometimes got 100 kernels on a cob can be taken as a measure of declining yields. One hundred kernels per cob would give them 16 bushels per acre which, with a 20% loss would bring the harvestable yield to 12.8 bushels per acre. If the Hurons, like other shifting agriculturalists waited until their average harvestable yields had declined by 60 to 75%, their fields were abandoned once yields reached seven to eleven bushels per acre.

Sagard's report that some ears had up to 400 kernels was undoubtedly true, but this would hardly be a field average even under the most favourable conditions. A cob holding 400 kernels would have to be about eight inches long. Such cobs have not been found on Huron sites but cobs longer than this have been excavated on Iroquoian sites predating the 17th century (Stockhouse and Corl, 1962:6). In any case, a field yielding such cobs would have given the Hurons 67 bushels per acre. Such yields were not really reached until the introduction of hybrids.

The rate at which yields declined is difficult to estimate. Following the reasoning put forth so far, sandy loams were abandoned after eight to twelve years when:

> . . . the land long tilled produced scanty crops (J. R., Vol. 11:7).

> . . . when the land is so exhausted that their corn can no longer be grown in the usual perfection (Sagard:93).

Other reasons for land abandonment will be discussed later, in the meantime the observation by the priests seem to indicate that after ten years the land still produced corn but that the crops were not worth

picking. It stands to reason that land would have to be abandoned sometime before an absolute minimum is reached. It is therefore, probable that like other corn growers the Hurons abandoned their land after yields had fallen to 60 or 75% from the average or to seven to ten bushels. If eight bushels is considered cause for land abandonment, the figure is identical to yields justifying land abandonment among other corn cultivators.

By the time eight bushels per acre are reached on the original fields a number of other factors have come into play, such as extension of fields during declining years and fire wood exhaustion. These will be discussed in the next section.

If eight bushels are reached after ten years on a sandy loam and 27 bushels are an average, the absolute maximum during the first years of cultivation would be 46 bushels per acre. The average of 27 bushels would have been obtained after five or six years assuming a steady year by year decline to eight bushels after ten years.

The situation just described may be considered very hypothetical not only because of the assumptions built into it, but also because of the nature of the data used and the number of unforeseen factors that could and probably did play a role in upsetting the system. One of the most complicated of these factors is the proportion of corn lost to predators. Throughout the discussion a 20% loss was assumed. In any year this loss could have been greater or less. In view of the care taken by Huron women of the crops, a figure of 20% seems justified. The average yield computed here may seem high compared to the opinion most scholars seem to have of the efficiency of Iroquoian agriculture. It is difficult to see how this

average yield can be reduced. If Ontario farmers in the first half of the 19th century averaged 20 to 25 bushels to the acre, 27 bushels among the Huron seems reasonable. Corn was not as important to early Ontario settlers as it was to the Hurons, and although methods were similar, the Hurons spent considerably more effort in tending their fields than the 19th century farmer. It is therefore felt that the Huron yields here computed, while they may vary greatly in any one year due to unforeseen circumstances, are fairly reasonable.

One would not expect average yields on gravels, sands and loamy sands to be of the same magnitude as on sandy loams. Maximum and average yields would be expected to be lower. Rates of decline have already been described, and eight bushels after five years seems reasonable for a coarse sand. What a maximum or average crop was is difficult to say. If crops declined on a coarse sand at the same rate as on a sandy loam a maximum yield of 24 bushels could be expected with an average of 16 bushels after three years. (Figure 15).

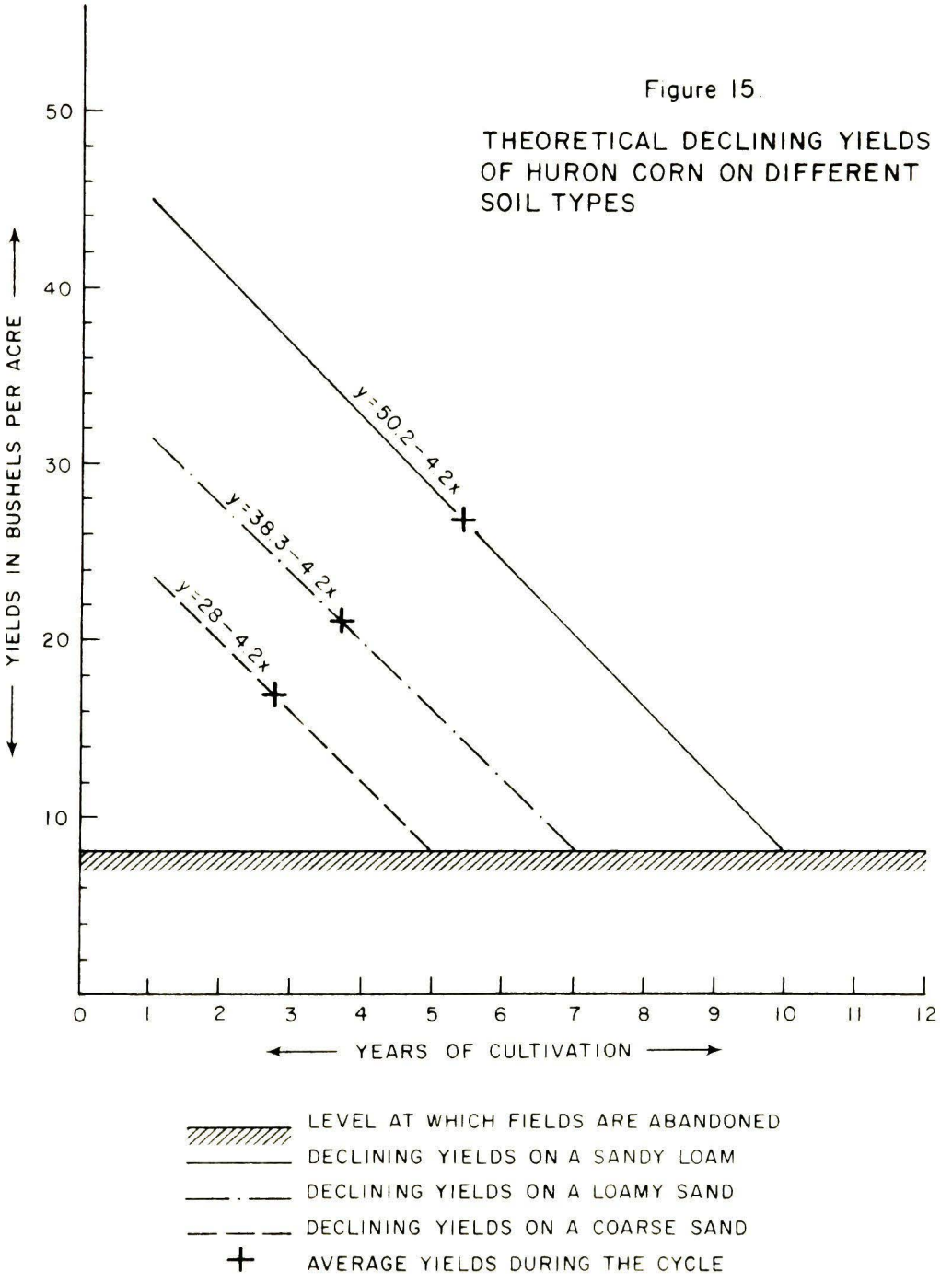
ii) Yearly Huron corn requirements.

In an earlier chapter it was estimated that Huron corn requirements came to about 1.3 pounds per person per day. This figure represents the subsistence needs of a person but is not representative of his total needs. Champlain (Vol. 3:156) claimed that the Hurons strove to create a fairly large surplus " . . . for fear lest they should have a bad year." (Sagard: 103) also stated that they sow:

> . . . enough to provide food for two or three years, either for fear that some bad season may visit them or else in order to trade it to other nations for furs and other things they need.

Figure 15.

THEORETICAL DECLINING YIELDS OF HURON CORN ON DIFFERENT SOIL TYPES



Brébeuf even went so far as to call Huronia " . . . the granary of most of the Algonquins" (J. R., Vol. 8:115). Several references attest to the fact that corn was a major item of trade with the Algonquins (J. R., Vol. 11:7; Vol. 13:249).

What is difficult to reconcile is Champlain's and Sagard's claim that the Hurons strove to create a surplus to stave off starvation in case of crops failure, the fact that the Hurons traded corn to the Algonquins and the manner in which the Hurons viewed a potential crop failure. A potential crop failure was so serious that thought had to be given to trading food surpluses from neighbouring tribes. In other words, it is unlikely that they created a surplus for lean years as well as for trade. Any surplus from a fall harvest must have been traded during the late fall and winter to the Algonquins, leaving just enough corn for seed and food until the next harvest. One possible way of reconciling Champlain's and Sagard's observations with later accounts is that in the early years of contact and in precontact times corn surpluses were stored for lean years and only a small fraction was traded. As the Huron demand for furs increased during contact times more corn was needed as a trade item, with the result that the entire surplus above subsistence and seed needs was traded off. Numerous references, to be discussed later, show that the Algonquins were primarily interested in corn as a trade item. In return they supplied furs, meat and fish.

One thing that emerges from this discussion is that the Hurons recognized the desirability of producing some measure of corn above their subsistence needs. If they simply counted on an accidental bumper crop for trading purposes it is doubtful if Champlain and the others would have

stated specifically that the Hurons strove to create a surplus. It is also doubtful if regular trade could have been performed simply on the basis of an unexpected windfall. Recognizing therefore that a surplus was produced with intent, the question becomes how much extra corn was grown? This question is of course impossible to answer with any degree of certitude. Champlain's and Sagard's statements must be vastly exaggerated because they seem to indicate that each year the Hurons grew enough corn to feed two to three times their own population. Even if "most of the Algonquins" subsisted entirely on Huron corn, the Hurons would not have to grow nearly as much as described by Sagard and Champlain.

A solution to the problem of surplus is really not possible. One must therefore hazard a guess. If Huron needs are 1.3 pounds of corn per person per day, 472 pounds or 8.4 bushels are needed a year. If a surplus was created enabling each person to contribute one half a bushel towards trade, overall Huron needs would be about 1.4 pounds or 9 bushels per person per year. This would give a village of 1,000 people a stock of 500 bushels for trading purposes. The whole of Huronia would therefore have a stock of 10,500 bushels for trade which seems more than adequate considering storage problems and the extent of the trade involved.

A figure of 1.4 pounds of corn per person per day is still well below the figure of two pounds per person derived by Popham (1950:89). If the Hurons used two pounds of corn a day it becomes difficult to see what they did with it. Storage problems alone would be enormous. At 1.4 pounds per person per day, the average family of six would have to produce and store 54 bushels of corn per year. A longhouse composed of six families would therefore need 324 bushels of corn a year for subsistence, seed and

trading purposes. Since one bushel of dried shelled corn takes up about 1.25 cubic feet (Ontario Department of Agriculture, n. d. - a): 32), the 324 bushels could be stored in four bins eight feet high and four feet in diameter. In view of the descriptions of corn bins and the area reserved for storage purposes in a longhouse, not only for corn but fish and beans as well, this figure seems about right.

At nine bushels of corn per person per year the yearly corn requirements for a population of 21,000 Hurons would be in the order of 189,000 bushels.

f) Huron land requirements for agriculture.

Assuming a fixed need of nine bushels per person per year, Huron land requirements must have increased yearly due to declining yields on the originally cleared fields. The whole cycle of land use was characterized by the re-use of the originally cleared land until that land failed to produce. The point at which the original plot ceased to be effective for Huron needs was previously set at about eight bushels per acre. Additional land could be gained by stumping as mentioned by (Sagard:103). Inevitably though, more land had to be cleared to keep pace with declining yields. This could be done by extending the original fields or by clearing new patches wherever land was available. The exact procedure for gaining new land is not known. Two plausible approaches might be advanced. For the first of these, one might reason that in the initial year enough land was cleared as close to the village as possible to meet the requirements of each family. As yields declined the original fields were extended until they reached a neighbours plot or some natural obstacle. Additional patches would then have to be cleared farther from the village. An alternate

method would have been for each family to select an area large enough and sufficiently far removed from neighbouring fields and uncultivatable areas so that the necessary yearly extensions of land would not lead to a proliferation of fields. While the latter method has the advantage of keeping the number of fields to a minimum, it imposes longer travel times on villagers whose fields are farthest from the village. This method also assumes that individuals could lay some sort of claim to unused land until their fields grew to make use of it. Under Huron sanctions no one could lay claim to unused land. In view of the proliferation of cultivated patches among other shifting cultivators, the first of the two methods mentioned seems the more probable. One would reason therefore that by the time the original plot was thoroughly depleted several other plots existed, compounding the problems of adequate maintenance and supervision.

In calculating Huron land requirements two important points must be kept in mind. First, the land requirements for one person, or a village, will vary with the number of years a plot or plots have been under cultivation. As the first plot loses fertility and yields decline, more land is added in the second year. The second years addition will however, have the original fertility of the first plot. In the third year, land must be added to take care of a two-years decline from the first plot and a one-year decline from the second years addition. The third year's increment will however, have the original fertility of the land. And so on until the area is abandoned. The second point to notice is that rates of decline, and therefore land requirements, will be different for different soil types.

Keeping the above points in mind, calculations were made to obtain

the yearly land requirements for one person on the three major soil types utilized by the Hurons, during any year of continuous occupation (Figure 16).[1] In calculating the figures for the graph two assumptions had to be made; first, the yearly need at nine bushels per person is constant throughout each cycle; two, yields decline at a predictable rate as depicted in Figure 15. If either of these factors vary at an unpredictable rate, no estimates of land requirements are possible. The data on Figure 16 therefore depicts the increasing land needs of a person whose yearly need is nine bushels of corn. The yearly gains in fertility from newly added land are taken into account as well as the yearly losses from land cleared in previous years. This is a much more realistic method of calculating land needs than the usual method of dividing the average yield into the yearly need.

The disadvantages of using a coarse sand or gravel rather than a sandy loam are immediately apparent. Twice as much land must be cleared the first year and about three times as much added every year to keep up with declining yields. In the end the coarse sand or gravel can only be cultivated half as long as the sandy loam. In view of the large disadvantages of this soil type over the others, it is surprising that any village sites occur on it at all. A family of six would have to clear 2.25 acres in the first year, and by the end of the five year cycle would have a total of 4 acres under cultivation to bring in an annual crop of 54 bushels.

The loamy sands, utilized by about 18 per cent of the Huron villages

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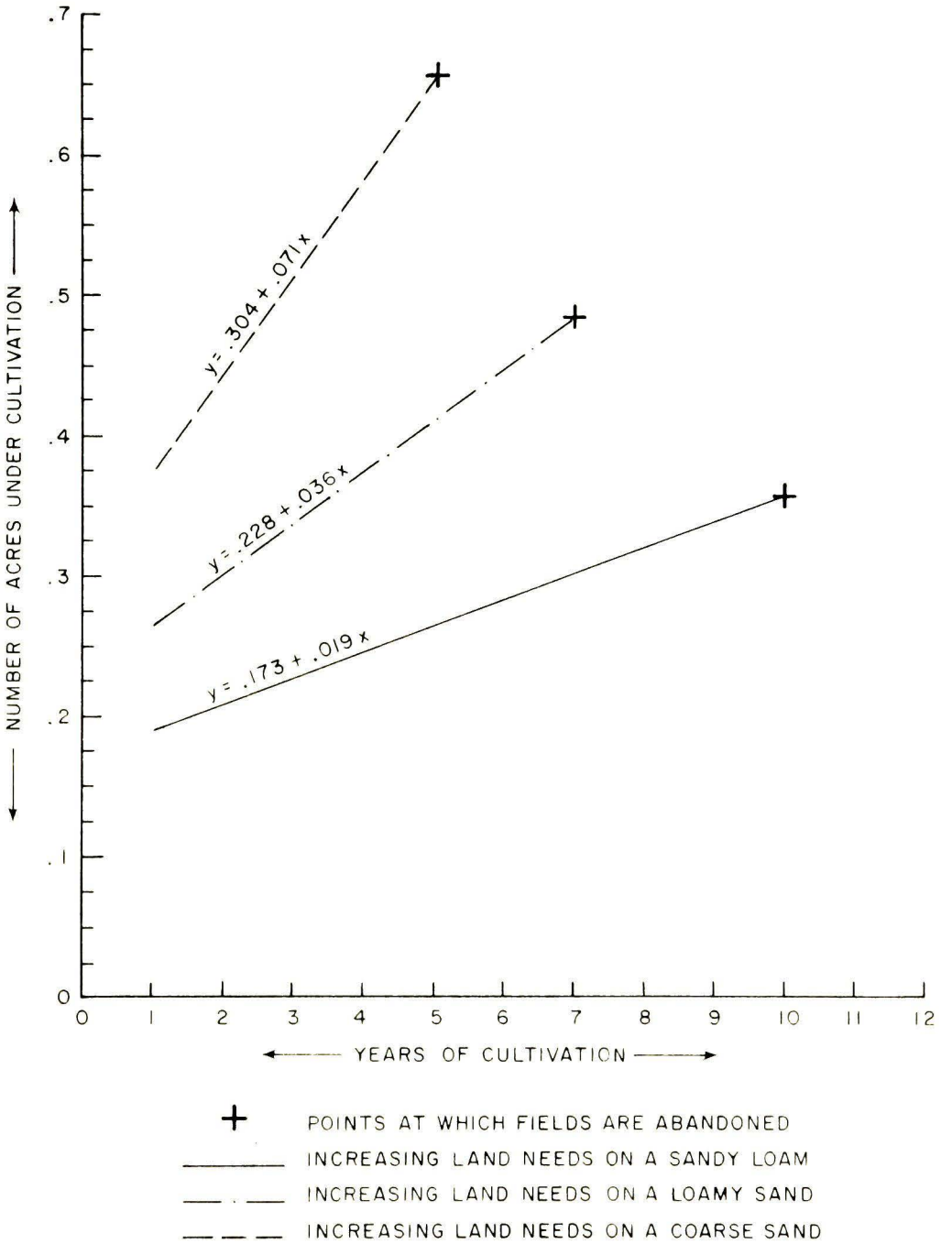
1. The manner in which the data depicted by Figure 16 was derived, is shown in Appendix VII.

Figure 16.

INCREASING LAND NEEDS WITH DECLINING YIELDS, FOR ONE PERSON WITH A FIXED NEED OF NINE BUSHELS PER YEAR



are somewhat better. A family of six would need to clear 1.6 acres in the first year and have 2.9 acres under cultivation after seven years. On the sandy loams a family of six would need 1.14 acres in the first year and 2.2 acres after ten years. This soil type supported about 72 per cent of the villages in Huronia.

In order to calculate the total amount of land in Huronia under crops in any one year, three assumptions are made; the first is that the number of people dependent on each soil type is roughly proportional to the percentage of village sites on each soil type (Table No. 1); two, that the silt loams, being higher in natural fertility than either loamy sands or coarse sands can be added to the sandy loams; and three, that because of the likelihood that all the plots are at different stages in their cycle toward abandonment, land requirements can be calculated from the mid point of each cycle. The result is, that in any given year about 6,500 acres in Huronia were under crops (Table No. 23). Since beans and squash were grown on the same fields no additional land was needed.

TABLE NO. 23

Average Yearly Land Requirements for Crops in Huronia

Soil Type	Population	Crop Acreage
Coarse sands and gravels	1,050	543
Loamy sand	3,780	1,406
Sandy loam and silt loam	16,170	4,495
Totals	21,000	6,444

In order to estimate the total land taken up by agriculture in Huronia, the "fallow" period must be taken into consideration. The minimum length of the fallow period on each soil type was estimated

previously. The land taken up by fallow can be calculated by determining the amount of land used up by each cycle and multiplying it by the number of cycles that were run during a fallow period; or:

$$\text{Amount of fallow land (acres)} = \frac{\text{Fallow period (yrs.)}}{\text{Length of cycles (yrs.)}} \times \text{Land needs for one cycle}$$

In order to find the total land in use, one additional cycle must be added; this is the land last put under crops before returning to the fallow land.

$$\text{Total Huron land needs (acres)} = \left(\frac{F}{C} \times N \right) + N$$

- where F is the fallow period in years
- where C is the length of one cycle in years
- where N is the land used up in one cycle

On this basis the total Huron land needs for a population of 21,000 are close to 50,000 acres (Table No. 24), or about 2.3 acres per person. The amount of land available to the Hurons from the three preferred soil types was previously calculated at 157,861 acres (Table No. 24; Appendix VI). The Hurons therefore used about one third of the soils available to them under their system of agriculture.

Does this mean that Huronia was underpopulated and could have supported three times as many people? Probably not. In order to support 60,000 people, the area would have had to be used at its maximum carrying capacity relative to the Huron ability to produce food. This is of course impossible. No socio-economic group such as the Hurons could ever live up to the maximum carrying capacity of their territory. The implication of maximum carrying capacity is that the Hurons would have had to make optimum use of their soils. There would have had to be long range regional planning of soil resources; a perfectly balanced cycle of cropping and fallowing and a soil resource base that was equally usable and so distributed that maximum

TABLE NO. 24

Total Huron Land Requirements

Soil Types	Population	Length of one cycle (yrs.)	Length of fallow (yrs.)	Land used in one cycle (acres)	Amount of land in fallow (acres)	Total Huron land needs (acres)	Total land available (acres)	Total need available land %
Coarse Sands and Gravel	1,050	5	60	694	8,328	9,022	14,652	62%
Loamy Sand	3,780	7	50	1,833	12,831	14,664	56,906	26%
Sandy Loam and Silt Loam	16,170	10	35	5,821	20,374	26,195	86,303	31%
Totals	21,000			8,348	41,533	49,881	157,861	32%

use could be made of it. It would also mean that no droughts, falling water tables, wars or bumper years for crop pests upset the system. For these and many other reasons no population can ever live up to the "carrying capacity" of the territory it inhabits. Furthermore it should also be added here that the calculations of total land needs were based on a minimum fallow period. Depending on ground water conditions, the extent of original clearings in an area, and many other conditions, some fields might have taken more than 35, 50 or 60 years to recover. The figures on Huron land requirements may therefore be underestimated rather than overestimated. In other words it is very doubtful if Huronia could ever have supported anything approaching 60,000 people under Huron subsistence techniques. Rather than being underpopulated it is much more likely that the area was approaching a population maximum. This was suggested earlier by the close correlation between the amount of preferred soils in each tribal area and its population (Figure No. 1 and 2).

Of all the tribal groups the Attinguenongahac must have been particularly pressed for land. It will be recalled that this group occupied an area 10,422 acres of which 9,976 were sandy loams (Table No. 7). With a population of 3,800 this tribe had the highest population density of any tribe in the area. The total land requirements for 3,800 people on a sandy loam are 7,776 acres, showing that the Attinguenongahac used 78 per cent of their available soil resources. As stated earlier, the high population density of the Attinguenongahac was probably the result of crowding which occurred when some land was given over to the three tribes that arrived in the late 16th and early 17th century. Such a high proportion of soil resource use should therefore not be considered normal. If the

population total dependent on each soil type in the other tribal areas was known similar calculations could be made.

3. Gathering, Hunting and Fishing

The relative importance of gathering, hunting and fishing was described in the first part of this chapter. This section is intended to be an elaboration of some aspects of these activities, particularly the manner in which they were carried out and the time of year in which these activities took place.

a) Gathering

As an activity gathering of wild vegetable products was carried on from spring to late fall whenever time or opportunity permitted. A description of the different plant varieties available to the Hurons has been compiled by Yarnell (1964:44-88) and it would serve little purpose to compile an identical list here.

In general the food plants were used as an addition to the usual corn dishes to give them a greater variety in flavour. Particularly important were fruits such as raspberries, cranberries, cherries, grapes, wild plums and mayapples. Other vegetable products such as the Jerusalem artichoke, various vetches and wild leeks were also gathered. All of these were discussed in Chapter II, 3 (b).

Special mention must be made of the gathering of "hemp". This seems to have been a communal activity involving, in one case, about forty women (J. R., Vol. 26:203-205). In all, four types of plants seem to have been used. (Sagard:240) mentions a type of "hemp" growing in "---marshy damp spots---" which was probably swamp milkweed (Asclepias incarnata), while Lalemant (J. R., Vol. 23:55) wrote that the Huron women gathered

hemp on "---the untilled plains---". The latter reference must refer to spreading dogbane (Apocynum androsaemifolium) and indian hemp (Apocynum cannabium). Hemp was collected in the late summer and fabricated into twine and various products during the winter (Sagard:98; J. R., Vol. 23: 55, 241). "Hemp" was also obtained from the bark of a tree called Atti by the Hurons (Sagard:240). The bark was removed in strips and boiled to separate the fibres. From the description the tree could have been basswood (Tilia americana) or leatherwood (Dirca palustris). Both are common in Huronia.

In view of the abundance of Maples in Huronia it is possible that the Hurons also gathered maple sap. For the Hurons this activity is only mentioned by Le Clercq (Vol. 1:208), although the Jesuits recorded it among the tribes of the St. Lawrence Valley (J. R., Vol. 6:273). From the manner in which the Hurons prized the sugar used by the Jesuits one might almost suspect that maple sugar was unknown to them (J. R., Vol. 14:31, 41, 57). Since all the neighbouring tribes made use of maple sap it would be reasonable to suppose that Hurons did likewise. Whether any of the Indian groups reduced maple sap to sugar is not known.

On a few occasions Hunter (1898:37; 1899:65) noticed small groves of cherry trees growing at Huron village sites. It is doubtful if these were deliberately planted by the villagers. What is more likely is that some of the seeds that found their way into the garbage dumps managed to germinate and take root. Cherry trees could have been quite common on abandoned sites, but since the wild cherry grows best in a fairly open habitat, it is likely that once the forest closed up after Huronia was abandoned, the cherries were displaced. Orchards of fruit trees were

reported for the Iroquois, but how early they were deliberately planting trees is not known (Cook, 1887:73; Parker, 1910:19).

An interesting observation is that most of the gathered produce grows in open fields or the edge of the forest. With their clearing of the woodland and abandoning of fields the Hurons were therefore modifying their environment to accommodate a greater number and variety of useful plant species.

b) Hunting

The dog was the only domesticated animal the Hurons had. Sagard (226) described them as being about the size of a moderately sized mastiff with upright ears and a pointed snout. He also noted that they howled rather than barked. Like most breeds of Indian dogs the Huron variety was probably part timber wolf. Dogs were not only pets and companions (J. R., Vol. 14:33-35), but also a valuable asset in hunting. However, the greatest use of the dog seems to have been as a source of meat. Both Sagard(226) and LeJeune (J. R., Vol. 7:223) stated that the Hurons raised them like sheep as a meat supply. Most references seem to agree that dogs were principally eaten at feasts or ceremonies (Champlain, Vol. 3: 129; Sagard:220, 226; J. R., Vol. 9:111; Vol. 21:161; Vol. 23:173). The animals were simply left to roam through the villages and longhouses feeding off refuse and leftovers.

Contrary to popular opinion the turkey (Meleagris gallopavo) was not domesticated (Sagard:220). As a matter of fact it was rare in Huronia but more plentiful in the Petun area and among the Neutrals (Sagard:220; J. R., Vol. 21:197). This was a remarkably astute observation, because the turkey was at its northern limits in Southern Ontario and even in the

early part of the last century was only found in the southern parts of Simcoe County (Snyder, 1951:93). Another reason for the scarcity of the turkey in Huronia was the fact that its habitat is a mature forest. In other words one would not expect the turkey to be common in cleared areas and as far north as Huronia. It is interesting that Sagard(220) considered the turkey and a number of varieties of geese potential domesticates, but the Hurons were not "---willing to give themselves the trouble---".

While on the subject of domestication it is noteworthy that Champlain was of the opinion that once the Hurons had been shown the value of domesticated animals, and certain species had been introduced, "---they would be careful of them and would keep them quite well---" (Champlain, Vol. 3:130). Because of the large tracts of grassland in Huronia, Champlain thought that feeding "---horses, cows, sheep, pigs and other kinds (of animals)---" should pose no particular problem (Champlain, Vol. 3:130-131). Champlain's opinions were based on an observation that the Hurons sometimes kept and fed caged black bears (Ursus americanus) for two or three years, fattening them for special feasts (Champlain, Vol. 3:130). This practice was also observed by Sagard (220), and by some Dutch travellers among the Iroquois (Jameson, 1909:143). Since the Jesuits did not comment on such a practice it is fair to conclude that keeping bears in pens was not very common.

In spite of the general lack of meat in the Huron diet several authors also mention that Huronia did not seem to lack in game (Sagard:222; J. R., Vol. 7:7). Animals that were considered rare or absent in Huronia were the moose, bison, wolf, caribou and lynx (Sagard:223-225). Deer were more plentiful outside Huronia, especially towards the country of the Neutrals (Sagard:225, 227; J. R., Vol. 21:197; Vol. 27:289-291). Bears,

foxes, martens, hares and a multitude of birds and smaller mammals were considered plentiful (Sagard:217-228). As far as is known the only mammals or birds that were not eaten was the crow (Sagard:221) and probably the skunk (Sagard:224).

The stated absence of moose (Alces americana) bison (Bison bison), wolf (Canis lupus), woodland caribou (Rangifer caribou) and lynx or bobcat (Lynx canadensis, L. rufus) in Huronia, is interesting because it supports the contention that environmental conditions in the early 17th century and the present were similar. Some of these animals are present in middens on earlier sites south of Huronia. Thus for example the caribou is present at the Lawson site near Chatham, Ontario, tentatively dated at 1500 A. D. (Wright, 1966; Noble, 1968). Moose remains have been found at the Roebuck site near Prescott (ca. 1450 A. D.), at the Middleport site west of Hamilton (ca. 1350 A. D.) and at the MacKenzie site near Woodbridge (ca. 1550 A. D.) (Emerson, et. al., 1961 b):96-98). Bison was found at the Roebuck site. The presence of bison skins among the Hurons was reported by Champlain (Vol. 3:105) and Sagard (225), but as Champlain observed, these were traded from Indian groups in the northwest. Boucher (1896:137) also points out that the bison was absent in eastern Canada. Moose and caribou seem to have migrated out of Southern Ontario into the shield by Huron times. Both the lynx and bobcat should have been present in Huronia (Peterson, 1966:280-286). Sagard's "leopards", the cougar (Felis concolor), from which the Eries (Cat tribe) derive their name, as Sagard (223-224) points out were rare to absent in Huronia (Peterson, 1966:276-277). Sagard's observation that the wolf was rare in Huronia probably means that this shy creature was not often seen. The timber wolf

(Canis Lupus) is more prevalent on the shield, but the brush wolf (Canis latrans) was once fairly common in Southern Ontario (Peterson, 1966:197-203). Both of these animals tend to avoid human contact and would be extremely difficult for Indians to hunt.

Frequencies of animal bone material have not been published for Huron contact sites. Reports are however available for two early contact Petun sites whose economy and settlement patterns were almost identical to the Hurons. Judging from the presence of trade goods at these sites, the Sidey-Mackay site probably dates to the earliest period of contact, and the MacMurchie site a little later. Both predate Champlain's visit to the area. The frequency of bone material at the two sites is listed in Table No. 25 (Bell, 1953:71; Emerson, et. al., 1961 (b):101). An

TABLE NO. 25

Bone Material at Three Sites Near Huronia in Order of Relative Abundance

Copeland (precontact, ca. 1500)	Sidey-MacKay (early contact, ca. 1580)	MacMurchie (contact, ca. 1600)
Virginia deer	beaver	beaver
beaver	Virginia deer	muskrat
black bear	black bear	Virginia deer
red fox	dog	black bear
dog	woodchuck	dog

interesting comparison is the Lalonde period Copeland site north of Barrie (Channen and Clarke, 1965:14). Over the hundred years represented by the three sites, deer is replaced by beaver (Castor canadensis), and later by beaver and muskrat (Ondatra zibethicus) in order of importance. This is

undoubtedly a reflection of the growing importance of the fur trade.

Unfortunately no attempt has ever been made to determine the age, size or number of individuals of each species present. The orders of importance represented by Table No. 25 reflect the percentage of bone material of a species related to the total bone material at the site. Because one deer or one bear supplies considerably more meat than several beaver or muskrats one cannot really say that deer and bear ceased to be the major meat producing mammals.

The ethnohistoric sources state quite clearly that deer and bear were the major food animals (Champlain, Vol. 3:81; J. R., Vol. 23:63). These were followed by the dog (Sagard:220). Beyond these three animals anything that had meat on it, from birds to mice, was eaten (Sagard:217-228). The general lack of meat in the diet can best be explained in terms of a variety of factors which were somewhat different for different animals. Chief among these factors where the abundance of the animal, hunting methods and the seasonality of the hunt.

Unlike the deer, the black bear was not subject to seasonal hunting or organized mass hunts. Bear seem to have been hunted by individuals or small groups of men on occasions when one was scented by a dog or when one was known to be about (J. R., Vol. 15:99; Vol. 14:33-35). Huronia and adjacent areas were a perfect habitat for the black bear, but population densities must have been low compared to other meat and fur bearing animals. The black bear is completely onmiverous, preferring substantial wooded areas, especially near large streams. They tend to be solitary, moving in fairly well defined territories (Peterson, 1966:221). Population densities in a deciduous forest have been estimated at two to five bears per ten

square miles (Shelford, 1963:29). The low population densities and solitary nature of this animal would dictate the hunting procedures described in the ethnohistoric sources. The tractability of the young and their omniverous diet would make it fairly easy to raise cubs in captivity for special feasts. In view of the low density of black bears and their relatively low reproductive rate,[1] one would expect that over the years of hunting this animal would have been more prevalent outside of Huronia. In other words the bear could not have been a major food source for 21,000 people. The fact that it was considered a close second in importance to deer as a meat supply serves to point out that meat could not have been too important in the Huron diet.

The major source of meat for the Hurons were deer. Deer were hunted in snares (J. R., Vol. 23:157), in traps (J. R., Vol. 30:53), by individuals using the bow (J. R., Vol. 26:313), and most commonly in large organized communal drives (Champlain, Vol. 3:60-61, 81-85; J. R., Vol. 15:183; Vol. 22:273; Vol. 33:83). Two types of communal drives were described. Both of these methods involved a large number of people who were placed in a line through the woods driving the animals ahead of them. In one case the animals were driven towards a peninsula and eventually into the water where they were killed from canoes (Champlain, Vol. 3:60-61; J. R., Vol. 22:273). In the other case the animals were driven into a triangular enclosure with a compound at its apex. When the animals reached the compound it was closed, and the animals killed with bow and spear

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1. Females start breeding when they are three years old. They breed only every other year and usually produce two cubs (Peterson, 1966:221).

(Champlain, Vol. 3:81-85). In the communal hunt witnessed by Champlain in the Belleville area, 120 deer were caught by 500 men in 38 days. A similar deer hunt was described by Ragueneau a two days journey south of St. Ignace I (J. R., Vol. 33:83). This hunt involved 300 people including women. Although hunting was a man's occupation, women were taken along to help cut up the meat and transport it back to the village (J. R., Vol. 33:89).

Unlike the hunting of other animals, deer hunting had a definite seasonal pattern. The best time for these mass hunts was the late fall (Champlain, Vol. 3:60-61, 81-85; Sagard:82; J. R., Vol. 8:149; Vol. 13: 109, 113; Vol. 39:207), towards the middle or end of October. The other period for hunting was the late winter. Most hunters returned during lent, just before Easter (Sagard:82; J. R., Vol. 15:183; Vol. 17:143). February was considered to be a bit early for hunting (J. R., Vol. 13:263), so most of this activity seems to have taken place in March.

Sagard and the Jesuits mention two types of deer. The most plentiful of these was the Sconoton (Skenonton) which was judged to be a little smaller than the ones the priests were familiar with from Europe (Sagard: 225). This was undoubtedly the Virginia or white-tailed deer (Odocoileus virginianus). The other variety was larger and sometimes called "stags" or "elks" (Sagard:225; J. R., Vol. 29:221). From the descriptions this would be the American elk or wapiti (Cervus canadensis).

Although the general habitat of the white-tailed deer and the wapiti are the same, the wapiti is much less specialized in the food it eats (Peterson, 1966:321). Both the deer and wapiti thrive best in areas of second growth timber, on the edge of the forest or in natural openings. Both tend to avoid heavy forested areas. The wapiti will eat a great

variety of grasses, herbs, shrubs and trees (Peterson, 1966:321). By contrast the white-tailed deer tends to avoid grasses, concentrating on small trees and shrubs such as the maple, cedar, yew, hemlock, sumac, various ashes, basswood, dogwood, willow and others (Taylor, 1956:199-200). When acorns are available, white-tailed deer prefer these to all other foods (Taylor, 1956:197). In the summer both species can be found scattered throughout their range. During this time single deer or a doe with her offspring travel more or less alone within a restricted territory. At this time deer have their widest distribution and lowest density. In the fall deer tend to congregate in mast producing areas such as heavy concentrations of oak and, or, chestnuts (Taylor, 1956:141). This usually happens in October and marks a period of high concentration of deer in a particular habitat. In late October and the beginning of November the rutting season starts lasting until the end of November (Peterson, 1966:324). Although the animals are still in the mast producing area, feeding becomes of secondary importance and mobility is high (Taylor, 1956:142). In the winter deer seek sheltered areas and if the snow gets deep, they will "yard" (Taylor, 1956:143). At this time cedar swamps are a favourite habitat and as a result of "yarding", it is in late winter that deer achieve high local densities and limited mobility. Mobility may even be more impaired in early spring when deep snows become crusted with rising daytime temperatures. During this period food is also at its lowest (Peterson, 1956:325). There is some evidence that deer will migrate when weather conditions become uncomfortable or food becomes scarce (Taylor, 1956:158).

The habits of deer described above account to a large extent for the seasonality of Huron hunting and the areas described as having large

deer populations. The late winter and late fall produced large local concentrations of deer, and Huron communal hunting expeditions coincided perfectly with these periods. In the summer when deer were scattered the Huron men were away trading. During this time occasional animals might be snared, trapped or shot with the bow and arrow.

As observed earlier, deer were considered to be more abundant outside of Huronia, which is reflected by the observation that large hunting expeditions had to be carried on outside of Huronia. In view of the fact that deer prefer areas of forest regeneration, forest edges and openings one would think that Huronia proper was a perfect habitat for them. The answer seems to lie in a variety of factors. Huronia was heavily settled and large areas were burned every year. Given a choice deer tend to avoid human beings and live in terror of fire and smoke (Taylor, 1956:164). While large areas within Huronia provided an excellent habitat, the previously abandoned lands to the south and southeast provided similar habitats without yearly fires or settlement. Mast producing areas were also more prevalent southof Huronia, particularly the open oak woodlands of the Oakridges moraine and the oak-chestnut areas along the north shore of Lake Erie. The prevalence of this type of habitat would explain the two fall mass hunts observed by Champlain in the Rice Lake area, Ragueneau's observations on the large hunt a two days journey south of St. Ignace I and Sagard's comment that deer were more plentiful in the Neutral area.

There are only three references that give any indication of the numbers of deer taken. The communal hunt described by Champlain involving 500 men produced 120 deer in 38 days (Champlain, Vol. 3:85). A winter hunt carried out by the villagers of Contarea, had a yield of 20 deer and

four bear (J. R., Vol. 10;181). Judging from the size of some feasts prompted by hunting successes, 30 deer were an above average take (J. R., Vol. 10:179).

The low Huron meat intake in as far as bears were concerned, has already been discussed. Deer meat was only readily available in the late winter and fall in what appear to be not very large amounts. A take of 20 deer and four bears for a village the size of Contarea is not large. Neither is a take of 120 deer for 500 men in 38 days. Huron hunting methods, the seasonality of hunting and the seasonal availability of game seem to have been the factors responsible for the low meat intake in the Huron diet.

It is doubtful if the beaver was ever very plentiful in the occupied areas of Huronia. Certainly by the time the fur trade was well on the way beaver were absent in Huronia. In 1623 Sagard wrote that "---such a quantity of them (beaver) is brought every year (to the St. Lawrence area) that I cannot think that the end is in sight" (Sagard:232). In 1634 Le Jeune commented that:

> There is a danger that they will finally exterminate the species in this Region (the shield area), as has happened among the Hurons, who have not a single Beaver, going elsewhere to buy the skins they bring to the store-house of these Gentlemen (the traders). (J. R., Vol. 8:57).

The habitat of the beaver is well known. It always lives in waterways such as streams and lakes where poplar and other deciduous trees and shrubs are present. Because of it's restricted habitat and distinctive signs of it's presence, the beaver is easily hunted and over-exploited. Beaver hunting was of course carried on in the winter when the animals were in their huts and the fur was at it's best (Sagard:233). Since not

all beaver live in huts (some live in borrows along stream banks), it was probably difficult to exterminate them completely in Huronia and adjacent areas. Left alone for a few years bank beaver tend to replenish their population fairly rapidly. By the latter part of the 17th century, and perhaps earlier, beaver had repopulated Southern Ontario and were hunted by the League Iroquois. Some of the main beaver hunting areas were mapped by Lahontan including the Holland marsh, the swampy areas of Lake St. Clair along the Sydenham and Thames rivers, the swamps at the headwaters of the Grand river and Spencer creek, and areas on the south side of the Ottawa near the Rideau (Map No. 32). The high incidence of beaver on the early contact sites probably reflects a peak of beaver hunting in and near Huronia which dropped later during the contact period. It is therefore doubtful if beaver figured in the Huron diet to any extent during the 17th century.

The importance of smaller mammals in the diet was probably low. Most, such as foxes, squirrels, mink, marten, otter, etc. would have been difficult for the Hurons to catch. Snares were set, but according to Sagard "---not often, because the cords are neither good nor strong enough, and the animals break and cut them easily when they find themselves trapped" (Sagard:223). Sagard made this statement in connection with hares and rabbits (probably Lepus americanus, the snowshoe hare, and Sylvilagus floridanus, the cottontail rabbit). One would expect that if these were difficult to snare, other mammals common to Huronia, with the exception of the woodchuck, would be even more difficult to catch. Bones from small mammals are infrequent on Huron sites, emphasizing the point that Huron Hunting techniques were simply not sophisticated enough to exploit them as

a meat resource. Although the paucity of bones from larger mammals may partially be a reflection of butchering techniques, this would not explain the scarcity of bones from the smaller mammals.

c) Fishing

Fishing was an activity that was carried on virtually throughout the year. There are descriptions of winter fishing (Champlain, Vol. 3: 166-168; J. R., Vol. 35:175), spring fishing (J. R., Vol. 14:57; Vol. 17:197; Vol. 19:171-175), summer fishing (J. R., Vol. 8:143; Vol. 16:249; Vol. 17: 51) and autumn fishing (Champlain, Vol. 3:56-57; Sagard:185-189; J. R., Vol. 8:143; Vol. 13:115; Vol. 15:113). The two peak seasons seem to have been the late winter to early spring and the fall from late September to the beginning of December. These peak periods are the same as those for the hunting season. This may mean that some villagers went fishing, while others went hunting or that there were regional differences in Huronia; those villages close to the fishing grounds placing a greater emphasis on fishing than hunting. The data is unfortunately insufficient to make a case for either one or the other. Preliminary excavations at some sites in the Penetang Peninsula seems to suggest that these placed a greater emphasis on fishing compared to sites in central Huronia.

The principal food fish of the Hurons were whitefish, trout, sturgeon, pike and at certain times of the year two fish called the Auhaitsiq and the Einchataon (Sagard:230-231). Similar to the hunting periods, the peak periods for fishing were closely adjusted to the movements of the fish.

The whitefish (Coregonus culpeaformis) spawns in Georgian Bay from the middle of November to mid December and in Lake Simcoe from the beginning to the end of November (MacKay, 1963:131). Spawning takes place in shallow

waters, over rocky shoals, gravels and sand. Throughout the winter it inhabits fairly shallow waters reappearing on the shoals as the ice breaks up (MacKay, 1963:127, 130). By the end of May they seek deep waters. The lake trout (Salvelinus namaycush) inhabits rocky shallows in the spring as the ice melts and seeks deeper waters by May (MacKay, 1963:121-122). Between mid October and late November it spawns on the rocky and sandy shoals of Georgian Bay. Spawning in Lake Simcoe takes place between mid October and early November (MacKay, 1963:122). Its movements and habitat are therefore similar to the whitefish. These were the principal fish caught during late autumn fishing among the islands in Georgian Bay (Sagard:230). By late November, as Sagard correctly observed, these fish departed from the shoal areas and the Hurons returned to their villages (Sagard:189).

Sturgeon, pike and maskinonge, the other major food fish spawned in the spring. The sturgeon (Acipenser fulvescens) ascends streams or shallow lake waters, spawning during the latter part of May and early June (MacKay, 1936:32). During the summer and fall it feeds in fairly shallow waters. From various descriptions of pike, both the northern pike (Esox lucius) and the maskinonge (Esox masquinongy) must have been caught (Champlain, Vol. 3:45-46; Sagard:230). Both of these fish spawn as soon as the ice melts in shallow, weedy waters, small streams and creeks, and along grassy margins of lakes (MacKay, 1936:194, 204), during the summer the pike stays in shallow weedy waters while the maskinonge descends to slightly deeper areas. In the fall the maskinonge returns to shallow waters.

What Sagard described as the Auhaitsiq was a fish "similar to the

herring but smaller." It was only available during certain times of the year, when it was caught in "immense numbers" by means of seine nets. Many people co-operated in the catch which was later divided among the participants. These fish were eaten fresh or smoked (Sagard:231). This inadequate description fits almost any small to medium sized "herring" like fish such as the smelt (Osmerus modax), alewife (Pomolobus pseudoharengus), mooneye (Hiodon tergisus), shad (Dorosoma cepedianum) and the cisco (Coregonus artedii). Of these the mooneye and shad do not commonly occur in Lakes Simcoe and Huron (Scott, 1954:12, 16). The smelt and alewife are probably too small to have been caught in seine nets, besides they seem to be 20th century introductions to Lake Huron (Scott, 1954:15, 17; Hubbs and Lagler, 1947:43, 57). The shallow water cisco seems to fit Sagard's description best. Superficially it resembles the herring more than any other Great Lakes fish. It moves in large schools and is found in shallow waters from late fall when it spawns, to the late spring. During the summer this fish seeks deep cold waters.

The last important food fish described by Sagard was the Einchataon. This fish has already been mentioned in connection with longhouse storage facilities (Chapter V, part 2). The Einchataon was a fish up to one and one half feet long and resembled the French barbeau (barbel). The fish was not cleaned but hung in bunches along the inside of the longhouse roof. It was caught in the late fall and was a major food source during the winter (Sagard:95, 230-231).

Of the common fish in the Great Lakes, only the sturgeon, catfish and burbot have barbels. The sturgeon was described by Sagard in an earlier passage and is a much larger fish than the Einchataon. The burbot

(Lota lota) is a fairly large fish which would have been available to the Hurons only through ice fishing. It also resembles the cod more than it does the barbeau. Of the catfishes the channel catfish (Ictalurus punctatus) is the largest; it spawns in the spring and is caught in commercial quantities (MacKay, 1963:178-183). The more common brown bullhead (Ictalurus nebulosus) is smaller than the channel catfish; it also spawns in the spring and travels in schools (MacKay, 1963:184). A fish that resembles the French barbeau (Barbus barbus) is the common sucker (Catostomus commersonnii) except that it does not have barbels (Sterba, 1963: 237-238; Figure 298). The sucker is however most abundant when spawning in the early spring and not in the late fall when the Hurons caught the Einchataon.

None of the fish listed above answer Sagard's description adequately. Of these the catfish comes perhaps the closest. The fact that the Hurons caught the Einchataon in the late fall after the trout and whitefish had gone corresponds to the habits of the catfish who seek out the spawning areas to feed on the eggs.

Most of the fishing was carried on with nets and seems to have been very efficient. Expeditions were sent among the islands of Georgian Bay, Lake Simcoe and the smaller lakes within Huronia. The "Narrows" between Lake Couchiching and Lake Simcoe were an important fishing station. When lake fishing, a seine or gill net was used, which was set into the water in the evening and taken up in the morning (Sagard:186). Some of the larger whitefish were boiled and the resulting oil skimmed off and

stored in gourds.[1]

Winter fishing was also done with a seine (Champlain, Vol. 3:167-168; J. R., Vol. 35:175). The net was spread under the ice by passing it from one hole to another in a large arc, returning at the end to the original hole. Net sinkers kept the net in a vertical position. When the net reached the bottom the two ends were drawn together and the net hauled onto the ice through a large main hole (Champlain, Vol. 3:167-168).

Some fishing was carried on with a line and hook (Champlain, Vol. 3:167; Sagard:189). But apparently not very successfully because lines could not be made strong enough to hold large fish (Sagard:189).

Champlain's description of the fishing station at the "Narrows" is interesting and has been confirmed archaeologically. Apparently the "Narrows" were closed with a series of stakes except for a few openings where nets were set (Champlain, Vol. 3:56-57; Kenyon, 1966:1-4). Champlain described the catches as being very plentiful and there is no reason to doubt him. Even today the "Narrows" are a well known fishing place particularly during spring spawning runs of walleye (Stizostedion vitreum) suckers, pike and sturgeon.

The seasonal abundance of the common fish in the lower Georgian Bay and Lake Simcoe area has been compiled in Table No. 26. From this table it is apparent that the outstanding fishing season is the late fall. The three most important fish are all present at the same time in the same general habitat. All three school in large numbers and are easily

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1. Sagard describes these storage vessels as "---the rind of a certain fruit that comes from a foreign country---" (Sagard:186). It reminded him of calabashes.

TABLE NO. 26

Seasonal Abundance of Common Fish in Shallow Water Areas

Fish Species	J	F	M	A	M	J	J	A	S	O	N	D
Whitefish (Coregonus culpeaformis)	o	o	o	o	o						×	×|o
Lake Trout (Salvelinus namaycush)			o	o	o					|×	×	
Sturgeon (Acipenser fulvescens)					|×	×|o	o	o	o	o		
Pike (Esox lucius)				|×	×	o	o	o	o	o		
Maskinonge (Esox masquinongy)				|×	×					o	o	
Cisco (Coregonus artedii)	o	o	o	o	o				|o	o	o|×	×|o
Catfish (Ictalurus sp.)				|×	×	×|o	o	o	o	o	o	
Sucker (Catostomus commersonii)				o|×	×|o							
Burbot (Lota lota)	×	×	×|o									
Walleye (Stizostedion vitreum)			|×	×	o	o						

o Denotes fish is abundant in shallow waters
× Denotes fish is spawning in shallow waters

caught in seine nets. By contrast the spring fishing season is of longer duration because spawning times overlap from March to early June. The spring fish also do not school in the same numbers as the fall fish nor do they spawn in open waters. The best chance the Hurons would have had to catch any of these fish would have been by closing off small weedy bays, creeks and rivers with nets and weirs. The "Narrows" between Lake Couchiching and Lake Simcoe were an ideal place for this type of spring fishing. Summer fishing could not have been too fruitful. Fishing by the line or spearing were probably the most promising methods. Winter fishing, like spring fishing must have been a cold, uncomfortable experience. Excellent catches of whitefish, cisco and burbot could have been made with the methods

described by Champlain.

Brief mention should be made of various amphibians and reptiles present in Huronia. Sagard noted the presence of turtles, snakes and various kinds of frogs. Of these, turtles were eaten and certain snakes hunted for their skin (Sagard:235-236). Whether snakes were eaten is not known. Several interesting observations have been made in a study of turtle remains, from archaeological sites (Bleakney, 1958:1-5). Of eight common species only three turn up in very small quantities on Indian sites; the Midland Painted Turtle (Chrysemys picta marginalis), the Snapping Turtle (Chelydra serpentina) and Blandings Turtle (Emys blandingi). All three are inhabitants of shallow, weedy waters. The author concludes that turtles were not actively pursued for food, but were probably collected incidentally as the opportunity presented itself, such as for example by children playing at the edge of ponds (Bleakney, 1958:4). If the Indians had hunted turtles diligently more species and bone fragments should have been present. These observations concur with personal observations at several Huron sites. Turtle bones, while not rare, do not occur in the quantities one would expect from their abundance in Huronia.

One frog that was evidently eaten was the green bullfrog (Rana catesbeiana). Sagard(236) gives an excellent description of it so that a definite identification can be made (Logier, 1937:12-13). Sagard adds that he did not try them because he was not convinced they were "clean".

In providing a food supply fishing had several distinct advantages over hunting. Pound for pound fish were more plentiful, easier to catch and more predictable in their habitat and habits. Moreover fish could be dried and stored. There is no evidence that the Hurons had the ability

to preserve and store meat for any length of time. As observed earlier, meat was invariably eaten immediately after the animal was killed. Fish was therefore a staple and game a seasonal supplement. The Huron subsistence economy should therefore be regarded as an agriculture-fishing complex and not as an agriculture-hunting complex as Kroeber (1939:150) had proposed. Future archaeological work should test the possibility of minor regional variations.

4. The Problem of Village Movement

Throughout this thesis reference has been made to the fact that the Hurons shifted the locale of their villages periodically. Sagard and the Jesuits were of the opinion that soil and firewood depletion in the neighbourhood of the village were responsible for these moves (Sagard:92-93; J. R., Vol. 10:275; Vol. 11:7; Vol. 15:153; Vol. 19:133). According to Champlain such a move was one to three leagues from the old site (Champlain, Vol. 3:124-125). As stated earlier these moves usually occurred after eight to twelve years.

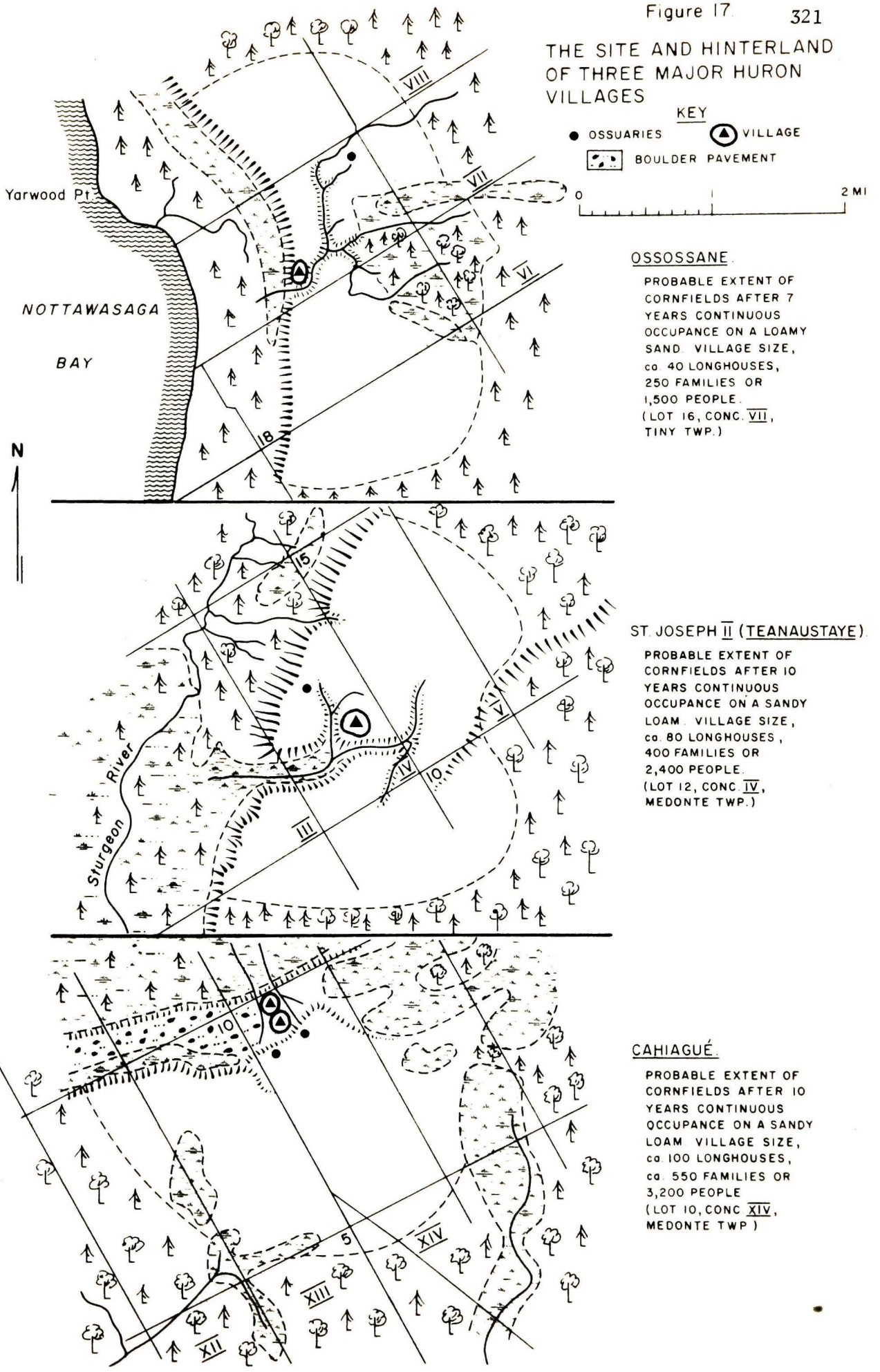
These observations are interesting because they seem to indicate that a village was moved when the original fields, those first cleared and closest to a village, were exhausted. As stated earlier, after six to twelve years depending on the soil type, the soils on the major fields would have been exhausted and the soils on the smaller yearly extensions in various stages of nutrient depletion. Except for the small yearly extensions to keep up with declining yields apparently no major clearing operations were carried out once a village was built and the first fields cleared. By the time the original fields gave out almost twice as much land stood under crops than in the first year of clearance; all of it

added piecemeal. By the end of the cycle there was therefore one main depleted field and again as much in small parcels adjacent to the main field or further removed; in various states of exhaustion. The question now becomes why was not more land cleared further from the village after the closest fields were depleted? Was distance to outlying fields a factor?

The distance of village to the fields is dependent on the size of the village, the soil type utilized and the amount of arable land near the village. Since these variables could all vary independently of each other, it would be best to look at a few examples. On a sandy loam a village of 1,000 people would need 360 acres of land to produce a bare minimum for subsistence (Figure No. 16). If only half of the village 'umland' were arable, which is not uncommon in Huronia, the farthest fields after ten years would not lie further than 0.60 miles from the village. For smaller villages the distance from village to the productive fields would of course be less. On a coarse sand a village of 1,000 would have an 'umland' of 0.80 miles after six years. A village such as St. Joseph II, with a population of 2,400 living on a sandy loam, would have an 'umland' of 0.90 miles after ten years, while Ossossane with a population of 1,500 on a loamy sand would have an 'umland' of 0.84 miles after seven years. Cahiagué, with an estimated population of 3,200 and an umland of sandy loams would have its fields in a radius of 1.1 miles after ten years. It would seem therefore that the village fields of even the largest villages were not located much more than a mile from the village even if only 50% of an 'umland' were arable. The interesting thing is that few if any Huron villages, during the contact period could ever cultivate their 'umland',

Figure 17.

THE SITE AND HINTERLAND OF THREE MAJOR HURON VILLAGES



OSSOSSANE.

PROBABLE EXTENT OF CORNFIELDS AFTER 7 YEARS CONTINUOUS OCCUPANCE ON A LOAMY SAND. VILLAGE SIZE, ca. 40 LONGHOUSES, 250 FAMILIES OR 1,500 PEOPLE. (LOT 16, CONC. VII, TINY TWP.)

ST. JOSEPH II (TEANAUSTAYE).

PROBABLE EXTENT OF CORNFIELDS AFTER 10 YEARS CONTINUOUS OCCUPANCE ON A SANDY LOAM. VILLAGE SIZE, ca. 80 LONGHOUSES, 400 FAMILIES OR 2,400 PEOPLE. (LOT 12, CONC. IV, MEDONTE TWP.)

CAHIAGUÉ.

PROBABLE EXTENT OF CORNFIELDS AFTER 10 YEARS CONTINUOUS OCCUPANCE ON A SANDY LOAM. VILLAGE SIZE, ca. 100 LONGHOUSES, ca. 550 FAMILIES OR 3,200 PEOPLE (LOT 10, CONC. XIV, MEDONTE TWP.)

because they were located on the abandoned Lake Algonquin shorelines. The land below the shorelines was invariably in swamp. Rather than cultivating an 'umland', they cultivated a 'hinterland'. Ossossane therefore had a semicircular 'hinterland' of 1.4 miles; St. Joseph II a 'hinterland' of 1.3 miles and Cahiagué a 'hinterland' of 1.4 miles (Figure No. 17). Since these were the largest villages in Huronia one can surmise that the Hurons did not wish to cultivate fields that were more than about one and a half miles from their village. Because most of the villages were much smaller than Ossossane, St. Joseph II and Cahiagué one wonders if simple distance of village to fields was a factor in village abandonment. If soil exhaustion did play a role, and all the ethnohistoric sources said it did, it was not a simple relationship between the location of productive fields and their distance from the village. A series of other factors must have come into play.

The problem takes on a different perspective when one realizes that only women worked in the fields. In the case of St. Joseph II, out of a population of 2,400 perhaps 500 were women capable of performing agricultural labour. At the end of ten years these 500 women had to tend 860 acres of plots scattered over 2.7 square miles even though the farthest fields were only 1.3 miles from the village. In view of the task of weeding and hoeing these fields, and above all the problem of keeping birds and animals away, this must have been a fearful job. Thus while the actual walking distance to the fields was never very long for any village large or small, the problem of looking after an increasing number of scattered plots by a limited number of women would affect each village equally whether it was large or small. In other words the distance of

village to productive fields was not as serious as the ratio of women to productive land scattered over a large area. This ratio would affect all villages, large or small. Therefore by the time the closest fields were exhausted, which were the largest contiguous fields, the other more scattered plots could not be supervised adequately and the village had to be relocated.

By the time a village had existed for six to twelve years and the nearest fields were exhausted, three other related problems may have played a part in village abandonment. One of these has already been mentioned and that was the problem of bird, animal and insect pests. Not only were these a problem in the fields but as mentioned earlier, also in the village. After six to ten years of continuous occupance the villages must have accumulated a substantial population of mice (Champlain, Vol. 3:123; Sagard:227). Except for their dogs, the Hurons had no way of ridding themselves of these rodents. In some Central American countries rodents and other pests have been cited as causes for land abandonment (Watters, 1966:10) and there is no reason to suppose that the situation in Huronia was any different. A second problem once the women got too scattered over the fields was one of protection. Iroquois raids were a constant summer threat and there were never enough Huron men that could be induced to stay in Huronia and protect the villages and women in the fields. As long as the women were within the shadow of the village they could flee there for protection. Once they moved away from the closest fields they could no longer be adequately protected. Several references state clearly that it was usually among villagers working in the fields, particularly the women, that the greatest casualties occurred (J. R., Vol. 10:95; Vol. 27:65;

Vol. 29:249). A third problem was one of getting adequate supplies of firewood. Both Sagard (92-93) and Brébeuf (J. R., Vol. 11:7) cited distance to firewood as a cause for village relocation. Gathering firewood was also the womans job (Champlain, Vol. 3:136, 156; Sagard:101). Apparently only good dry wood was used. The Hurons preferred:

> ---to go far in search of it rather than to take green wood or what makes smoke; for this reason they always keep up a clear fire with a small quantity of fuel; and if they do not find trees that are quite dry they fell those which have dry branches----. We were not so particular, and were satisfied with what was nearest to our hut, so not to spend our whole time in this occupation. (Sagard:94).

Champlain's (Vol. 3:156) statement that it took only two days to gather a year's supply of firewood seems absurd when other writers stated that distance to firewood was a reason for village abandonment. Perhaps Champlain was referring to a recently erected village. With gradual land clearing and yearly burning one could reason that by eight to twelve years good firewood had to be obtained from areas beyond the cleared fields. Since all the firewood was carried to the village on the backs of the women, this could have become quite a troublesome job once the forested areas were more than a mile from the village.

A number of other reasons for periodic village relocations could be cited. Fear of enemy attack appears to have been one (Champlain, Vol. 3: 124-125). Sagard noted that this was especially true for frontier villages (155). At least Toanché and St. Ignace I were moved for such a reason. In the case of Toanché it was because the inhabitants feared French revenge for Brulé's murder, and in the case of St. Ignace I it was fear of an Iroquois attack. Occasional fires may have led to village relocation,

especially if such a fire occurred several years after initial settlement. By that time new construction materials may have been difficult to obtain near the village.

The possibility that social tensions led to a splitting and movement of the larger villages was mentioned in the previous chapter. Social tension is also seen as a primary factor in limiting the size of Huron villages. In view of the efficiency of Huron agriculture and fishing, and providing a village had an arable 'hinterland' of at least one mile in depth, there is no reason why environmental factors should have played a role in keeping the great bulk of the villages below a level of 1,000 people. The discovery of manuring or a rational pattern of fallowing might have given villages a greater degree of permanency in an area, but these factors could not by themselves lead to larger villages. Larger villages would necessitate social mechanism that the Hurons did not possess. The very existence of a few large villages demonstrates that with existing agricultural practices villages larger than 1,000 people were possible.

In summary, it is postulated that village movement was a phenomenon that arose out of a combination of factors. Chief of these was soil depletion on the fields closest to the village and the resultant scattering of a limited number of women over a large area made up of a great number of small family sized corn patches. The scattering of the labour force made working the fields difficult, especially the control of pests. At the same time protection of the women from enemy raids became next to impossible as long as the bulk of the men were engaged in summer trading and fishing. The exhaustion of firewood within carrying distance of the

village is seen as another contributory cause in village abandonment.

Chapter VII

External Relations and Trade

Introduction

Few aspects pertaining to the Hurons have been discussed as frequently as their role as traders. Of these studies Biggar's (1901) volume and the first three chapters of Innis' (1930) study laid the foundations for later works such as Hunt's (1960) thesis on the interrelationship of war and trade in the Great Lakes area and Rich's (1967) updating of previous work. The most recent statement on the subject is Trigger's (1968) excellent paper, bringing some anthropological theory into the discussion as well as a more critical reading of the primary sources.

Due to the unreliability of some of the secondary sources, a detailed discussion of these will be generally avoided. In the case of Hunt's (1960) book for example, a major discussion of this work would result in an unnecessarily long and complicated chapter overshadowing the main purpose of this section. Instead the primary documents, maps and archaeological material will be re-examined to construct as plausible a picture as possible of the growth of the Huron trade network, the social and economic significance of trade and the interrelated facets of inter-tribal politics and war that were a part of trade. In keeping with the theme of the thesis, the emphasis will be placed on the organization and development of trade by the Hurons, rather than the organizational problems of the French fur traders.

The interpretation of Huron trade presented in this chapter differs somewhat from the accepted picture. For example this writer could find no

evidence for the widespread pre-contact Huron trade network envisaged by Hunt. Instead it seems that Huron trade developed slowly out of close relations with Algonquin groups into a vast carrying trade that involved not only the Algonquins but also the Petun, Neutrals and western Montagnais. The maximum development of this trade network was not reached until the late 1630's and early 1640's when the Algonquin tribes between Huronia and the St. Lawrence were decimated by disease and war. Prior to that time the Algonquins were a major factor in the eastern Canadian trade network with a substantial trade of their own; a trade they jealously guarded. In order to present a plausible picture for these and other reinterpretations it was necessary to examine the original sources on a year by year basis. Only then is the slow development, ultimate extent and nature of Huron trade apparent. That previous writers on the subject did not do this is not surprising in view of the tediousness of the task.

The development of Huron trade falls into five major sections: pre-contact trade, the early French contact period, the period to the English conquest (1629), the period up to the early 1640's and the period ending with the fall of Huronia. The periods beginning with the first French-Huron contact are examined on a yearly basis. Documentation is of course not available for every year but overall trends in the development and nature of Huron trade can be established. Each yearly outline is followed by a summary and discussion of the period. As pointed out earlier, only major differences between this and previous work are discussed.

1. The Political and Social Basis of Trade

Two closely related elements of Huron life were external politics and trade. As a rule the Hurons did not trade with tribes with whom they

were at war, or strangers with whom they had no formal peace treaties. The conclusion of some sort of peace treaty was therefore a prerequisite to trade. This point is extremely well illustrated by the early contacts between the Hurons and Champlain. Before any trade was made the Hurons insisted on a military alliance (Champlain, Vol. 2:69-71). When other French traders came to trade with the Hurons, Champlain had to explain that they were all from the same nation and that no separate alliances were necessary (Champlain, Vol. 2:188-189; 193-204). Throughout his lifetime Champlain remained in a special position with the Hurons because he alone of all the traders observed the reciprocal relationships of alliance in war and relations in trade. Similar relations were observed between the Hurons and Algonquins. Not only were these trading partners but also military allies (Champlain, Vol. 1:164; Vol. 2:68). The Montagnais were wedded to the military alliance through the Algonquins (Champlain, Vol. 1: 103; Vol. 2:122), which later led to a profitable Huron-Montagnais trade.

Another illustration of the close relationship between politics and trade was the constant attempt to suppress murder and therefore war between tribes. Murder was a matter that affected not only the relatives of the deceased, but the entire tribe (J. R., Vol. 10:225). In order to avoid serious ruptures between tribes heavy payments were made to assuage the feelings of the tribe that had been wronged. Among the Hurons more was paid when a Huron murdered a foreigner than one of his own kind:

> ---because they say that otherwise murders would be too frequent, trade would be prevented, and wars would too easily arise between different nations (J. R., Vol. 33:245).

The size of the payment seems to have been directly related to the value the Hurons placed on the trade contacts with that nation (J. R., Vol. 38:

283-285). In the case of the murder of a French donné[1] by some Hurons the ensuing payment was much higher than it would have been if a member of a friendly tribe had been murdered (J. R., Vol. 33:239-249). Earlier, in the case of the murder of Brulé, the Hurons had automatically assumed that their trade connections with the French had been put on a very insecure basis. Some were afraid to come and trade at Quebec (J. R., Vol. 8: 103), others were easily dissuaded from going to the St. Lawrence when some Allumettes told the Huron fur brigade that the French meant to avenge Brulé's death (J. R., Vol. 5:230; Vol. 8:103). Another example in which murder and wounding threatened trade and peaceful relations, was the incident between the Hurons and Algonquins at Cahiagué in 1615 (Champlain, Vol. 3:101-114). Champlain regarded the matter very seriously because in the opinion of both Hurons and Algonquins nonsettlement of the alleged wrongs would result in war and therefore a complete halt in French-Huron relations (Champlain, Vol. 3:103). The matter was finally settled through Champlain's diplomacy and heavy payments.

In order to ensure healthy relations between tribes, people were sometimes exchanged (J. R., Vol. 12:79). These could act as trade contacts, hostages and spies. It is interesting to note that when Champlain wanted to place French youths among the Hurons and Algonquins, these tribes expected some of their members to be placed with the French (Champlain,

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1. The donné (literally "a given man") was a layman who had donated his services free of charge to the Jesuit Order for a specified period of time. He had no priestly function but acted as a servant to a priest. The function of the donné, the nature of his vow and specific individuals are discussed in the Relations (J. R., Vol. 21:293-307; Vol. 33:253; Vol. 42: 265).

Vol. 2;138-142; 186-188; 201-202). The fact that Champlain wanted to exchange people clearly inspired trust and helped cement relations.

Once trading relations had been established with another group, not all Hurons could take advantage of these relations. Trade was in the hands of the person ("master of the route") who pioneered the route and established the first contacts (J. R., Vol. 10:223-225). The only people who could share in this trade automatically were the children of the "master" and members of his extended family:

> The children share the rights of their parents in this respect (trade), as do those who bear the same name (J. R., Vol. 10:225).

Non family members might be permitted to share a trade route providing proper payment was first made (J. R.:ibid). In the case of French-Huron trade, the trading rights belonged to certain families among the Arendaronons because it was they who had first contacted Champlain. However, in view of the importance of the trade, the Arendaronons decided to share it with the other Huron tribes (J. R., Vol. 20:19).

Encroachment on another family's trade route was only tolerated if the offending member did not get caught in the act (J. R., Vol. 10:225). If he was caught in the act of trading he was treated as a thief and might barely get away with his life. If he managed to get back to the village undetected, complaints would result but no prosecution.

In order that Huronia was not left unprotected, the chiefs and their councils had to decide who and how many men could go on the yearly trading expeditions (Champlain, Vol. 3:166; Sagard:99). In keeping with other council decisions, the decision as to who could go trading was not binding, but contravention of the decision could result in strong village disapproval,

and as a rule these decisions were accepted (Sagard:99). In later years as French-Huron trade grew stronger it became more and more difficult to keep some men at home to protect the villages (J. R., Vol. 10:51; Vol. 14: 57). In 1637 for example, some of the "---old men and those most influential in the country---" were accused of starting rumours of an impending Iroquois attack in order to keep enough men in the villages (J. R., Vol. 14:39).

The establishment of political alliances and trade between tribes did not extend to unhindered passage across the territory of an allied tribe. In some cases where tribes permitted passage, payment had to be made. Forcing a passage could of course lead to a war. In the case of the troublesome Allumettes for example, the Jesuits observed that the Hurons would not force their way across Allumette territory in spite of Huron numerical superiority (J. R., Vol. 9:275), and in spite of the exorbitant tolls the Allumettes were charging (J. R., Vol. 10:77). In the case of the Petun and Neutrals, transit across Huron territory was strictly forbidden by the Hurons and no Petuns or Neutrals ever attempted to force their way (J. R., Vol. 21:177, 203-205). Huron observation of these rules, even in the case of weaker allies was probably prompted by a feeling of self preservation. If they broke the rules others could do the same leading to a collapse of the intricate system of alliances and a termination of trade.

A discussion of these trading regulations leads to some interesting conclusions. Essentially the stability of the Huron trading system depended on peaceful relations not only with trading partners but also with any intervening tribes. Prior to trade, peace treaties had to be negotiated.

Judging from Champlain's descriptions such peace negotiations were elaborate affairs in which gifts were exchanged and sometimes people. In all probability such treaties were renewed every year. The fragile nature of inter-tribal relations is illustrated by the fact that a single murder could result in almost instant hostility. The customary means of preventing open war was to pay off the aggrieved party. While inter-tribal trade seems to have been in the hands of individual families, the whole tribe would be held responsible for their actions. Treaties seem to have been made in the name of the tribe while the family who pioneered the new route had the rights to the trade. Such a system of regulations was exceedingly sophisticated. The fact that the tribe stood behind the individual trading families helped to assure them a measure of safety away from home. While an individual trader might be charged exorbitant transit fees or occasionally mistreated, his life was usually safe. The spectre of intertribal war as the result of one murder was enough to assure the lives of the traders. Family monopoly of the trade contacts they had pioneered would encourage a proliferation of trade contacts with every neighbouring tribe. Such a regulation would encourage each Huron family to seek its own trade contacts until all neighbouring groups had been contacted. If a family found that the trade they had opened up was too large to handle others could buy their way into the route. It would be difficult to think of a more efficient trading system for a group that had a barter economy and acted essentially as middlemen between the French, a host of small Algonquin tribes and a large number of Neutral and Petun villages. Private trading rights assured contact with a maximum number of foreign tribes; it assured a lack of competition and therefore high prices to the Hurons who

distributed high value French goods and manufactured products of their own. The whole system was backed by the entire tribe who stood collectively behind each trader.

Another interesting facet of Huron trade was the means by which the proceeds of trade were redistributed in Huronia. While a barter economy existed between the Hurons and non Huron tribes, there is no evidence of any kind of barter system between the Hurons. There is no evidence that goods and services were redistributed in Huronia through commercial transactions or any kind of marketing system. Indeed there is no evidence of the existence of market places or a hierarchy of villages based on marketing principles. Goods and services were exchanged on an entirely different basis. The Huron system comes close to Dalton's definition of a reciprocity economy, "---that is, material gift and counter gift-giving induced by social obligation derived, typically, from kinship---" (Le Clair and Schneider, 1968:153).

Unquestionably the prime means by which goods were redistributed was through gift giving. The immediate and extended family would automatically share in the goods an individual family member accumulated (J. R., Vol. 10:223-225). This observation seems to have been validated archaeologically, since marked differences in the quantity of trade goods occur between longhouses within the same village (Tyyska, 1968:8). Some families had more trade goods than others. Beyond the family, goods were diffused through a variety of institutionalized gift giving ceremonies. Gifts were exchanged when people visited each other (Sagard:140); gifts were given in marriage to the prospective bride and her parents (Champlain, Vol. 3:138; Sagard:122-123; J. R., Vol. 14:19); rich presents were given in name-giving

ceremonies when a youth succeeded to the name of a deceased member of the community (Sagard:209-210; J. R., Vol. 23:167-169).

Curing ceremonies and burial ceremonies were other occasions on which large presents were distributed. In order to be cured of a sickness, either real or imaginary, the afflicted person could demand anything he desired in order to cure his illness (J. R., Vol. 14:27). At times these "illnesses" took the form of regular "festivals", during which an apparent effort was made to drive all "evil spirits" out of the body and soul of the afflicted and out of the village. During these "festivals" the "afflicted" could ask for anything they wanted and most often their desires were fulfilled (Champlain, Vol. 3:149, 164-165; Sagard:118-119, 203; J. R., Vol. 10:175-177; Vol. 23:53). These curing ceremonies seem to have been an attempt to cure psychosomatic illnesses through the identification and subsequent possession of desired objects. On the occasion of the death of a member of a community, his property was given to his sister's sons and daughters (Champlain, Vol. 3:140; Sagard:130). Others would heap gifts on the bereaved and the body of the deceased, a ceremony in which:

> ---they spare nothing, not even the most avaricious. We (the Jesuits) have seen several stripped, or almost so, of all their goods, because several of their friends were dead, to whose souls they made presents (J. R., Vol. 8:121).

The great "feast-of-the-dead" resulted in a universal exchange of goods, some of which were buried in the ossuary (Champlain, Vol. 3:161-163; Sagard:172-173; J. R., Vol. 10:265-271; Vol. 23:31).

Since the Hurons were inveterate gamblers, games of chance were a further means of distributing goods (Champlain, Vol. 3:166; Sagard:96-98). As a matter of fact Le Jeune commented that some Hurons undertook the

trading voyage to Quebec only to gamble and that some lost their merchandise through gambling before they got to Quebec (J. R., Vol. 5:241). In some of the games whole villages would play against each other with heavy betting on both sides (Champlain, Vol. 3:166; J. R., Vol. 10:187). Stakes were high and when an individual ran out of goods he would on occasions gamble his own scalp and fingers (J. R., Vol. 16:201). Some large losses were observed by the Jesuits. In one case a man lost a beaver robe and four hundred glass beads, and then hanged himself (J. R., Vol. 10:81). On another occasion one village lost thirty collars of 1,000 beads each, in addition to all moveable property including tobacco pouches, robes, shoes and leggings (J. R., Vol. 17:205). Losses in the value of two to three hundred écus[1] were not uncommon (J. R., Vol. 15:155). Along with frequent feasts, festivals and gift giving, gambling was the prime means of redistributing wealth.

In order to have some accumulation of goods at hand in case of public emergencies, each village (and probably each large family), set up a public "treasury". Each person contributed what he could and the lot was under the supervision of a chief (Sagard:266-267; J. R., Vol. 28:87). Such accumulations of capital were necessary to make treaties, exchange prisoners or pay off blood feuds arising out of murder (Sagard:163-164; J. R., Vol. 10:217-221; Vol. 33:229-249). In a case cited by Champlain

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1. The écus was worth about three francs, while the franc and the livre were about equal in value (J. R., Vol. 1:313; Vol. 4:269). One pound of beaver was worth about ten livres (J. R., Vol. 28:235). Gambling losses could therefore have been equivalent to seventy five pounds of beaver which could conceivably be the profit from an entire summers trading.

some Algonquins had to pay fifty wampum belts and "---a great number of kettles and hatchets and two female prisoners (Iroquois)---" (Champlain, Vol. 3:102-103) for a Huron they had killed. Other examples are cited by Brébeuf (J. R., Vol. 10:215-223), demonstrating clearly that no one person could pay the quantity of goods usually demanded for a murder. Capital goods had to be accumulated by a family or village to prevent inter village and inter tribal blood feuds.

One of the prime motives for the accumulation of wealth was to give it away thus enhancing the givers social status in the eyes of his villagers. One of the qualities a leader had to have was liberality (J. R., Vol. 10:231). Gift giving and a generous disposition were therefore a means of acquiring prestige and ultimately perhaps political power. War chiefs in particular had to be wealthy because they were obliged to give feasts and presents in order to drum up enthusiasm for a campaign (Sagard: 151-152; J. R., Vol. 10:181). Although political eminence was primarily achieved through real ability measured in terms of success at trading, good advice, valour or liberality, it could also be achieved through bribery (J. R., Vol. 10:235). It would therefore stand to reason that a person with proven ability as a trader had a good chance of acquiring a chieftainship, and that the acquisition and judicious disposal of trade goods was one of the roads to political power.

The means by which goods were redistributed among the Hurons also provides a partial explanation of why goods were acquired. A Huron was expected to give gifts, participate in ceremonies and take part in gambling. He therefore had to acquire goods to fulfil his social obligations; the more successfully he fulfilled these obligations the more recognized he

became in the community. There were of course other reasons for participating in trade. To some trading was an adventure or a challenge akin to a raid in enemy territory (Trigger, 1968:113; J. R., Vol. 5:241). In addition to important social motives for the acquisition of socially valued products, French trade goods were valued because they were durable utilitarian goods. French trade goods in order of popularity seem to have been hatchets, knives, kettles and iron arrow points. Beads were very popular but seem to have been largely given as presents to the Hurons. Other items were blankets, capes, shirts, fish hooks, pocket knives, rings, awls and sword blades (J. R., Vol 5:263-265; Vol. 10:53; Vol. 12:119-121, 249, 257; Vol. 15:159). All of these items with the exception of the textiles have been amply confirmed by archaeology.

French trade goods were of course valued by those tribes that did not have any close connections with the French. They were therefore useful in expanding trade with the Petun and Neutrals for products the Hurons desired or wished to trade somewhere else.

All of these points will be examined later in this chapter. In the meantime it is important to reiterate that the motives behind Huron trade were not only the acquisition of utilitarian objects. If utilitarian value was the only concern, the Huron market could have been quickly saturated. The acquisition of trade goods to further social ambitions and the expansion of trade to neighbouring tribes were equally important. This will be re-examined later. If the Hurons had had a money economy or a social structure based on accumulated wealth or land, the situation might have been different. However land could not be bought or sold; prestige arose not out of accumulated wealth but out of socially accepted means of

redistributing wealth. Since goods were in constant exchange (some went out of exchange through ossuary burial, others simply wore out), those people that had lost their goods or given them away had to acquire new ones. The surest way of acquiring large quantities of goods was through trade. Thus trade was perpetuated and the proceeds of trade were useful not only as utilitarian objects but also in meeting social obligations. Huron social institutions helped to keep the whole system going.

2. Pre-Contact Trade

The extent of Huron trade with neighbouring tribes prior to their contact with the French in 1609 is largely a matter of conjecture. Pre-European Huron sites yield very few evidences of trade with other tribes (Wintemberg, 1926:37). The only articles that turn up with any regularity, that can be considered foreign to Huronia are shell objects and chert. To these can be added the occasional piece of catlinite and native copper.

Catlinite (pipestone), a fine grained reddish stone, is occasionally found in the form of small beads, ornaments or pipe bowls. It was mined and utilized primarily by the Siouan Indians of Southwestern Minnesota and South Dakota. In all probability the few pieces that found their way to Huronia came to them via the Puans who lived on the western shores of Lake Michigan (Map No. 33). Because only small amounts of catlinite occur on Huron sites it is not likely that the Hurons had direct contact with the Puans. In all probability intervening Algonquin tribes such as the Ottawa or Nipissing, acted as middlemen between the two groups. Ottawa relations with western tribes can be ascertained from Champlain who stated that they carried shields made of buffalo hide (Champlain, Vol. 3:45), and Sagard, who noted that the Ottawa had extensive relations with tribes

to the north and west (Sagard:64-66). There is no evidence that the Hurons had any direct contact with any of the western tribes until perhaps after the fur trade was well developed. But even this is doubtful.

Small amounts of native copper could have filtered down to the Hurons from the upper Lake Superior and western Lake Michigan area where the mineral was once mined. The active exploitation of copper had ceased by about 1500 B. C. with the disappearance of the Old Copper Culture (Quimby, 1960:62), but small bits and pieces could still have been mined and traded to Ottawa and Nipissing traders who had contacts in these areas. Some Algonquins told Champlain in 1603 that the Hurons knew of the existence of a northern copper mine (Champlain, Vol. 1:164), yet the only proof Champlain ever got from this copper producing area was from an Algonquin seven years later, who had obtained it there himself (Champlain, Vol. 2: 123). Again, judging from the small amount of native copper that has turned up on Huron sites it is doubtful if they exploited these sources of copper directly or dealt with the Indians that lived in the copper producing areas.

Flint, or rather chert, had to be imported because there are no significant chert formations in Huronia. No study on Huron chert artifacts has ever been made, but none of the material need have come from a greater distance than the Niagara Escarpment (Ingham and Dunikowska-Konuiszy, 1965: Figure 13). Chert was probably one of the items obtained from the Neutrals.

Shell artifacts, primarily in the form of wampum beads are the only concrete evidence of possible long distance trade in any quantities. Most of these beads were manufactured from the columella of shells such as Marginella apicina and Fulgor perversa (Wintemberg, 1926:37, 44). These

shells are native to the shores of the American South Atlantic and Gulf States. The probable direct Huron source for these shells, besides the usual neighbouring trading partners, were the Andastes (Susquehannock). As early as 1615 Champlain mentioned the loose Huron military alliance with the Andastes (Champlain, Vol. 3:53-55). He even sent Brulé to them in order to get help in the forthcoming raid on the Onondaga (Champlain, Vol. 3:213-226). In later years several attempts were made to link up with the Andastes showing that Huron-Andaste relations had existed for a long time (J. R., Vol. 30:253; Vol. 33:73, 133). On his trip, Brulé noted that the Andastes had access to the sea (Champlain, Vol. 3:218). Since the use of wampum beads was widespread among the Indians of North-eastern North America much of the Huron beads could have come from various sources, and probably did. The route to the Andastes was dangerous and long. It skirted the edge of the territory occupied by the Seneca (Champlain, Vol. 3:55; J. R., Vol. 33:131-133) and at least on one occasion the trip took some fifty days to complete (J. R., Vol. 33:129) (Map No. 33). It is doubtful if any quantity of goods came over this route during the Huron-Iroquois wars. The Neutrals, who had similar trade connections (J. R., Vol. 21:201), and some of the eastern Algonquin tribes were probably the best sources for sea shells.

The most likely indicators of precontact Huron trade are the observations of Champlain and Sagard in 1615-1616 and 1623. Essentially these observations convey the impression that Huron trade with the Petun and Neutrals was less developed than trade with the Algonquin groups. The Neutrals were mentioned primarily as growers and exporters of tobacco (Champlain, Vol. 3:99; Sagard:158). Although the Hurons were officially

at peace with the Neutrals in 1615 the chances are that this had not always been the case. In 1623 for example, members of the Huron Attignaouantan were trying to organize a war against the Neutrals, which might have succeeded were it not for the intervention of the Récollets (Sagard: 151, 157). If the Hurons were that careless about the possibilities of a Neutral-Huron war in 1623, their trade contacts could not have been highly valued at that time and might have been only weakly developed prior to contact. Except for tobacco, of which the Hurons did not grow much, it would be difficult to think of any products except luxuries that the two groups could have exchanged. Their subsistence economies were of course very similar. More extensive trade seems to have developed as a result of the fur trade.

The situation between the Hurons and the Petun seems to have been similar. Champlain noted that the two groups were at peace, but the Relations point out that this peace had a recent origin (J. R., Vol. 20:43). Like the Neutrals the Petun were known for their tobacco "---in which they have a great trade with other tribes" (Champlain, Vol. 6:248). Other than tobacco, the subsistence economy of the Petun was identical to that of the Hurons (Champlain, Vol. 3:95-96).

Huron trade of Algonquin products to the Petun and Neutrals seems to have been unlikely. The Ottawa (Cheveux Releves or Ondatahouats), an Algonquin group allied to the Neutrals in a war against the Fire Nation (Assistaeronons) (Champlain, Vol. 3:97, 99) and living as close neighbours to the western villages of the Petun, probably supplied all the Algonquin products the Petun and Neutrals needed. Both Champlain (Vol. 6:248-249) and Sagard (67) considered the Ottawa great traders dealing in dried

berries, reed mats and other products for fur, wampum, nets and pigment. Their trade network appears to have extended to the north to the Saulteurs and Ojibwa tribes along the east and northeast shore of Lake Superior, and north west to the Puans (Sagard:64; J. R., Vol. 14:155). Both Champlain and Sagard estimated that the Ottawa travelled 400 to 500 leagues to go to trade. Until late in the contact period Ottawa connections to the east seem to have been minimal. In 1615 Champlain tried to persuade them to trade at Quebec (Champlain, Vol. 3:96-97), but in 1623 the Ottawa were still getting their French trade goods from the Hurons near the mouth of the French River (Sagard:66). Ottawa-Neutral trade appears to have been highly developed; probably more developed than Huron-Neutral trade. Ottawa-Neutral political ties were of course much closer than Neutral-Huron ties. The former had a political-military alliance against the Assistaeronons west of Lake St. Clair, while the latter merely tolerated each other in their respective territories (Champlain, Vol. 3:99-100). It is interesting to note that it was the Ottawa who tried to dissuade Champlain from visiting and establishing trade contacts with the Neutrals (Champlain, Vol. 3:100). As will be shown later, as the fur trade developed it was the Hurons that took over the role of primary trader with the Neutrals and Petun.

Pre-contact Huron trade seems to have been strongest with some of the Algonquin groups, notably the Nipissings. Ridley's (1954) excavations at the Frank Bay Site on the south shore of Lake Nipissing show beyond the shadow of a doubt that Huron and proto Huron contacts with the tribes of this area were of a considerable antiquity. Since some of the Nipissings wintered regularly among the Hurons it is not entirely clear whether the Huron material goods found at the Frank Bay Site were brought there by

Nipissings returning from Huronia or by Hurons trading among the Nipissings. In all probability both situations occurred. The point is that Huron-Nipissing relations predated European contact by a considerable margin.

Champlain (Vol. 3:39-40) and Sagard (64) found the Nipissings friendly, kind and polite. Apparently they were one of the few Algonquin tribes that had no objections to the French passing through their territory to the Hurons. Other Algonquin tribes along the Ottawa-Lake Nipissing route, particularly the Allumettes tried to hinder French-Nipissing and French-Huron contact from the beginning of the contact period. In 1609 they tried to stop the Hurons from coming to the St. Lawrence (Champlain, Vol. 2:71) and in 1613 they prevented Champlain from going to the Nipissings (Champlain, Vol. 2:285). This can be interpreted as meaning that until the contact period Nipissing, and therefore Huron connections with the eastern Algonquin tribes, the Montagnais and the St. Lawrence valley, were through a series of middlemen, notably the Allumettes. Travel across the territory of the Algonquin Ottawa River tribes was discouraged. According to Champlain (Vol. 3:39-40) and Sagard (86-87) the Nipissings did their trading with tribes a months journey to the north. These tribes were in turn trading with the English on Hudson Bay. The Nipissings even offered to take Champlain on one of their northern trips (Champlain, Vol. 3:101, 104). The impression one gets is that the lower Ottawa River Algonquins acted as middlemen between the Nipissings and the French prior to 1609. Trade goods were passed on to the Nipissings who in turn traded them to the north and north west for furs (Champlain, Vol. 3:39-40; Vol. 4:287) and to the south to the Hurons.

Ridley's archaeological proof of a longstanding tie between the

Hurons and Nipissings is mirrored by Champlain's early observations. The explorer noted that the Nipissings wintered among the Hurons in 1615-1616 (Champlain, Vol. 3:101, 104). Sagard noted the same thing in 1623 (Sagard: 86). References from the Relations to be examined later, show that this was a yearly affair. In their contact with the Hurons the Nipissings exchanged skins (Champlain, Vol. 4:309-310) and probably fish (Champlain, Vol. 4:287; J. R., Vol. 21:239) for corn, corn meal, wampum and fishing nets (Champlain, Vol. 3:131). The contention that the relationship between the Nipissings and Hurons had been a longstanding one is further illustrated by the fact that the Nipissings spoke Huron as well as Algonquin (Sagard:86). The Huron's ignorance of Algonquin was described by Sagard as either indifference or lack of need. If Huron pre-contact trade had ranged beyond the Nipissings a knowledge of Algonquin would have been essential. Such a lack of knowledge seems to indicate that Huron trade contacts were primarily confined to neighbouring Algonquin tribes, in particular the Nipissings and Ottawa who regularly wintered in or near Huronia.

Huron pottery material has been found as far north as the mouth of the Michipicoten River (Ridley, 1961; Wright, 1963; Wright, 1965). Judging from the quantities found it is likely that at least some Hurons travelled that far north. It is not clear whether these trips were as a result of the developing fur trade, or whether some Hurons were regularly travelling that far in pre-contact times. The few pieces of Iroquoian pottery found in the Lake Abitibi area appear to be late Algonquin copies of Huron pottery (Lee, 1964:40-41). In view of the development of the fur trade and the lack of motive for pre-contact long distance travel it seems more likely that direct Huron contact to the Lake Superior area was a result of

the fur trade.

Huron knowledge of routes to the Iroquois country appear to have been good through the excursions of their war parties (Champlain, Vol. 2: 110). Even through the Hurons seem to have been aware of the routes to the south and southeast to the St. Lawrence area they did not use them as trade routes because of potential Iroquois attacks (Champlain, Vol. 3: 80-81). As a matter of fact in 1639 the Hurons told the Jesuits that they would have come to the French before 1609 if they had known a safe route (J. R., Vol. 16:229). The "safe route", as it finally turned out was the Ottawa River route which prior to contact times seems to have been little used by the Hurons.

In summarising this section it must be pointed out that the best evidence for Hurons pre-contact trade is with their immediate neighbours. Of these the Petun and Neutrals seem to be of secondary importance. Part of the explanation seems to be 16th century hostilities, similar subsistence economies and probable trade on the part of the Petun and Neutrals with the Ottawa. Routes to the southeast and east via the Kawartha Lakes and the upper St. Lawrence were known but not used for trading because of Iroquois hostilities. Similarly the route to the Andastes was known but little used. Huron contacts to the northeast along the Ottawa seem to have been slight except through a string of Algonquin middlemen. There is no evidence that trade was carried on into western Lake Huron and Lake Michigan. Ottawa and Neutral hostilities with the Assistaeronons probably prevented Huron trade in the Michigan Peninsula and Ottawa-Nipissing trade with the Puans in the Green Bay area of Wisconsin prevented the Hurons from making contacts there. Due to the distances involved and the reality of

close contact with the Nipissings, Huron trade in the Michigan and Wisconsin areas would seem rather pointless. Only to the north can a good case for large scale Huron trade be made. This trade involved a close relationship with the Nipissings and to some extent the Ottawa. These Algonquin tribes seemed to have had extensive connections with Siouan and Ojibwa groups to the north and northwest. To what extent the Hurons travelled the trading routes north of Lake Nipissing, and from the French River to the Sault and beyond into Lake Superior and Lake Michigan is unknown. On the basis of Huron pottery at several sites up to the mouth of the Michipicoten River some Hurons may have travelled that far. This might account for the stories Champlain heard of Huron knowledge of a Northern coppermine.

The number of Hurons involved in summer trade outside of Huronia is likely to have been small in terms of the later fur trade. Trade was in the hands of small groups of individuals and families with monopolistic rights to certain routes. It is difficult to envision a large percentage of the male population of Huronia taking part in such a trade. Moreover the Nipissings and some other Algonquin groups such as the Iroquets were wintering regularly among the Hurons. It is at this time that trade could most conveniently be carried on. The long distance summer trade to the north was probably motivated by trade for exotic rather than utilitarian products, and by the desire for adventure and prestige.

Prior to the fur trade there does not seem to have been any pressing need for the Hurons to undertake voyages of the kind they participated in during the 1630's and 1640's. All evidence seems to point to gradual expansion of the Huron trade network from the neighbouring Iroquoian and

Algonquin tribes to most of the Algonquin and some of the Montagnais tribes of Ontario and Quebec. The nature of Huron trade and its gradual expansion can best be illustrated by studying it over time on a year by year basis. Of crucial importance is an understanding of the beginnings of French contact.

3. The Early Contact Period

There is no evidence to suggest that the Hurons got any quantity of French trade goods until late in the sixteenth century. Hunt's elaborate thesis of a 16th century Indian trade network carrying European goods from the Atlantic coast "---swiftly throughout the region---" just does not seem to be true (Hunt, 1960:13-18). The earliest Huron and Petun sites containing some trade material date towards the end of the 16th century (Wright, 1966:74-75, 101). The first trade goods may have trickled in earlier, but only in very small quantities. This is not to deny that some trading had been going on along the Atlantic coast of Canada since before Cartier's visit to the St. Lawrence in 1535. However the quantity of goods involved does not seem to have been large enough to have had much effect on the tribes of the Great Lakes area. In all probability most trade goods prior to the latter part of the 16th century were absorbed by the various Montagnais and eastern Algonquin tribes, a small residue finding its way to Huronia. It is interesting to note that Lescarbot (Vol. 3:25-26) definitely puts the beginning of the fur trade to de Monts efforts in the Tadoussac area. This could not have been earlier than 1599. Prior to that time "---Tadoussac had hardly been heard of; at most the savages, and then only those of the neighbourhood, came perfunctorily to find the cod-fishers in the neighbourhood of Bacallaos (Newfoundland), and there

bartered almost for nothing such things as they had" (Lescarbot, ibid).

The Hurons definitely got their first trade goods from Algonquin traders prior to 1603 (Champlain, Vol. 1:164). Champlain's statement leaves no doubt that prior to 1609 the Algonquins were acting as middlemen between the Hurons and the French. In that year the first Hurons visited the French near the mouth of the Batiscan River a few miles upstream from Quebec (Champlain, Vol. 2:68). Several statements make it clear that this was the first direct contact between the Hurons and the French. Champlain stated that he had never encountered these people before (Champlain, Vol. 2:109), and when he fired his gun many of them expressed surprise "---especially those who had never heard or seen the like" (Champlain, Vol. 2: 70). More importantly the Hurons did not bring much merchandise nor were they particularly interested in trade (Champlain, Vol. 2:71). Their purpose was to conclude an alliance with the French and help their Algonquin allies on a raid against the Mohawk (Champlain, Vol. 2:68-70). The first meeting between Champlain and the Hurons characteristically lasted several days and included speeches and gift giving. It was exactly the kind of meeting one would expect the Hurons to have conducted in concluding a treaty with another tribe.

Several other pieces of evidence lend support to the contention that the first direct contact between the Hurons and the French was in 1609. Under Huron law rights of trade belonged to the group that had pioneered the new connection. This group was the Arendaronon, who even in 1640 still considered themselves special allies of the French (J. R., Vol. 20:19). It was also among the Arendaronon that Champlain stayed the winter of 1615-1616. An interesting point here is that Iroquet, the

the Algonquin chief who introduced the Hurons to Champlain in 1609, was also wintering among the Arendaronon in 1615. It seems therefore that Iroquet brought a group of Arendaronons to Champlain in 1609 and that the Arendaronons invited Champlain to visit Huronia (Champlain, Vol. 2: 105), a task which he could not accomplish until 1615. Because the Arendaronon were the first to conclude a treaty and trade contacts with the French, they considered themselves special allies of the French and the rest of the Huron confederacy recognized the primacy of Arendaronon rights to the Huron-French trade, a right the Arendaronon later relinquished.

Inasmuch as trade was concerned, the first contact between Hurons and French was disappointing (Champlain, Vol. 2:71). Nor was the year 1610 much better. The highlight of that year, as far as the Indians were concerned was another raid on the Iroquois. The Huron contingent arrived too late to participate in the raid and consisted of only eighty men (Champlain, Vol. 2:138). As in the previous year, the Hurons had been led to the rendezvous with the French by Iroquet and his Algonquins. Apparently most of the trading was done with the Montagnais (Champlain, Vol. 3:125), the Hurons only stayed three days and then departed (Champlain, Vol. 3:138). Later Champlain (Vol. 3:146) commented that the trade had been particularly disappointing that year.

The year 1611 is important because this was the first year that the Hurons came to the St. Lawrence for reasons other than war. On the 13th of June a group of some 200 Hurons and Algonquins, again led by Iroquet and Ochateguin, met at the Lachine Rapids with Champlain and the other traders. Several important points emerged from this meeting. First of all the alliance made in the previous two years had to be reaffirmed by

further gift giving and lengthy speeches (Champlain, Vol. 2:189-191). After the gift exchanges were completed Champlain had to listen to lengthy Huron and Algonquin complaints about the avariciousness of the French traders (Champlain, Vol. 2:188-189, 193-194). Apparently this group of Indians was not used to bargaining and haggling, something that the Montagnais in the Tadoussac area had learned over many years of trading (Champlain, Vol. 2:171). Another interesting point that emerged from this meeting was that the Montagnais, Algonquins and Iroquois all tried to prevent the Hurons from coming to the St. Lawrence to meet with the French. The Montagnais and Algonquins had spread a story that the French had killed the Huron lad Savignon who had been exchanged for Brulé the previous year (Champlain, Vol. 2:187); while the Iroquois had leaked a story to the Hurons that Champlain had made a pact with them and was waiting with 600 Iroquois near the Lachine Rapids to kill any Hurons and Algonquins that came to the St. Lawrence (Champlain, Vol. 2:189-190). The latter ruse apparently worked because the Hurons claimed that for this reason some 400 Indians had stayed home that year. The amount of trading that went on that year was "---very little---", a "---few articles---" (Champlain, Vol. 2:192). The main point as far as the Hurons were concerned was to cement the alliance made in the previous years. Trading seems to have been an afterthought or rather an activity that seemed to be necessary to get French favour.

In 1612, while Champlain was in France, some 200 Hurons and Algonquins had come to the Lachine Rapids to meet the French for another raid on the Iroquois (Champlain, Vol. 2:217). Trading was light because the Indians had come prepared for war and were bitterly disappointed when the

French traders would not help them. In 1613 the Hurons resolved not to come to trade. In the previous year they had been ill-used by the traders who had also told them Champlain was dead, and that they would not help them in their wars (Lescarbot, Vol. 3:29; Champlain, Vol. 2:217-218; 254). Consequently Champlain found only a few Algonquins at the Lachine rapids and very few furs (Champlain, Vol. 2:252-254).

When trade did not materialize by the spring of 1613 Champlain realized that he had to change his tactics. Up to now the French fur trade had relied solely on furs supplied by the Montagnais, Abenakis and the Algonquin tribes along the shore of the St. Lawrence and the lower Ottawa. The Hurons and Algonquins of the upper Ottawa had hardly entered the fur trade and seemed to be more interested in going to war than engaging in trade. Champlain realized by 1613 that he had to visit these tribes personally and use promises for help in war as a guise to induce these Indians to come to trade. In the years 1613 and 1615 Champlain's trips up the Ottawa and to Huronia laid the basis for close Huron-French relations and the gradual expansion of the Huron trade network.

Champlain's trip up the Ottawa in 1613 is usually seen as an exploratory trip to gain information about the "northern sea" (Rich, 1967: 11-12). While this was certainly part of the reason why he ascended the Ottawa, more important was the promotion of trade. Failure for trade to materialize at the Lachine rapids in the spring of 1613:

> ---made me resolve in carrying out my explorations, to make my way into their country in order to encourage those who stayed at home with an assurance of the good treatment they would receive and the quantity of fine wares that were at the Rapids, as well as of my desire to help them in their wars (Champlain, Vol. 2:254).

On May 27th, 1613, Champlain proceeded up the Ottawa well supplied with presents, his ultimate aim being to contact all the Algonquin tribes as far as the Nipissings. These plans were frustrated when Champlain found that the Allumettes would not guide him past their territory (Champlain, Vol. 2:283-297). Disappointed Champlain tried to make the best of the situation by asking the Allumettes to relate his wishes to the other tribes. Specifically the message he wanted to get across was that he wished to aid all the tribes in war (Champlain, Vol. 2:283-284), to make alliances with the other tribes (Champlain, Vol. 2:286) and to ask them to come and trade at the Lachine rapids (Champlain, Vol. 2:297). The Allumettes in turn promised to spread the message to the neighbouring tribes and collect a large war party for the next year (Champlain, Vol. 2:284, 297-298).

On the way back from the Allumettes Champlain ran into a number of lower Ottawa River Algonquin groups (mainly from the Petite Nation) ultimately totaling about eighty canoes "---with a great deal of merchandise---" (Champlain, Vol. 2:298-299). After trading was completed Champlain asked them to take two French youth's along "---in order to keep the Indians friendly, learn something of their country, and place them under the obligation of coming back to us" (Champlain, Vol. 2:307). At no time were any Hurons or upper Ottawa River Algonquins involved.

An interesting point that recieved confirmation from this voyage was the reality of longstanding Iroquois raids to the lower Ottawa well before the organization of the first Huron fur brigades. The Algonquins told Champlain that the Iroquois were in the habit of raiding the lower Ottawa from Lake St. Louis to Allumette Island (Champlain, Vol. 2:260,

266-268, 278-279). The threat of these raids may have been a partial deterent to an earlier development of close trading contacts with the upper Ottawa River Algonquins, the Hurons and the French. In later years the benefits accruing from trade had to be constantly weighed against potential losses at the hands of the Iroquois along the lower Ottawa and upper St. Lawrence. As early as 1615 the Hurons asked the French to establish a post at the Lachine Rapids in order "---to give them safe passage by the river on account of their fear of their enemies---" (Champlain, Vol. 3:172). Until Champlain's visit to the upper Ottawa Algonquins and Hurons in 1615, these fears as well as other difficulties probably far outweighed any benefits they could see from trade.

In summarising the early contact period several important points should be noted. This was essentially a period of frustration and disappointment to the French. Even though the Hurons had been contacted by 1609, accompanied by peace treaties and aid in war, little trade resulted. The underlying reasons behind this slow development of Huron-French trade can be found in the conventions governing Indian trade and the inter tribal relations of the pre-contact period. Huron trade had been primarily oriented to the north and northwest of Huronia. The southeastern route to the St. Lawrence was closed by the Iroquois, while the route via Lake Nipissing and the Ottawa River was across the territory of allied Algonquin tribes. These Algonquins had acted as middlemen between the French and Hurons for some time and were reluctant to lose their position. For this reason the Algonquins had nothing against Huron warriors coming to the St. Lawrence but were reluctant to see any development of Huron-French trade. On their part the Hurons seem to have been fairly content with this situation. What

Champlain interpreted as a reluctance to trade seems to have been partly a desire on the part of the Hurons to preserve friendly relations with the Algonquins. It is also doubtful whether the Hurons as a whole understood at that time what the implications of close trading relations with the French could mean. Champlain knew that in order to expand trade past the Algonquin tribes he had to visit the Hurons and intervening tribes personally. He had to point out the advantages of trade to the Hurons as a whole and find some means of negotiating a passage for them through the Algonquins along the Lake Nipissing, Ottawa River route. In 1615 Champlain decided to visit the Hurons with the view of placing Huron-French trade on a securer basis.

4. Champlain's Trip to the Hurons and the Beginning of the Huron Fur Trade

In 1614 Champlain stayed in France reorganizing his company and getting support for a group of Récollet priests to come to New France. As far as Huron-French trade is concerned, nothing much seemed to have happened. In June 1615 Champlain found a group of Hurons and Algonquins at the Lachine Rapids ready for a raid on the Iroquois. Again it was pointed out to him that "---only with difficulty could they come and see us if we did not help them, because the Iroquois, their ancient foes, were continually along the route and prevented them from passing" (Champlain, Vol. 3:31). It was the same old story; the Iroquois threat and the Huron preference for war over trade combined to assure a minimal supply of furs. Only a massive show of strength and friendship could overcome these hindrances to trade (Champlain, Vol. 3:31-32). For this reason Champlain decided to visit Huronia and organize the Hurons on a mass raid against the Iroquois. The Hurons were delighted and promised 2,500 warriors.

As far as Huron-French relations were concerned Champlain's voyage in 1615 had a number of important consequences. For the first time the bulk of the Huron population were contacted directly by a number of Frenchmen including Champlain, a priest (Joseph Le Caron) and fourteen others. These stayed among the Hurons for ten months (August 1st, 1615 to May 20th, 1616) visiting various villages with assurances of friendship and no doubt promises of trade. The raid on the Onondaga, while a disappointment to Champlain, demonstrated to the Hurons the reality of the French alliance. Their growing concern for continued French good will was clearly demonstrated by their behavior when on one occasion Champlain got lost on the retreat from the Onondaga. Champlain was told that, "---If you had not come back and we had been unable to find you, we should not have gone down to the French any more for fear lest they should have accused us of having put you to death" (Champlain, Vol. 3:91). From then on Champlain was closely watched, the Hurons fearing that French-Huron ties would be severed if they were somehow involved in his death. The arrival of a priest among the Hurons had no immediate effect on the Hurons, but it set a precedent for later years.

Besides visiting the Hurons, Champlain also journeyed to the Petun with whom he "made friends" and "---a good number promised to come down to our settlement" (Champlain, Vol. 3:95). On the western edge of the Petun territory he renewed his friendship with the Ottawa who likewise promised to come to trade (Champlain, Vol. 3:96-97). While visiting the Ottawa, Champlain met some Neutrals and regretted that he could not visit their country as well (Champlain, Vol. 3:100-101). On his way back from the Petun Champlain stopped by some Nipissings who were wintering on the

bordersof Huronia. These also promised to come to the St. Lawrence in the following summer (Champlain, Vol. 3:104). It is therefore apparent that exploration and war were not the only motives that induced Champlain to visit Huronia. During this visit he personally contacted the Nipissings, Ottawa, Petun, Hurons and some Neutrals, as well as a number of Algonquin bands notably the one led by Iroquet, asking all of these to come to trade at the Lachine Rapids (Champlain, Vol. 3:113). Apparently the trip to these tribes paid off because a large number of men accompanied Champlain back to the Lachine Rapids on May 20th, 1616 (Champlain, Vol. 3.168-169). Biggar went so far as to state that: "The barter at the rapids this summer was unusually large, for all the tribes visited by Champlain during his winter among the Hurons now came down to the St. Lawrence for the first time" (Biggar, 1901:106). Whether the Petun, Neutrals or Ottawa came to trade is doubtful, but at least they had seen some Frenchmen and acquired first hand knowledge of the kind of goods it was possible to obtain.

During his visit to the Hurons Champlain sketched out the salient features of trade relations in the Eastern Great Lakes area. The Hurons regularly traded corn, corn meal, wampum and fishnets for furs with the Nipissings and other Algonquin tribes (Champlain, Vol. 3:53; 131). On both occassions where Champlain mentions this trade he points out that the furs traded from the Algonquin tribes were used by the Hurons to make clothing and robes. The Hurons did not have enough skins of their own for clothing and had to get more through trade from various Algonquin tribes. At no time did Champlain state that these furs were gathered by the Hurons in order to trade them to the French, an implication that has been read into Champlain's statements by Hunt (1960:54). The main trade item the Hurons

got from the Neutrals and Petun was tobacco (Champlain, Vol. 3:99; Vol. 6:248). There is no evidence that at this time any other products were involved. Even in later years tobacco seems to have been a major trade item between these groups. Judging from passages in the Jesuit Relations the Hurons grew some tobacco (J. R., Vol. 11:7) near their longhouses (J. R., Vol. 15:79). Tobacco was always a highly valued product among the Hurons (J. R., Vol. 9:273; Vol. 10:301) and on many occasions the priests either gave it to them or used it to induce the Hurons to attend Church services (Sagard:85; J. R., Vol. 13:141, 171; Vol. 24:151). The impression one gets is that the Hurons did not grow enough tobacco to satisfy their own needs as well as the needs of some of the Algonquin groups they were trading tobacco to (J. R., Vol. 6:273). Before 1615, Petun and Neutral tobacco seems to have come mainly to the Hurons and some of the Algonquin groups that were wintering in the area. What the Hurons traded to the Petun and Neutrals at this time is not known.

Among the Algonquin groups of this period the Ottawa were regarded by Champlain as great traders, covering some 400 to 500 leagues every summer (Champlain, Vol. 3:97). Their connections with the Petun, Neutrals and areas to the northwest were noted earlier. Champlain observed that they were semi agricultural, a fact that probably allowed them to undertake such long trading voyages (Champlain, Vol. 3:97). The Nipissings were undoubtedly the Hurons strongest trading partners. On several occasions Champlain noted their connections to tribes north of Lake Nipissing (Champlain, Vol. 3:41) and to the north and northwest into the upper and western Great Lakes (Champlain, Vol. 3:105). Nipissing, Ottawa and Huron connections to the east seem to have been slight; at least up to 1615 the

Hurons were brought to the Lachine Rapids by lower Ottawa River Algonquins (Iroquet's tribe) and neither the Nipissings nor the Ottawa ever passed that far.

The major trade routes in existence by 1615 can be identified by means of Champlain's maps and journals.[1] The Ottawa River (River of the Algonquins) was evidently the trunk route for all the Algonquin tribes living to the north and south of it. Between Lac des Chats and Allumette Island, the Muskrat Lake chain to the south of the Ottawa was used to avoid the dangerous Calumet Rapids (Champlain, Vol. 2:272; Vol. 6:242-243). Along the Ottawa Champlain pointed out some of the tributaries that led to the various Algonquin tribes. Of these tributaries the Rouge and Petite Nation Rivers led to the Ouaouechkairini (Ouescharini or Petite Nation) (Champlain, Vol. 2:266; Map No. 4:point 57). The Gatineau led up to another Algonquin tribe not specifically identified (Champlain, Vol. 2:266). Apparently the Gatineau was sometimes used to get to the upper St. Maurice and thence to Trois Rivières thus avoiding Iroquois raids on the lower Ottawa (Champlain, Vol. 2:266-267). This seems to have been largely an Algonquin route. It is not mentioned anywhere else nor does it appear on any maps. Apparently few Indians inhabited the areas upstream along the Rideau River. Champlain mentions the Rideau as a route used by Iroquois raiders (Champlain, Vol. 2:268). An Algonquin tribe (the Aontrataronons) may have inhabited this area at one time. They are marked on Sanson's map of 1656 (Map No. 9). in the general area of the upper Rideau near the St. Lawrence, but appear to have been ejected from the area sometime

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1. See Map No. 3 and 4. For a reconstruction see Map No. 33.

before 1643 by the Iroquois (J. R., Vol. 27:37). Along the Madawaska River Champlain noted an Algonquin tribe the Mataouckkarini (Matou-ouescarini) (Champlain, Vol. 2:271), and along the Muskrat Lake route the Kinounchepirini (Quenongebin) whose chief may have been Nibachis whom Champlain visited in 1613 (Champlain, Vol. 2:264, 275). On Allumette Island were the powerful Kichespiirini (Allumettes) who proved to be so troublesome to later Huron trading voyages (Champlain, Vol. 2:277-278). Sources to be discussed later show that it was the Allumettes that were playing the role of middlemen between the French and the tribes to the west until Huron trade was better developed. The Ottawa north of Allumette Island was apparently thinly inhabited (Champlain, Vol. 3:37-38). Only the Kotakoutouemi (Otagouttouemins) are mentioned, a tribe whose main territory appears to have been in the upper Dumoine River area (J. R., Vol. 18:229). While in the upper Ottawa River area Champlain mentioned a river that was used to get to the "Northern Sea", Trois Rivières and the Saguenay (Champlain, Vol. 3:38-39). Judging from his map of 1616 (Map No. 3) this river was the Dumoine. In this respect the map of 1616 is considerably more accurate than the map of 1632 (Map No. 4) leaving no doubt that the Dumoine River route was meant and not the upper Ottawa-Lake Timiscaming route as some have suspected (Champlain, Vol. 3:39, footnote one; Hunt, 1960:60, Map). It is doubtful if the Hurons used the Dumoine River route at this time; most of Champlain's information seems to have come from Algonquins.

The Nipissings occupied the shores and island of the lake of the same name, trading up the Sturgeon river (Rivière d Estarjon; Map No. 3 and 5; Champlain, Vol. 3:41) to the Timiscimi and Outimagami. In this case

Champlain noted that the Nipissings traded French goods for furs (Champlain, Vol. 3:41). Nipissing connections to the north west at least as far as the east shore of Lake Superior were mentioned earlier. Champlain's information for the shore of Lake Huron northwest of the French River, Sault Ste. Marie and Lake Superior (Maps No. 3 and 4) evidently came from the Ottawa and Nipissing. In 1615, near the mouth of the French River, an Ottawa chief sketched a map of the area for Champlain, even pointing out the general area where he got his yearly supply of blueberries (Champlain, Vol. 3:44). The location of the blueberry grounds, and it seems the map, were reproduced by Champlain for his map of 1632 (Map No. 4). Other information on the northern areas was obtained from the Nipissings (Champlain, Vol. 3:104-105).

In examining the sources up to 1615, there is no evidence that the Hurons had any trading connections beyond Lake Nipissing to the north, the Petun to the west and the Neutrals to the south. By and large the Nipissings seem to have carried the trade to the Hurons and the Ottawa to the Petun. The Nipissings traded to the north and northwest of Lake Nipissing sharing the northwestern route with the Ottawa. To the east the Nipissings were in contact with the Allumettes and may have used the Dumoine River route. The central and lower Ottawa River area was controlled by the Allumettes and Petite Nation who seem to have been the major suppliers of furs to the French until 1616. The other Algonquin tribes along the Ottawa were either unimportant in the early fur trade or were serviced by the Allumettes and Petite Nation.

Judging from this trade pattern only the Algonquin tribes from the Nipissings eastwards seem to have been strongly affected by the French fur

trade up to 1615. Although the Hurons had received French trade goods in some quantities before 1615, there is no evidence that they participated directly in the collecting and trading of furs. Up until 1616 the French sources for furs were various Algonquin groups and of course the Montagnais.

5. The Development of Trade to 1629.

a) Yearly trading activities: 1616-1629.

That the summer of 1616 was a trading success involving some Hurons has already been noted. Nothing is known of 1617, but in the summer of 1618 Champlain was back in New France. He met "---all the savages of my acquaintance and with whom in their own country I had become intimate----" at Trois Rivières (Champlain, Vol. 3:208). Trading went on from July 7th to the 14th and was evidently successful. Complaints were made of Iroquois raids and as usual Champlain was asked to aid his allies in war (Champlain, Vol. 3:209). Again nothing is known of trading activities in 1619. In 1620 trade in the upper St. Lawrence area went on at the mouth of the Richelieu River, but Champlain does not recount how successful it was (Champlain, Vol. 5:4, 9). In 1621 and 1622 trade was conducted at Trois Rivières (Champlain, Vol. 5:31, 35, 82). In June 1622 two Iroquois came to Trois Rivières in an attempt to arrange a peace (Champlain, Vol. 5: 74-80). Apparently the peace negotiations were successful, at any rate in 1624 after a Montagnais had killed an Iroquois peace was retained in spite of the difficulties arising out of intertribal murder (Champlain, Vol. 5:130-131). In all thirty-five Iroquois canoes came to the St. Lawrence in 1624 to trade and finalize the treaty (Biggar, 1901:124). This treaty seemed to last from 1622 to 1627 and was a period of excellent trading. Hunt (1960:69-70) stated that the French were worried over a

Huron-Iroquois treaty and sent Sagard, Nicolas Viel, Le Caron and eleven others to Huronia to prevent the treaty from being ratified. In the light of Champlain's and Sagard's writings Hunt's supposition does not seem to be correct. No treaty between the Hurons and Iroquois would have diverted the fur trade to the Dutch, on the contrary the French stood to gain from the treaty by diverting Iroquois trade to the St. Lawrence.

The year 1623 is important not only because the information on trading is unusually complete, but also because it marked the re-introduction of missionaries to Huronia. From that date to 1629 some missionaries were always present among the Hurons. The Huron-Algonquin fur brigade in 1623 consisted of about sixty canoes and some two hundred men (Champlain, Vol. 5:100-101). Trading was done at the mouth of the Richelieu River. An interesting point is that the Hurons complained bitterly that some Algonquin groups barred certain routes to them, levied heavy tolls and even robbed them (Champlain, Vol. 5:103).

Two priests, Nicolas Viel and Joseph Le Caron, a lay brother Gabriel Sagard, and eleven other men returned with the Hurons. Besides hoping to Christianize the Hurons, the Récollet missionaries were also supposed to induce the Hurons to come and trade (Champlain, Vol. 5:108; Sagard:77-78). In return for their hospitality to the Récollets the Hurons expected the priests to persuade the traders to give better prices for their furs (Sagard:244-245). Later the same was expected of the Jesuits by the Hurons. The role that the Récollets had to play as intermediaries in the fur trade was not new. In addition to being an interpreter, it was a paid job Brulé had had for some years (Champlain, Vol. 5:132). Besides Brulé other Frenchmen had been in Huronia between 1616 and 1623. How many

Frenchmen were involved and what years they went to Huronia is not known. At least some were in Huronia in 1622 (Champlain, Vol. 5:100-101), probably staying at Carhagouha (Le Clercq, 1881:205). The express function of these men was "---to keep them (Hurons) steady in their friendship, and dispose them to come to us" (Champlain, Vol. 5:101; J. R., Vol. 4:197). With the Récollets Champlain put this relationship on a permanent basis.

Le Caron and Sagard returned to Quebec in 1624; Nicolas Viel stayed in Huronia only to be drowned in the Ottawa on his return in 1625. In 1624 at least forty-five Huron canoes arrived for trade (Champlain, Vol. 5:131-133) as well as the thirty-five Iroquois canoes mentioned earlier. In 1626 the Récollet Joseph La Roche de Daillon and the Jesuits Jean de Brébeuf and Anne de Nouë were sent to Huronia with a few Frenchmen "---to induce the savages to come down and trade" (Champlain, Vol 5: 207) and to carry on the mission. Michel, one of the French interpreters, even accused the Jesuits of trying to "convert the beaver", rather than the Indians (Champlain, Vol. 6:137); demonstrating that the development of trade contacts was an important function of the priests. The year 1627 was regarded as one of the best years for trading, but unfortunately marked the end of the Iroquois peace (Champlain, Vol. 5:229-232). Between the years 1622 and 1627 there does not seem to have been any Iroquois raids on the Huron and Algonquin fur brigades. Sagard put this lack of Iroquois activity to the presence of the few Frenchmen who regularly travelled with Hurons, implying that the Iroquois were frightened of them (Sagard:261). In the light of previous and later Iroquois activity this hardly seems a plausible reason for the cessation of the Iroquois raids. As a matter of fact during this period the Iroquois were embroiled in a

quarrel with the Dutch and Mahicans and were therefore trying to stay on friendly terms with the Hurons, Algonquins and Montagnais (Champlain, Vol. 5:214-219).

There are no records of trade being carried on in the upper St. Lawrence area during 1628. Instead the English blockaded Quebec and captured French vessels bringing supplies (Champlain, Vol. 5:275-296). By July, 1629, the French at Quebec were reduced to desperate straits. The previous fall they had even bought food from local Algonquin tribes at the price of one good beaver skin for five eels (Champlain, Vol. 5:298). When the missionaries returned from Huronia with twelve canoes on July 17th, the French tried to barter corn from the Indians, but with little success (Champlain, Vol. 6:45-47). A few days later the Hurons decided to return to Huronia "---with the little merchandise they had brought---" (Champlain, Vol. 6:49). With the evacuation of Quebec in September, 1629, French-Huron trade relations ceased until the return of the French in June 1632 (J. R., Vol. 5:17).

b) The logistics of Huron trade and Huron trade contacts: 1616-1629.

Sagard's account of 1623 to 1624 provides an unusually clear picture of the nature and extent of Huron trade in the early 1620's. During the winter the Huron women would prepare corn meal for the men to take along on their summer trading (Sagard:101-102). Along the route corn would be cached at a two days' travel distance apart (Sagard:60). While travelling an attempt was made to catch fish by dragging a line behind the canoe. The usual meal therefore consisted of corn soup and fish, the Hurons eating twice a day (Sagard:61-62).

According to Sagard, Huron canoes were at a maximum eight to nine

paces long (twenty to twenty-two feet), one to one and a half paces wide (two and a half to four feet) (Sagard:100), and held five to six men (Sagard:56). Smaller canoes holding two or three men were especially built for difficult journeys on narrow rivers with many rapids and portages (Sagard:246). These descriptions fit well with those of Champlain and the Jesuits showing that the average Huron canoe changed very little in size between 1615 and 1650. Champlain put the average capacity at four to five men (Champlain, Vol. 2:289-299; Vol. 5:100); Charles Lallemant in 1626 put the capacity at four to five men (J. R., Vol. 4:205); in 1642 (J. R., Vol. 24:275) and 1648 (J. R., Vol. 32:97) it was still about four men to a canoe. Bressani put the capacity of a Huron canoe at three to four men but mentioned that some could hold eight or ten (J. R., Vol. 38:247). Besides its complement of men Bressani stated that the average canoe held about "2,000 livres burden" (J. R., Vol. 39:47). If Bressani was referring to beaver skins it would mean that a canoe could hold four men plus 200 skins weighing about one to two pounds each (J. R., Vol. 4:255; Vol. 28:235). Sagard put the capacity of a Huron canoe at a similar figure; one hogshead or cask which comprised about 200 pounds (Sagard:100; J. R., Vol. 28:235).

Under very good conditions a Huron canoe could cover some 25 to 30 leagues in a day (Sagard:101). The usual length of a trip between Huronia and Quebec was about three to four weeks depending on the weather and point of destination or departure on the St. Lawrence (Champlain, Vol. 3:36-46, 168-169; J. R., Vol. 8:89; Vol. 10:89; Vol. 15:161; Vol. 16:231; Vol. 18:11, 17; Vol. 31:21). The usual time of arrival at the St. Lawrence between 1611 and 1629 was anywhere from mid June to mid July (Champlain, Vol. 2:186; Vol. 3:31-32; Vol. 5:101-102, 129; Vol. 6:45). For various

reasons to be discussed later, arriyal times at the St. Lawrence got to be slightly later in the years during the 1630's and 1640's.

Throughout this period the Hurons travelled to and back from the St. Lawrence in small separate groups. These small flotillas travelled at different speeds and departed and arrived at different times (Champlain, Vol. 5:129-133; Sagard:56, 63, 255). Apparently these small flotillas were organized on a village basis, or at least canoes from the same village travelled together. Thus for example Sagard travelled to Huronia with the Hurons from Tequenonquiaye and departed with those from Quieunonascaran while Brulé travelled with those from Toanche (Sagard:247, 251). This mode of travel would account for Sagards statement that each small flotilla put up the coat-of-arms of its' particular village at camping places along the way. The fact that trade was in the hands of individual families within each village, who had their own separate trade contacts, probably helped to splinter trading voyages into small separate groups.

Judging from Champlains descriptions the Huron war parties travelled in large compact groups; at least the ones that came to the St. Lawrence and the ones he travelled with. It was not until well into the 1640's that the character of Huron trading voyages began to change and took on more the appearance and organization of a war party (J. R., Vol. 32:179).

Throughout the entire period between 1615 and 1629 the main route between Huronia and the St. Lawrence was the Georgian Bay-French River-Lake Nipissing-Ottawa River route. Both Champlain (Vol. 3:38-39) and Sagard(249, 253) refer to a route up the Dumoine River and thence to the Saguenay, but it is not clear whether the Hurons were using this route to travel the entire distance to the Saguenay (Map No. 33). There is no

evidence that any Hurons ever traded in the Saguenay-Tadoussac area, or that Huron canoes ever approached Quebec from the east. Since the Hurons usually left Huronia sometime between mid May and Mid June (Jones, 1908: 404) there was simply not enough time for them to have travelled across central Quebec, through at least three tribal areas, and still have arrived at the usual trading places upstream from Quebec in mid June or July. What seems more likely is that the bulk of the Hurons travelled the normal route to Quebec stopping at various places along the way, notably among the Ottawa, Nipissings and Allumettes (Champlain, Vol. 3:39-42, 43-44; Sagard:63, 66, 249-250, 255-258), to gather more furs or pay toll charges. Some Hurons may have gone up the Dumoine River to trade with the Kotakoutouemi and Attikamegue before 1629, thus accounting for Sagard's statements that they were reluctant to show the French some of their fur sources northeast of the Ottawa (Sagard:87). Once the Hurons were among the Kotakoutoumi or Attikamegue it would have been easier for them to return via the Dumoine and Ottawa than to go on to Lake St. John or pass down the St. Maurice. Since the Hurons were at peace with the Iroquois from 1622 to 1627 there was really no reason why they would want to avoid the shorter and easier Ottawa route. Hunt (1960:57-62) tried to make a case for a northern Huron route but did not handle his material chronologically. Going strictly by the available evidence the case for a northern route before 1629 is decidedly weak. The arrival times on the upper St. Lawrence of the Huron fur brigades, the routes travelled by Champlain and Sagard, and the fact that every Huron fur brigade approached the French posts from the upper St. Lawrence seems fairly conclusive that in the main only the Ottawa River route was used.

One of the most troublesome aspects of the entire trip to the St. Lawrence seems to have been the passage through Allumette territory (Champlain, Vol. 5:103; Sagard:255-258). As the Huron canoes came down the Ottawa, the Allumettes would delay them until a good sized fleet had assembled. They would then force the Hurons to give up a goodly portion of their corn and barter some furs. Presumably those Hurons that gave the best prices for Allumette furs were allowed transit first. At the same time the Hurons had to suffer insults and other indignities. Apparently the Hurons got off lighter when a priest accompanied them. Sagard relates that the Allumettes feared reprisals from the French traders if the priests were attacked or insulted (Sagard:257). During the 1620's at least, the Allumettes seem to have prospered as a result of toll charges. Over the 1630's Allumette opposition to Huron trading voyages increased until the Allumettes were reduced by smallpox between 1642 and 1644 (J. R., Vol. 24: 267; Vol. 26:301-305) and virtually wiped out by the Oneida in 1646 (J. R., Vol. 28:225). These events will be examined in greater detail later in this chapter. It should also be pointed out that similar to the Allumettes, the Montagnais at this time tried to prevent the Hurons from travelling down the St. Lawrence to trade in their territory. Toll charges were also set in corn (Sagard:268).

By the mid 1620's the Hurons seem to have developed stronger trade contacts with the Neutrals. Judging from Sagard's few remarks in 1623 Huron-Neutral contacts were not particularly highly regarded (Sagard:151, 157). The major Neutral product seems to have been tobacco (Sagard:158). Exotic skins also came from the Neutral country such as bobcat and black squirrel skins (Sagard:224; J. R., Vol. 17:165). Neither of these skins

were traded to the French, but were made into robes for the Huron's own use. Ragueneau singled the black squirrel skins out as a Huron's most valued possession (J. R., Vol. 33:193). In return the Hurons traded French goods to the Neutrals.

In 1626 the Neutrals were visited by the Récollet Joseph de la Roche Daillon, having been preceded by Brulé and on various occasions by other Frenchmen (Sagard:194). The purpose of Daillon's visit was to contract an alliance between the Neutrals and the French, and to induce them to come to the St. Lawrence to trade (Le Clercq, 1881, Vol. 1:263-272). The Neutrals seemed interested in going to trade with the French, but did not know how to get there. Although some Algonquins and Hurons knew the route to the St. Lawrence (a ten day's journey), they refused to show Daillon and the Neutrals the way. The result of Daillon's efforts to get the Neutrals interested in trade was an immediate Huron response in the form of rumours and innuendo well calculated to spread fear of the French among the Neutrals. This propaganda war was so successful that Daillon was fortunate to get away with his life. It is therefore clear that by 1626 the Hurons valued Huron-Neutral trade to such an extent that they tried hard to prevent any strong ties between the Neutrals and the French.

A trip to the Neutral country took some five days from the Petun (Le Clercq, 1881, Vol. 1:263-265; Sagard:158), and five to six days from Huronia (J. R., Vol. 18:39; Vol. 20:95). The nearest Neutral villages could be reached in four to five days under good travel conditions (J. R., Vol. 21:189, 205-207). All travel to the Neutrals was over narrow, difficult trails. There is no evidence that canoes were ever used. Consequently

all goods that were exchanged between the two groups had to be carried on the backs of the traders. Under these conditions it is difficult to envisage any products being exchanged except high value goods such as furs, tobacco, trade goods and a few luxuries. There is no evidence that at this date or any other the Hurons were trading corn from the Neutrals (Hunt, 1960:56-58). Hunt's thesis that the Hurons monopolized the corn from the Neutral "farms" is entirely without foundation. Indeed it would be difficult to envisage a trade based on corn being carried on over some 100 miles without canoes or carts, but entirely on the backs of a few traders. If such a thing had occurred surely someone would have observed it.

Even less is known about Huron dealings with the Petun during the 1620's. Like the Neutrals, the Petun were visited by Frenchmen other than priests (Sagard:194). Daillon was even guided to the Neutrals by the Petun (Le Clercq, 1881, Vol. 1:263-264), showing that the Petun, unlike the Hurons had no objections to French-Neutral contacts. The major Petun product seems still to have been tobacco (Champlain, Vol. 6:248). Judging from Sagard (85) this herb was always scarce among the Hurons. Undoubtedly furs were also traded from the Petun for trade goods because one never hears of any Petun going to trade in the St. Lawrence area. In the light of what happened in the late 1630's, the Hurons probably discouraged direct Petun-French contact, although none of the pre-Jesuit writers refer to it.

Huron-Ottawa relations during the 1620's are rather nebulous. Sagard, like Champlain pointed out that some of the northern tribes, notably the Nation des Bois (Ojibwa) were dependent on the Ottawa for trade (Sagard: 64). Exactly which branch of the Ojibwa was meant is not clear. Possibly

it was the Saulteurs or some group at the eastern end of Lake Superior. At any rate the Ottawa travelled to the northwest to trade for "---furs, pigments, wampum, and other rubbish" (Sagard:67). Like Champlain, Sagard stated that some of their trips encompassed 400 to 500 leagues. When the Hurons returned from the St. Lawrence, the Ottawa stationed themselves on Georgian Bay near the mouth of the French River to trade with the Hurons (Sagard:66). This followed a pattern similar to the one observed by Champlain eight years earlier (Champlain, Vol. 3:43-44). In 1623, trading between the two groups took two days. There is no evidence that the Ottawa at any time during the 1620's went to the St. Lawrence to trade.

Unlike the Ottawa, the Nipissings seem to have travelled to the St. Lawrence to trade (Champlain, Vol. 5:129). On several occasions when Champlain referred to Algonquins travelling with the Hurons, he probably meant the Nipissings. Like Champlain, Sagard observed that the Nipissings wintered among the Hurons (Sagard:86). In the summer they traded with some groups at a four to six weeks journey north of Lake Nipissing. These tribes were in contact with "---a certain people who reach the place by sea, in great wooden boats or ships laden with different kinds of merchandise---" (Sagard:86-87). In all probability the groups the Nipissings traded with were in contact with the British on Hudsons Bay. Later sources identify these northern groups as the Crees or Kilistinon Algonquins (J. R., Vol. 21: 125). By the late 1640's and early 1650's some of these Crees became identified as the "Kilistinons of the Nipissings" (J. R., Vol. 44:249; Map No. 8, 9 and 11).

On their way from the St. Lawrence, the Hurons still stopped among the Nipissings to rest and trade (Sagard:63). The same procedure was

followed on the way to the St. Lawrence (Sagard:248-249).

c) Summary and discussion: 1616-1629.

In spite of the meagre amount of information, some generalizations can be made about this period. With Champlain's visit to Huronia trade began to develop with tribes in the interior, especially for the Hurons and Nipissings. Both of these groups were in unique geographical positions to become middlemen to their neighbours. The Neutrals and Petun would have had to cross Huron territory to get to the Nipissing-Ottawa route and then pass through Nipissing and Allumette territory, two tribes with whom they had no relations. The Hurons discouraged this from the beginning and neither the Petun or Neutral seem to have tried to break intertribal law by forcing their way.

The Nipissings in turn were in an excellent position to block all groups in the upper Great Lakes area from coming to the headwaters of the Ottawa. As far as we know they never had to exercise their right to prevent passage. Huron canoes could easily pass through Nipissing territory because of the longstanding relations between the two. Both Hurons and Nipissings however, ran into constant trouble with the Allumettes who exacted heavy tolls along the Ottawa, and the Montagnais who extracted dues once the Hurons and Nipissings tried to go very far down the St. Lawrence. The Hurons therefore acted as middlemen primarily to the Petun, Neutrals and some of the Georgian Bay Ottawa, while the Nipissing traded to the north to the Cree and other Algonquin groups. Both Nipissings and Hurons seemed to have traded together in the area of the upper Ottawa and Dumoine Rivers.

Throughout this period Champlain and the other traders felt it

necessary to place Frenchmen among the Indian tribes "to induce them to come and trade". It is hard to tell if Champlain's fears were justified. He obviously felt that if the French were not among the Hurons and various Algonquin tribes, these would stop coming to the St. Lawrence.

One factor that probably helped trade to get started, and one that is usually overlooked, is the Iroquois peace. From 1622 to 1627 there are no records of Iroquois hostilities along the trade routes. Prior to that time these incursions were a constant source of complaint and a strong factor in the reluctance of the Hurons to come to the St. Lawrence area except to wage war.

Throughout this period the major route was the Georgian Bay-French River-Lake Nipissing-Ottawa River route. Huron and Nipissing traders went up the tributaries of this trunk route to trade with various Algonquin bands. It is doubtful if large numbers of Hurons ever attempted voyages of the kind described by Hunt. There is little evidence to suggest that Hurons ever paddled from the head-waters of the Ottawa to the Saguenay River. At the time when Champlain and Sagard were writing, "the Saguenay" did not have the specific meaning that it has now; it was rather a vaguely defined area encompassing most of interior Quebec north of the St. Lawrence and east of the Ottawa. All Sagard and Champlain really said was that Hurons and Nipissings were trading up the tributaries of the Ottawa into the interior.

Throughout the period, travel by canoe was in small groups probably organized on a village basis. The size of canoes varied with the difficulty of the journey. The standard canoe running the trunk route was about twenty feet long and held up to five men with their baggage. Smaller canoes with

two or three men were used to get up the difficult tributaries of the Ottawa.

The quantity of furs taken during this period is unknown. In 1623 Sagard observed that: "Such a quantity of them (beaver) is brought every year that I cannot think but that the end is in sight" (Sagard:232). The number of beaver in storage at Quebec, when the English took the post in 1629, was between 3,000 and 4,000 pelts, and probably represented that year's trading (Champlain, Vol. 6:141; Biggar, 1901:162-163). If, as stated earlier, the average canoe held about 200 lbs. of beaver, about twenty canoes could have brought this quantity to Quebec. As observed earlier, 1629 was a very bad year for trade. In 1626, Charles Lallemant wrote that the annual take of beaver in the St. Lawrence area was 12,000 to 15,000 skins. In one unusual year the merchants got as many as 22,000 skins (J. R., Vol. 4:207). It must be remembered that all the Indians trading with the French contributed to this total.

The number of Huron canoes that usually came to trade is known only for 1624, when about forty-five canoes attempted the trip (Champlain, Vol. 5:131-133). In 1623 there had been sixty Huron and Algonquin canoes with some three hundred men (Champlain, Vol. 5:100-101). In view of Bressani's and Sagard's statements that a Huron canoe could hold about two hundred pounds of skins, the Hurons and Algonquins together probably accounted for about two-thirds of the annual take of the French merchants.

To the bulk of the Hurons trading could not have been an important activity during the period 1615 to 1629. In all, probably never more than 200 men participated in the annual trading voyages. This number is very small out of a population estimated at 21,000. The importance of trade

must be seen in terms of the goods that were brought to Huronia and the social and utilitarian value of these goods, rather than as an activity that employed the efforts of a major segment of the population.

6. Trade and Politics to the End of 1641.

a) Yearly trading activities and intertribal relations: 1632-1641.

In 1632, New France was ceded back to the French. The amount of trading that took place between the British and the French Indian allies is difficult to estimate. Brulé had been sent back to Huronia in 1629 and may have brought the Hurons to trade with his English allies in 1630 (Champlain, Vol. 6:102).[1] At any rate the year 1630 was very successful for the British merchants. Champlain estimated that their total take from the former French possessions was 300,000 livre's worth or about 30,000 lbs. of skins (Champlain, Vol. 6:183). In 1631 de Caen went back to the St. Lawrence hoping to contact the Hurons, however trade was so bad that year, the British would not let him compete with them (Champlain, Vol. 6:214, 216; Biggar, 1901:157-158). Apparently the Hurons were dissatisfied with the British in 1630 and simply did not come the following year (Le Clercq, 1881:311).

With the return of the French to the St. Lawrence Valley, Huron trade began to pick up again and continued roughly in the same manner as it had during the 1620's. Various factors complicate the picture during the 1630's, but during the early 1640's several events happened, notably increased

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1. Brulé was probably killed by the Hurons in 1631 or 1632. In 1633 the Jesuits got the first news of Brulé's death, and some Allumettes warned the Hurons not to go to Quebec claiming that the French were seeking vengeance (J. R., Vol., 5:239).

Iroquois hostility, that make it practical to treat the 1640's in a separate section. As with the previous sections in this chapter, each year will be examined separately and then combined into a set of generalizations for the period.

Apart from the fact that about 50 Huron canoes arrived at Quebec in 1632 little is known about the Hurons during this year (J. R., Vol. 5: 71).

The description of events and attitudes in 1633 is unusually complete. Virtually every facet of Huron-French relations is brought to light, as well as Huron relations with other tribes. The beginning of the trading season was marred by an Iroquois attack on a French bark and shallop in the upper St. Lawrence area, in which two Frenchmen were killed and scalped (J. R., Vol. 5:213-215). Apparently the Iroquois departed because on the 22nd and 23rd of June twelve canoes led by Iroquet and twelve to fourteen canoes of Nipissings arrived for trading (J. R., Vol. 5: 219). Towards the end of July the Hurons arrived:

> Already a few canoes had arrived on different days, sometimes seven or eight, sometimes ten or twelve at a time; but at last, on the 28th of July; there arrived about one hundred and forty all at once, carrying easily five hundred Hurons - or 700 as some say - with their merchandise (J. R., Vol. 5:239).

Bressani, recounting these events at a later time, put the number of Huron canoes at 150, with 700 to 800 men (J. R., Vol. 39:51). Apparently more Hurons would have come if some had not been frightened away by the Allumettes who claimed that the French wanted to avenge Brulé's death (J. R., Vol. 5: 239-241). Amid the trading the usual councils were held between the Hurons and the French in which presents were exchanged, friendships renewed and an agreement made to send some Jesuits to Huronia (J. R., Vol. 5:245-267).

Champlain even proposed Huron-French intermarriage "---that we be one people" (J. R., Vol. 5:211). The Hurons seemed delighted with events and began haggling among themselves as to which village should have the honour of giving passage to a Jesuit (J. R., Vol. 5:259-263). Shortly before the Jesuits were to embark a very interesting event occurred that throws considerable light on the role of the Allumettes and Petite Nation as controllers of the Ottawa River route. A member of the Petite Nation had murdered a Frenchman and was being imprisoned by Champlain. When Champlain refused the usual payments for murder the Allumettes told the Hurons not to give any Frenchmen passage across Petite Nation and Allumette territory. The Hurons took these threats at their face value and told Champlain that they could not take the Jesuits. The reasons given by the Hurons was that the Ottawa River was not under their control and that they had to abide by the wishes of the Allumettes and Petite Nation if they were going to pass in security. The Hurons did not want to be put into the position of endangering their access to the St. Lawrence (J. R., Vol. 6:7-17). The Jesuits saw the matter somewhat differently and their views are worth quoting in detail. They advance two reasons why the Hurons could or would not take them along:

> The first is found in the interests of the Island Savages (Allumettes), the Algonquains, and the other tribes which are between Kebec and the Hurons. These people, in order to monopolize the profit of the trade, prefer that the Hurons should not go down the river to trade their peltries with the French, desiring themselves to collect the merchandise of the neighbouring tribes and carry it to the French; that is why they do not like to see us go to the Hurons, thinking that we would urge them to descend the river, and that, the French being with them, it would not be easy to bar their passage. The second reason may be found in the fear of the Hurons, who see that the French will not accept presents as a compensation for the murder

> of one of their countrymen; they fear that their young men may do some reckless deed, for they would have to give up, alive or dead, any one who might have committed murder, or else break with the French (J. R., Vol. 6:19).

These very astute observations mirror experiences on the Ottawa in the 1620's. As Sagard had observed, the Hurons got past the Allumettes much easier when there were Frenchmen with them, and from the beginning the Allumettes had opposed French-Huron trade contacts. With increased Huron and Nipissing activity among the upper Ottawa River Algonquins the Allumettes probably saw their position as middlemen eroding. If the French started travelling the Ottawa even the lucrative tolls might disappear.

Only a few Huron canoes came to trade in 1634 (J. R., Vol. 7:213; Vol. 39:51). Brébeuf put the total at about eleven (J. R., Vol. 8:69). The reasons for this small number were as follows. During the Autumn of 1633, smallpox made its first appearance among the Hurons (J. R., Vol. 8:43, 71-73), and in the next spring they suffered heavy losses at the hands of the Iroquois (J. R., Vol. 8:69). In the early summer news of a new invading Iroquois army prompted most Hurons to stay at home to defend their villages (J. R., Vol. 7:213). Furthermore, the villages that had participated in Brulé's murder were still afraid to go to the St. Lawrence; as a matter of fact the other Huron villages prevented them from doing so, probably fearing that they could be drawn into a Huron-French blood feud if the French tried to arrest the murderers (J. R., Vol. 8:99). Fortunately some Nipissing canoes had come to trade with whom some of the priests could travel to Huronia (J. R., Vol. 8:71). Again the Allumettes objected to the passage of Frenchmen through their territory (J. R., Vol. 7:215; Vol. 8: 71, 83); in fact they told the priests that the same would be done to them as had been done to Brulé. In the end the priests were given passage by

some Hurons and Nipissings, but it was made clear that they would have preferred Frenchmen with guns instead of priests (J. R., Vol. 7:217).

Sometime during the summer of 1634 the Hurons made peace with the Senecas (J. R., Vol. 6:57; Vol. 7:215; Vol. 8:59, 115), and possibly also with the other Iroquois tribes (J. R., Vol. 8:117).

During the winter of 1634 to 1635 some Allumettes came to Huronia spreading a story that Champlain did not want the Jesuits to live in Huronia anymore because of Brulé's death, and that he demanded four Huron heads as revenge (J. R., Vol. 8:103). The Jesuits managed to persuade the Hurons that none of this was true, but claimed that the stories would have been successful in disrupting trade if they had not been there to refute them. Another attempt to sew discord between the French and Hurons came in the spring of 1635 when some Montagnais arrived at Quebec with the story that the Hurons had killed the Jesuits for spreading disease among them (J. R., Vol. 8:43).

To everyones relief the first canoes arrived from Huronia on July 10th, exactly how many, is not known (J. R., Vol. 8:45). On the 22nd of July Champlain held a council with the Hurons explaining to them that French goodwill depended on good treatment of the priests and adoption of Christianity. Adoption of Christianity would assure victory over the Iroquois, and the coming of many Frenchmen to Huronia would mean intermarriage and that the Hurons would be taught to make all the articles they were now trading from the French (J. R., Vol. 8; 49-51).

During that summer rumours began to circulate that the Iroquois had attacked some canoes of the Petite Nation and had attempted to bribe the Montagnais into attacking the Hurons (J. R., Vol. 8:59). The Jesuits

saw these stories as an attempt by the New England traders to alienate the Hurons from their Algonquin, Montagnais and French allies, and through the Iroquois-Huron peace, divert the Huron fur trade to the south (J. R., Vol. 8: 61). Other rumours spoke of an impending Iroquois attack on Huronia.

In the same year the Jesuits observed that the Huron country, and presumably adjacent areas, were now out of beaver and the Hurons had to go "---elsewhere to buy the skins---" (J. R., Vol. 8:57).

Towards the end of March 1636 a group of Allumettes arrived with presents among the Hurons and the Algonquins and Nipissings that were wintering in Huronia, with the request to join them in a war against the Iroquois (J. R., Vol. 10:73-77). Apparently some Iroquois had raided the Allumettes killing a number of them. The Hurons and their allies turned the request down, "---on account of the extortion practiced on them by the Island Savages (Allumettes) in going down for trade" (J. R., Vol. 10: 77). Other reasons that were given for turning down the Allumettes were need for protection at home. The Attignaouantan refused outright because the Allumettes had slighted them by not giving them presents. The Allumettes, disappointed in their requests, warned both Hurons and French that they would refuse to let them pass through their territory in the summer (J. R., Vol. 10:77). Next, the Allumettes turned to the priests trying to win them over with flattery, pointing out that the Hurons had killed Brulé and Nicolas Viel, and that the best thing would be if they returned to Quebec (J. R., Vol. 10:79).

After the Allumettes left, a small group of Amikouas arrived from the mainland north of Manitoulin Island with the request that the French help them in a war with the Puans (J. R., Vol. 10:83). This is the only

reference since the 1620's to Indian relations northwest of Huronia.

Huron raids against one of the Iroquois tribes in the spring of 1636 (J. R., Vol. 10:83), and subsequent fears of an Iroquois invasion delayed the trip to Quebec that year (J. R., Vol. 9:245; Vol. 13:7). Finally on July 22nd the first major contingent of eight to ten canoes left followed by others over the next week (J. R., Vol. 13:7-9). A few canoes seem to have left during late June because the first Huron canoe arrived at Trois Rivières on July 15th (J. R., Vol. 9:245). Apparently it had been sent ahead to negotiate a passage with the Allumette (J. R., Vol. 9:247). On August the 15th another canoe arrived with the news that the Allumettes were holding up the main Huron contingent (J. R., Vol. 9: 271). Initially the Hurons were unable to pass and thirteen canoes returned to Huronia (J. R., Vol. 9:271). The main body of Hurons waited until the priests got to the island, who eventually got them through after much haggling and gift giving (J. R., Vol. 9:271-277). The upshot of the incident was that no matter by how much the Hurons outnumbered the Allumettes, they observed the laws governing passage. Furthermore, the Hurons saw that it was essential that some Frenchmen accompany them. The Jesuits interpreted this incident as further evidence that the Allumettes "---would prefer that the Hurons should not come to the French nor the French go to the Hurons, so that they themselves may carry away all the trade" (J. R., Vol. 9:275).

On August the 19th the Hurons finally arrived at Trois Rivières (J. R., Vol. 9:279). The contingent was made up of only a "---few canoes but they carried a great amount of merchandise" (J. R., Vol. 9:273-275). After trading was completed the Hurons were persuaded to leave twenty boys

with the French to start a seminary. In return the French promised to send more Frenchmen to Huronia (J. R., Vol. 9:283-293).

During this year the Iroquois peace seems to have been only between Hurons and Seneca (J. R., Vol. 13:45). Both the Montagnais and Algonquins organized raids against the eastern Iroquois (J. R., Vol. 9: 251-253). The Hurons also engaged in some fighting (J. R., Vol. 9:225) but there were no reports of Iroquois warfare along the trade routes.

During the winter of 1637 to 1638 smallpox raged through the Huron villages. Not being able to find a specific cause for the disease an amazing variety of theories circulated. Some Allumettes, trying to sew discord between the French and Hurons, claimed that the Hurons were bewitched by Champlain's cloak and that the explorer wanted them to join him in the afterlife (J. R., Vol. 13:247). Other Algonquins said it was a deliberate act of the French (J. R., Vol. 12:85-87). Some Hurons saw the diseases as French vengeance for the death of Brulé (J. R., Vol. 12:87), others said Brulé's uncle was avenging him (J. R., Vol. 14:17), and still others said it was a curse from Brulé's sister (J. R., Vol. 14:53). At times French trade goods were blamed as the carriers of the disease and some Hurons stopped using French kettles (J. R., Vol. 12:237; Vol. 15:21). Most often the Jesuits were accused of causing the diseases and several councils were held to decide what to do with them (J. R., Vol. 13:215; Vol. 14:15-23; Vol. 15:37-51). At a council meeting in January 1637 one of the influential chiefs told the others that getting rid of the Jesuits would mean the ruin of the country because French-Huron ties would be severed and trade would come to an end (J. R., Vol. 13:215-217). At a meeting in August a decision was made to defer all actions against the

Jesuits until the Huron traders returned from Quebec (J. R., Vol. 15:47). Since the traders were well satisfied with French conduct at the trading posts and could not see the French being deliberately responsible for the diseases, the matter was shelved (J. R., Vol. 15:55).

As usual, during the winter a number of Nipissings lived near the Huron villages (J. R., Vol. 13:191; Vol. 14:7). These departed, sadly decimated by smallpox, on April 19th when the waters of Georgian Bay became navigable (J. R., Vol. 14:37). During the winter the Ottawa also came to Huronia. Their purpose was to return 2,400 beads they had once stolen from Brulé thinking that this was what caused the diseases (J. R., Vol. 14:99-103). Apparently the Jesuits had little prior knowledge of the Ottawa because they spoke of them as a "strange nation" with whom the French had no formal relations (J. R., Vol. 14:103). During this time some Jesuits visited the Petun (J. R., Vol. 14:87). In contrast to later years, no Huron opposition was recorded.

During the spring rumours circulated that the Iroquois were going to attack as soon as the Hurons left for trading (J. R., Vol. 14:39). Due to these rumours embarkation was deferred until mid June (J. R., Vol. 14:55, 109). Apparently the attack on Huronia did not materialize, instead the Iroquois waited near the junction of the Ottawa and St. Lawrence River. On June 28th a group of Algonquins led by Iroquet managed to rout an Iroquois contingent on Lac St. Louis (J. R., Vol. 12:181), and in late July the first Huron canoes arrived at Trois Rivières (J. R., Vol. 12:193). In the meantime, however, the Iroquois had returned and on August 6th ambushed a group of Hurons just above Trois Rivières (J. R., Vol. 12:199). The Iroquois followed up their victory by coming right up to the French trading post

(J. R., Vol. 12:201-203). In total the Jesuits estimated that the Iroquois army was made up of some 500 men. Further Huron losses took place at various times during August (J. R., Vol. 12:97-99, 207-211). On August 27th four Huron canoes managed to make it through the Iroquois blockade (J. R., Vol. 12:227), followed by one more on August 29th (J. R., Vol. 12: 235). The main Huron contingent of 150 men finally arrived on September 5th (J. R., Vol. 12:235-237). Most of the canoes were filled with sick people and it is a wonder that trading was attempted at all (J. R., Vol. 12: 231).

During the usual council meetings, presents were again exchanged and the Hurons were assured that the French had not spread the diseases deliberately (J. R., Vol. 12:249-251). The Hurons were again urged to return next year bringing with them some families to settle at Trois Rivières and Quebec (J. R., Vol. 12:255-257). The Huron village at Quebec was seen in four main ways; to have a group of hostages nearby and thus help to insure the safety of the Jesuits in Huronia; to insure that the Hurons would come trading in succeeding years; to create a group of Christian Hurons who would hopefully help to convert others; and lastly it was hoped that the men in the Huron village would help defend the French against the Iroquois (J. R., Vol. 12:79-81).

On October 3rd the Huron fleet arrived back at Huronia, apparently well satisfied with the trading they had done and the conduct of the French (J. R., Vol. 15:53-55). As usual the Nipissings spent the winter of 1637 to 1638 in Huronia (J. R., Vol. 14:7).

In contrast to the previous years, 1638 and 1639 are poorly documented. During 1638 the Nipissings as well as the Hurons were badly hit

by the diseases (J. R., Vol. 15;135-137). In spite of the diseases a Huron trading party managed to make it to Trois Rivières sometime in August (J. R., Vol. 14:267). At about the same time a Huron-Algonquin war party of some 300 men successfully battled the Oneida (J. R., Vol. 17: 63-71) showing that by no means all Huron men were actively engaged in trade. On two occasions that year the Allumettes made their presence felt. When Jérôme Lalemant went to Huronia in August of that year he was seized by the Allumettes and had to be ransomed from them by some Hurons (J. R., Vol. 14:269-271). The other occasion came in early September when the returning Huron traders were again told not to take any more Frenchmen to Huronia (J. R., Vol. 15:151). During the fall of 1638 the Jesuits were repeatedly blamed for causing all the "current troubles" but nothing positive was done about it (J. R., Vol. 17:115-119). No major Iroquois incursions were noted this year. The Seneca, at least, seem to have been busy on their Neutral frontier. In August 1638 some 600 Wenrohs evacuated the Niagara area and settled among the Hurons (J. R., Vol. 17:25).

There are almost no specific dates given for trading activities in 1639. Some Huron canoes must have begun arriving at Trois Rivières during July, because Father Chaumonot who travelled back with them to Huronia arrived there on September 10th (J. R., Vol. 18:11, 15). To the French, at least, trading was very successful that year. Not only did the Hurons come down but also 100 canoes of Allumettes and those from the Petite Nation (J. R., Vol. 16:43, 125). Besides these two Algonquin tribes, Nipissings and Attikamegues also appeared for trading (J. R., Vol. 16:47, 71).

On the whole Iroquois activity seems to have been light during 1639.

Jérôme Lalemant did however mention that even though this activity only consisted of "a few broken heads" the Hurons got consistently the worst of it (J. R., Vol. 19:81).

During the winter of 1639-1640 the Jesuits attempted to open a mission among the Petun. On their arrival they found almost universal hostility (J. R., Vol. 20:47). The Petun were of course afraid that the Jesuits had come to spread more disease amongst them. This fear was fanned by ". . . some Hurons, who went thither from time to time to effect some trades . . ." (J. R., Vol. 20.51). These Hurons urged the Petun to drive the Jesuits out of their country.

The fact that the Hurons spread sinister stories about the Jesuits to the Petun is usually interpreted as Huron protection of their commercial interests among the Petun (Hunt, 1960:56). While this may be true, also important was the genuine fear the Petun had of smallpox. The stories that the Hurons circulated among the Petun were no different from the stories that the Hurons were circulating among themselves. The Jesuits arrived among the Petun after the disease had been rampant for a number of years. It probably did not take much to fan the natural fear that the Petun had of the Jesuits.

By the summer of 1640 the diseases had diminished and the Petun began seeing the Jesuits in a more favourable light (J. R., Vol. 20:97). It was then that the Hurons spread stories that could be construed as a protection of commercial interests. The Jesuits observed that the Petun did not travel to the French to trade; that the Hurons did not permit them to trade with the French and that the Hurons spread stories among the Petun designed to breed distrust of the French (J. R., Vol. 21:177).

The principal Petun crop was still tobacco (J. R., Vol. 20;43). In return the Hurons probably exchanged French trade goods. There is not the slightest hint or suggestion that the Petun traded corn or for that matter anything else except tobacco. The supposition by Hunt (1960:56) that the Hurons used the Petun area as a granary seems entirely without foundation.

During the winter of 1639 to 1640 some Algonquins again wintered in Huronia (J. R., Vol. 20:39). The Jesuits continue to describe this as a regular yearly affair (J. R., Vol. 20:41).

During the summer of 1640 the Huron canoes left as usual for Quebec in small groups and at various times. The last group apparently left in early August (J. R., Vol. 20:77-85). In contrast to previous years the Jesuits and Hurons noted a sharp increase of raids on the Ottawa-St. Lawrence route during 1639 and especially 1640 (J. R., Vol. 17:223; Vol. 18:33). In the spring of 1640 the Iroquois even struck within sight of Trois Rivières (J. R., Vol. 18:187) as well as further upstream (J. R., Vol. 20:169). In the late summer these attacks were repeated near Trois Rivières as well as Montreal Island where the Iroquois captured several Frenchmen (J. R., Vol. 21:23). As a result of these raids fewer canoes seem to have passed through to the French posts and the Jesuits began to express genuine concern that if this kept up, their line to Quebec could be severed (J. R., Vol. 20:77). Another result of these raids was that some of the Algonquin groups were moving up the Ottawa and into the interior away from the St. Lawrence (J. R., Vol. 18:245). During this year the Allumettes still bragged that they controlled the movements of the Hurons, but their power seems to have been on the decline (J. R., Vol. 20:

155-159).

Although small Iroquois raids continued into Huronia during 1640, there is no mention of Huron retaliations (J. R., Vol. 20:79). Instead the Allumettes, Petite Nation and other Algonquins organized a war party against the eastern Iroquois (J. R., Vol. 20:167). On the whole the Iroquois seem to have come out somewhat better over the seasons exchange of hostilities.

By 1640 a sizeable group of Indians had settled at Trois Rivières and Quebec. These were principally composed of Algonquins, some Montagnais and Hurons. It is these Indians that now started trading northwards into the interior. During the summer of 1640 some travelled down the St. Lawrence to trade up the Saguenay (J. R., Vol. 18:111), while others, principally Algonquins, headed up the St. Maurice river system as far as Lake St. John to trade with the Papinachois and from there to Lake Mistassini to tap the fur resources of the Outagomois (J. R., Vol. 18:115-117). The description of these trips shows that the Algonquins had pushed the fur trade to the margins of the boreal forest. This new pattern in the fur trade became stronger over the 1640's and was one that Hurons who were settled at Trois Rivières and Quebec soon participated in.

In November 1640 Fathers Brébeuf and Chaumonot set out for the Neutrals to attempt a new mission (J. R., Vol. 17:37-41; Vol. 21:187-237). The reaction of the Neutrals to the Jesuits was similar to their reaction against Joseph Daillon fourteen years earlier and the reaction the Jesuits got from the Petun in 1639. Prior to the Jesuit's arrival among the Neutrals the Hurons had laid a groundwork of rumours, suspicion and ill feeling. Huron opposition to this trip was so strong that it was only by pure chance

that the Jesuits found someone who was willing to guide them (J. R., Vol. 21;205). Realizing that there might be opposition from the Neutrals to a group of priests, the Jesuits set out well supplied with trade goods and two French domestics in order to pass into Neutral territory on the pretext of being traders (J. R., Vol. 21:205). Although they were greeted with suspicion the pretext of trade opened up several villages for them (J. R., Vol. 21:207). After they were among the Neutrals for some time the domestics were sent home and all pretext of trade was removed (J. R., Vol. 21:209). Immediately the situation changed. Neutral interest in the Jesuits flagged. The Hurons, whose suspicion had been aroused as soon as the Jesuits made a pretext of trading, immediately redoubled their efforts to have the Jesuits ejected from the Neutral villages or killed (J. R., Vol. 21:290-223). In the end the Jesuits were forced to leave, convinced that the Hurons ". . . feared the removal of their trade . . ." (J. R., Vol. 21:205). Apparently Montmagny's warnings to the Hurons, not to engage in such calumnies against the Jesuits, had had little effect on their behavior when they felt their trading interests were threatened (J. R., Vol. 21: 143; Vol. 22:310).

As usual some Algonquins came to winter in Huronia. About 250 Nipissings camped a short distance from Ste. Marie (J. R., Vol. 21:143, 243) and fifteen cabins of Atontrataronons near St. Jean Baptiste (J. R., Vol. 21:247).

In February 1641 the Iroquois held a council among themselves to decide whether they should approach the French with a proposal for peace (J. R., Vol. 21:29). According to Dutch sources the year 1640 marked the exhaustion of the Iroquois beaver supply (Hunt, 1960:34, 74). It also

marked the enforcement of Dutch legislation against the sale of firearms to the Iroquois (Hunt, 1960:74, 165-169). Faced with these problems an Iroquois delegation of some 350 well armed men arrived at Trois Rivières in the early summer of 1641 (J. R., Vol. 21:37-39). At least another 150 Iroquois stationed themselves at various places along the St. Lawrence ready to intercept Algonquin and Huron canoes (J. R., Vol. 21:33, 41, 49). In their meeting with the French the Iroquois stated that they were unhappy with the Dutch and distrusted the English (J. R., Vol. 21:33, 55). What they wanted to do was form an alliance with the French but not the French Indian allies (J. R., Vol. 21:37-39). The main trade item the Iroquois wanted was guns (J. R., Vol. 21:53, 61). This was of course not the kind of peace proposal the French could accept. Any peace would have to include the Hurons, Algonquins and Montagnais as these would cease to trade with the French if they were excluded (J. R., Vol. 21:57). By mid summer the peace negotiations collapsed and the Iroquois fanned out to raid the Huron and Algonquin fur brigades. Immediately some Huron canoes were taken, while others turned back to warn the rest who were coming down the Ottawa (J. R., Vol. 21:65-67). During these skirmishes the French noted that at least 36 out of the 350 Iroquois had guns which they knew how to use very effectively (J. R., Vol. 21:63-65, 119). By the late summer the Iroquois finally departed allowing the Hurons to get through (J. R., Vol. 21:75).

During the summer several Huron villages launched raids into the Iroquois country (J. R., Vol. 23:173). Their success is uncertain.

During the late summer, besides the Hurons, a number of Algonquin tribes also arrived for trade (J. R., Vol. 21:117). These included the

Kotakoutouemi, Iroquets, Allumettes and Petite Nation (J. R., Vol. 20:259). The Attikamegues came as usual to Trois Rivières to trade but departed almost immediately due to their fear of the Iroquois (J. R., Vol. 20:271-273; Vol. 21:117). During the same summer some Hurons from the French St. Lawrence settlements followed the example of the Algonquins set the previous year by trading into the interior to the Ondoutawaka on the upper Saguenay (J. R., Vol. 22:75).

Nipissing trade with the French had dropped off during the beginning of the 1640's. According to the Jesuits the reason for this was because they were no longer permitted passage along the lower Ottawa (J. R., Vol. 21:241). During this period, however, the Nipissings still held the routes to the northern and western tribes (J. R., Vol. 21:185, 239). In the spring some Nipissings would depart up the northern rivers supplied with corn and trade goods which they would exchange for furs to the Crees (J. R., Vol. 21:123-125). They would trade there for ten days and then return to Lake Nipissing where some gathered to go down to the French to trade while others may have exchanged their furs to the Hurons (J. R., Vol. 21:239). At least in 1640, the Nipissings found Montagnais traders among the Cree (J. R., Vol. 21:123-125). In the autumn the Nipissings slowly made their way to Huronia fishing along the way, which they would dry and sell to the Hurons for corn (J. R., Vol. 21:239). The success of the Nipissing trading expeditions was summed up by the Jesuits, who considered them ". . . rich people who live in comfort (J. R., Vol. 21:239).

b) Summary and discussion: 1632-1641.

Trade and intertribal relations in the years from 1632 to the end of 1641 were in a sense a continuation of the main themes of the 1620's.

However, a few elements had been added that were to become dominant in the 1640's. Chief among those was the ascendancy of Iroquois power.

During the 1630's the Hurons were hard hit by smallpox. These diseases created strained relations with the Jesuits but did not seem to affect Huron relations with the French traders. "As a matter of fact in spite of the frightful death toll trading went on throughout all the years that the epidemic lasted. No doubt the reason why the Hurons were able to carry on trading in spite of these difficulties was that of the total male population only a fraction was engaged in trade. Besides, the diseases hit the young and old harder than the adult men.

Huron trade with the Neutrals and Petun went on as in the 1620's. At no time did either of these tribes come to the St. Lawrence and in contrast to the years before 1626, Frenchmen were discouraged from attempting to form any strong contact with them. Throughout the period, furs and tobacco seem to have been the main Neutral and Petun trade items. In return they received French goods. There does not seem to be any evidence that corn was traded by either the Petun or the Neutrals to the Hurons.

Huron relations with the Algonquin tribes were more complex than with the Neutrals and Petun. Until the late 1630's the Nipissings still travelled the route to the St. Lawrence. After that some still continued, but most seem to have given up the yearly voyages in favour of trading their furs to the Hurons. Opposition from the tribes along the Ottawa and no doubt the increasing Iroquois raids did not make the trip worthwhile. In contrast to the Hurons, the Nipissings did not have Frenchmen to help them through the blockades set up by the Allumettes. Nipissing control over the northern and western fur routes remained complete. Some Hurons

probably travelled with Nipissing and Ottawa traders as far as eastern shores of Lake Superior, but on the whole these seem to have been Algonquin routes.

During the winters, the Nipissings consistently came to Huronia. During this time they would lay in a supply of corn which they traded from the Hurons for fish and perhaps furs. The corn was later retraded to the northern tribes by the Nipissings. It was this activity that prompted Brébeuf to write that Huronia was ". . . the granary of most of the Algonquins" (J. R., Vol. 8:115). In view of the number of Algonquins involved this statement seems like a gross exaggeration. As pointed out earlier, it is difficult to know whether the Hurons strove to create a corn surplus specifically for trading. In view of the occasional Huron famine and the number of Algonquins involved in the corn trade one would be inclined to think that the Hurons traded any surplus corn above their seed and subsistence needs, but did not produce large surpluses specifically for trade.

Until the beginning of the 1640's the Allumettes were a major power along the Ottawa. Every year Huron canoes were delayed at Allumette Island where they had to pay toll charges in corn and furs. During the 1620's and early 1630's some Hurons were moderately successful in evading Allumette tolls by having Frenchmen travel with them. Due to trading ties with the French the Allumettes hesitated to force Frenchmen into paying toll charges. By 1638, however, the Allumettes were even stopping the Jesuits.

The stiffening of Allumette behavior can be seen in several ways. Firstly, through intertribal law the Allumettes had the right to stop anyone

from passing through their territory, or make them pay toll charges. Secondly, the Allumettes wanted to retain their position as middlemen between the French and those tribes to the north and west. Because of their relations with the French, the Allumettes could not stop the Hurons coming down the Ottawa, but they could make it costly and unpleasant for them. The Hurons in turn did not force their way across Allumette territory. Had they done so, the whole intricate trading system might have collapsed. It would have given the Petun and Neutrals the excuse to force their way across Huron territory, and would certainly have caused a major rupture with a number of Algonquin tribes such as the Petite Nation with whom the Allumettes had close relations.

The rules regarding rights of passage were universally accepted in Eastern North America and had a bearing on restricting the extent of the Huron trade network during this period. In the west the Hurons traded furs from the Neutral, Petun, Ottawa and Nipissing but did not seem to travel to the fur sources of these groups. More furs were probably picked up along the tributaries of the Ottawa. Passing down the St. Lawrence, the Huron traders got as far as Trois Rivières and sometimes Quebec. They were not allowed to pass further down the river because the Montagnais did not permit it (J. R., Vol. 8:41; Vol. 12:187-189). The Hurons traded a little corn, some tobacco, nets and squirrel skins to the Montagnais for moose skins (J. R., Vol. 6:273, 309; Vol. 7:13), they aided each other in war, and neither trespassed on the others' trade routes. The routes followed by the Hurons throughout this period as well as the organization and execution of trade seems to have been similar to the previous period.

Towards the end of this period some trends began to appear that

were to become dominant themes in the 1640's. Algonquins and a few Hurons settled at Trois Rivières and Quebec were beginning to pass up the rivers leading north from the St. Lawrence to tap the furs in what is now central Quebec. Several references show that they were working some of the same areas as the Montagnais. It is not clear why the Montagnais permitted this. The best explanation seems to be that since these traders were Christian Algonquins settled with the French the country was more open to them.

The major factors that bring this period to a close and usher in the 1640's are the activities of the Iroquois. Iroquois raids on Huronia and the lower Ottawa/upper St. Lawrence area had been sporadic throughout the 1630's. In the traditional annual raids on each others territory the Hurons seem to hold their own. Along the trade routes Huron losses were annoying but not really serious until 1640 and 1641. The growing intensity of Iroquois raids after 1640 can be ascribed to the decline of beaver in the Iroquois territories. As events show later, the annual raids on the Huron fur brigades did not really bring in enough furs for Iroquois purposes. The Iroquois peace proposals of 1641 were the first of a number of halfhearted attempts by the Iroquois to gain access to French trade and the northern fur resources by peaceful means. Each rejection of peace was followed by an intensification of warfare and a major change in tactics. It is this pattern that highlights the 1640's.

7. The Interrelations of Trade, Peace and War to 1649.

a) Yearly trading activities and intertribal relations: 1642-1649.

The year 1642 was marked by a series of Huron disasters which began to crystallize into a pattern leading ultimately to the collapse of the

trade network and finally the complete society. This pattern consisted of two main elements: firstly, much more intensive and extensive raids into Huronia, carried out primarily by the Seneca, Cayuga, Oneida and Onondaga; secondly, almost constant year round harrassment along the Ottawa and St. Lawrence trade route by the Mohawks and some Oneida. The intensification of Iroquois activity can be explained by a change in Iroquois motives, means and opportunity for carrying out warfare; and their success by the inadequate response of the weakened and divided Hurons who never seemed to grasp that Iroquois motives and aims for carrying out warfare had changed.

During the winter of 1641 to 1642 the Iroquois launched a series of raids on Huron frontier villages, with the result that one village among the Arendaronon was entirely destroyed (J. R., Vol. 23:105-107; Vol. 26: 175). Harrassment of Huron villages by roving Iroquois troops continued throughout the summer (J. R., Vol. 26:179, 205). The successful destruction of an entire village and the fact that warfare went on the entire summer was a marked departure from the traditional yearly raids.

Along the Ottawa and St. Lawrence, Iroquois activities reached a new height. Their blockade was so complete that for the first time virtually no Huron canoes got through (J. R., Vol. 22:273, 277; Vol. 23:35, 267, 269; Vol. 24:273-293; Vol. 26:201). In addition to destroying or capturing the small fleets of Huron canoes, the Mohawks managed to capture Father Jogues who was attempting to reach Huronia (J. R., Vol. 22:269).

A by-product of the Iroquois raids along the Ottawa and St. Lawrence was the withdrawal of the Algonquin tribes into the northern interior (J. R., Vol. 22:93, 127, 249; Vol. 25:105-115). In the spring of 1642, Iroquet's Algonquins were partially destroyed (J. R., Vol. 22:

269), and in the autumn of the same year the Allumettes (J. R., Vol. 24: 257). By the winter of 1642 to 1643 the Allumettes were referred to as a "scattered tribe", "reduced to nothing", exterminated by "disease and decimated by war and famine" (J. R., Vol. 24:267; Vol. 26:303). So effective was the destruction of the Ottawa River Algonquins that they never caused the Huron fur brigades any more problems.

Huron counterattacks during this year seem to have been ineffective (J. R., Vol. 22:305). Iroquois successes were explained in terms of two chief factors. The first of these was the possession of guns and in particular their effective use (J. R., Vol. 22:269, 279, 307). This observation was repeated almost every year until the demise of Huronia. Although the number of guns the Iroquois had was not large, they knew how to fire them from ambush in unified volley's. The disorganization caused by the discharge of the guns seems to have been highly effective, particularly in attacking the fur brigades. A second factor in the success of the Iroquois raids on the fur brigades was their change in tactics:

> In former years, the Iroquois came in rather large bands at certain times in the Summer, and afterward left the River free: but this present year, they have changed their plan, and have separated themselves into small bands of twenty, thirty, or a hundred at the most, along all the passages and places of the River; and when one band goes away, another succeeds it (J. R., Vol. 24:273).

In previous years the small Huron fleets had often waited on the upper Ottawa until the main body of the Iroquois war party had left the St. Lawrence area. This was the main reason why the Hurons sometimes arrived late in the summer at Trois Rivières. Now however, the Iroquois were along the trade route from early spring until late autumn.

The motives for Iroquois warfare were also becoming increasingly

clearer to the Jesuits. The Iroquois were in fact after the furs being carried in the Huron, Algonquin and Montagnais canoes (J. R., Vol. 24: 271). The reasoning was that the Iroquois needed the furs in order to trade powder and guns from the Dutch (J. R., Vol. 24:271-273). The depletion of furs in the Iroquois country by 1640 was noted earlier.

The only highlight of the year was the arrival of 13 canoes with some 60 Attikamegue, who came down the St. Maurice to Trois Rivières to trade and spend the winter (J. R., Vol. 23:309; Vol. 24:67). Their territory lay some three to four days journey up the St. Maurice (Map No. 33). The fact that the Attikamegue made the trip down the St. Maurice and the Hurons were not able to make it to Trois Rivières in 1642 points out that the Hurons were not using a northern route. It simply does not make any sense that the Hurons would run the risk of being captured by the Iroquois on the Ottawa and St. Lawrence if another route was available to them as Hunt supposes (Hunt, 1960:60-62). The closing of the Ottawa--St. Lawrence route in 1642 and the fact that the Hurons did not get through to Trois Rivières or any other St. Lawrence trading post shows that a northern Huron route did not exist. References to events in the later 1640's seem to confirm this conclusion.

In the winter of 1642 to 1643 several Algonquin groups wintered in Huronia. Among thesewere some refugee Allumettes, Nipissings and Atontrataronons (J. R., Vol. 26:301-307; Vol. 27:37, 55). In the spring a group of some 100 Neutrals came to Huronia for a short visit (J. R., Vol. 27: 21-27). According to the Jesuits the reason for this visit was to receive religious instruction and to ask the Fathers to open a mission among their villages. Apparently the Jesuits had some Huron converts operating among

the Neutrals. It was these converts who ostensibly arranged the visit. Whether the Neutrals were also seeking aid in their wars against the Assistaeronons or trying to make trade connections is not known. As far as one can tell from the ethnohistoric sources, this was the only time a sizeable group of Neutrals ever visited the Hurons.

During the summer of 1643 the Hurons suffered a number of severe defeats. Attempting to carry the war into Iroquois country a major Huron war party was defeated with no survivors (J. R., Vol. 28:45). Similar disasters occurred on the route to Trois Rivières (J. R., Vol. 28:45). The net effect was that only a few Hurons got through to carry on trade (J. R., Vol. 24:105). As far as the Jesuits were concerned, the Iroquois had ". . . closed all the passages and avenues of the River that leads to Kebec" (J. R., Vol. 27:63).

Although the Hurons carrying the furs from Huronia and the western Great Lakes area had little success in penetrating to the St. Lawrence, the Hurons settled at Sillery near Quebec, Tadoussac and Trois Rivières appear to have continued in their effort to tap the fur resources of the Montagnais. Two references show that some Hurons were operating in the upper Saguenay-Lake St. John area (J. R., Vol. 24:155; Vol. 27:27). Apparently the Hurons had a regular meeting place which they called Maouatchihitonam somewhere on the north shore of the Saguenay near Lake St. John in the traditional territory of the Cacouchaqui (J. R., Vol. 24:155). Of the thirteen small Montagnais tribes which came to the meeting place six are identifiable on the contemporary maps. These six all lived within the area drained by Lake St. John or a rough arc of some 200 miles from the west of Lake St. John through Lake Mistassini and Lake Manuan to the

shore of the St. Lawrence. There is no evidence that Hurons were travelling from Huronia to these tribes. Several references make it clear that the Christian Hurons at Trois Rivières, Sillery (Quebec or St. Joseph) and Tadoussac were operating this trade (J. R., Vol. 24:103-155) together with Algonquins and Montagnais resident at the same French settlements. In 1647 we learn that the Hurons from Huronia had a similar meeting place to the north of the upper Ottawa where they contacted a portion of the Attikamegue and other northern tribes (J. R., Vol. 31:219). In both cases the Hurons had a well established meeting place to which the Algonquin and Montagnais groups travelled. The Hurons themselves did not seem to have travelled beyond these meeting places into the areas occupied by these groups. As a matter of fact it would have been highly impractical. The Montagnais and Algonquin groups the Hurons were trading with consisted of small highly nomadic bands. To contact them individually would have been too time-consuming. The successful operation of trade therefore depended on the establishment of a regular meeting place which was accessible to all the groups. The lack of a northern route from the meeting place in the upper Ottawa area to Trois Rivières and the Saguenay is further strengthened by the Jesuit's discussion of their mail delivery to and from Huronia in the years the lower Ottawa, upper St. Lawrence area was blocked by the Iroquois. Mail was brought by the Hurons from Huronia to the meeting place north of the Ottawa, where it was taken by the Attikamegues to Trois Rivières. Mail from Trois Rivières was given to the Attikamegues and delivered to the Hurons at the same meeting place (J. R., Vol. 31:219). There is no mention of the Hurons travelling over this route.

The year 1644 was no better than the previous years from a Huron

and French point of view. Apparently the Hurons had tried to arrange some sort of peace in 1643 but these efforts did not materialize (J. R., Vol. 26:31). By April the Iroquois had blockaded the St. Lawrence leading to the capture of Father Bressani who was attempting to get to Huronia (J. R., Vol. 25:193). As in previous years Iroquois bands were scattered along the entire trade route above Trois Rivières (J. R., Vol. 26:35-37). Later in the summer several Huron fur brigades were captured and raids were launched in the vicinity of the French posts from Montreal to the mouth of the Richelieu (J. R., Vol. 27:221-225; Vol. 28:45).

Only two major Huron groups seem to have passed the Iroquois blockade. The first of these groups brought Fathers Brébeuf, Gareau and Chabanal to Huronia, escorted by about twenty French soldiers (J. R., Vol. 26:71; Vol. 28:45-47). The next year the soldiers were to escort the Hurons through the Iroquois blockade (J. R., Vol. 27:89; Vol. 28:47). The second group that managed to get through the Iroquois blockade was a Huron war party of some sixty men (J. R., Vol. 26:53). These linked up with a party of Algonquins and attacked a small force of Iroquois near the mouth of the Richelieu. In the skirmish three Iroquois were taken prisoners and taken to Trois Rivières for torture. The ensuing events were of paramount importance to trading activities in 1645 and 1646 (J. R., Vol. 26: 59-71).

When Montmagny heard that the Hurons had two prisoners and the Algonquins one, he decided to ransom the three men in the hope of getting them to arrange a peace treaty. The Algonquins readily accepted payment in return for their captive, but the Hurons did not. As a matter of fact the Hurons made it clear that they were not traders but warriors whose prestige

and glory depended on bringing captives to Huronia, not trade goods (J. R., Vol. 26;63-67). The Hurons went on to say that if these captives were to be used in order to treat for peace it was a matter for their chiefs to decide. Finally it was decided that the Hurons should make an attempt to arrange a peace treaty (J. R., Vol. 26:69-71). As will be shown later these moves resulted in a peace with the Mohawks until the fall of 1646.

As in previous years the Attikamegue came to Trois Rivières to trade (J. R., Vol. 26:81). With them came a small group called the Ouramanichek whose location is not known, but who apparently had trade connections to the north of the Attikamegue (J. R., Vol. 26:91-93).

From a Huron trader's point of view the years from 1641 to 1644 had brought nothing but a series of unmitigated disasters along the trunk route to the French. The amount of Huron fur that got through during these years must have been small. At any rate Montmagny considered the situation serious enough to send French soldiers to Huronia to escort the fur brigades, and to ransom Iroquois prisoners in the hope of making a peace. His fears were of course entirely justified, because in May 1645 Jérôme Lalemant wrote from Huronia that the Hurons were thinking " . . . of giving up the trade with the French, because they find that it costs them too dear, and they prefer to do without European goods rather than to expose themselves every year . . ." (J. R., Vol. 28:57). A strong effort had to be made by Hurons and French to assure safe passage on the Ottawa and St. Lawrence.

The year 1645 was dominated by two events; a partial peace with the Mohawk and the successful passage of a Huron fur brigade.

In the spring of 1645 some Algonquins successfully ambushed a small

party of Mohawks on the Richelieu River and took two prisoners (J. R., Vol. 27:229-231). The prisoners were taken to Quebec where Montmagny negotiated for their release into French custody. In a council with the Iroquois prisoners and the Algonquins it was then decided to release the Mohawk captured the previous year with instructions to contact his chiefs with a proposal of peace. The prisoner was released in mid May, and on the 5th of July returned with two important Mohawk spokesmen for a preliminary council. With them came Guillaume Cousture who had been captured with Father Jogues in 1642 (J. R., Vol. 27:245-247). The ensuing council was attended by Algonquins, Montagnais, Attikamegues, French and Hurons (J. R., Vol. 27:251-253). The main conclusions of the conference were that the Mohawks promised safe passage on the Ottawa-St. Lawrence trade route as well as safe conduct to anyone who wanted to visit them (J. R., Vol. 27:259). In return they wanted an assurance that the Algonquins and Hurons would quit their raids into Mohawk territory (J. R., Vol. 27:263-265). Over some objections by the Hurons, Montmagny accepted the peace and told his Indian allies to do the same (J. R., Vol. 27:267-269). As a token of friendship Montmagny sent two French boys with the Mohawks when they returned to their villages on July 15th. A decision was made to reconvene the council in the fall, giving all tribes concerned adequate time to canvass their villages.

An interesting point that emerged during these negotiations was that the Mohawks kept urging the Hurons in particular to accept the peace, ". . . and after taking the resolution to go to the Iroquois country, to pass by that of the Algonquins and that of the French" (J. R., Vol. 27:263). It appears therefore that the fur trade was of interest not only to the

French and their allies, but also to the Mohawk. The fall negotiations make it clearer that the real reason that the two sides were willing to negotiate a peace was because they both hoped to divert the fur trade into their hands.

Between the preliminary peace talks in July and the grand council in the fall, there were no major incidents on the St. Lawrence. Not so in Huronia. Iroquois raids began in the early spring and lasted into the late summer (J. R., Vol. 29:249-255). The principal Iroquois tribes involved in these raids were the Seneca, Oneida and Onondaga. As a result of these raids the Huron fur brigades did not leave Huronia until August.

On September 10th sixty Huron canoes arrived at Trois Rivières accompanied by the twenty soldiers sent to protect them, Jérôme Lalemant, one of the two Mohawk prisoners from the previous year and a lot of furs (J. R., Vol. 27:277). This was the first time in ". . . five or six years . . ." that any effective trading took place between the Hurons and the French (J. R., Vol. 29:247). Shortly before the arrival of the Hurons, the Attikamegues, some Montagnais, Allumettes, Iroquets and other Algonquin tribes had arrived at Trois Rivières for trade and to participate in the peace council (J. R., Vol. 27:279). On the 15th of September the Mohawk ambassadors arrived. The result of the council was a general peace between the Mohawks and the French Indian allies. Specifically they promised not to raid each other's villages nor would the Mohawk attack the annual trading voyages (J. R., Vol. 27:281-305). As usual people were exchanged, two Algonquins, Hurons and Frenchmen leaving with the Mohawks (J. R., Vol. 27:303). During the peace talks the Mohawk made an interesting point, namely that now since they and the Algonquins and Hurons are "one people",

they could hunt in Algonquin territory (J. R., Vol. 27:289-291).

The trading activities that year netted approximately 30,000 pounds of furs, visible evidence that peace along the trade routes was absolutely essential for trade (J. R., Vol. 27:85). Of this quantity, the soldiers who had gone to Huronia accounted for 4,000 pounds (J. R., Vol. 27:85, 89). If the ratio of 200 pounds per canoe holds true, the sixty Huron canoes accounted for half of the furs taken by the French in 1645.

During the winter of 1645 to 1646 small incidences occurred that were at first blamed on the Mohawk (J. R., Vol. 27:93, 99-101). On closer inspection the Mohawks were exonerated (J. R., Vol. 28:277). At the same time the Algonquins were becoming more convinced that the Mohawks would attack them in the spring (J. R., Vol. 28:149). These suspicions seem to have been founded on the fact that the Mohawk originally did not want peace with the Algonquins but were forced into it by Montmagny (J. R., Vol. 28:149-153, 315). Besides hostilities that went back for generations between the two groups, the Mohawk had also hunted all winter in Algonquin territory (J. R., Vol. 28:279-287). The peaceful opening of the Algonquin beaver lands seems to have been one of the main motives behind the Mohawk peace overtures and one that was no doubt resented by the Algonquins.

Towards the end of February 1646 the Mohawks felt it necessary to go to Trois Rivières to assure the French that they were not responsible for the winter's disturbances (J. R., Vol. 28:291). At the same time they warned the French and their allies that this peace did not include the Seneca, Oneida and Onondaga (J. R., Vol. 28:293; Vol. 29:147). Again the Mohawks made a special point to the effect that they would like to have

unhindered access to the hunting territory of their new allies:

> . . . that the chase be everywhere free; that the landmarks and the boundaries of all those great countries be raised; and that each one should find himself everywhere in his own country (J. R., Vol. 28:299).

True to the warning of the Mohawks the other Iroquois tribes continued to go to war. In the spring of 1646 a combined force of Onondaga and Oneida nearly captured a Huron village (J. R., Vol. 29:149). By July however, Huronia seems to have been in peace.

In order to consolidate the Mohawk peace Father Jogues set out for the Mohawk country on May 16th, arriving there on June 4th (J. R., Vol. 29: 49-51). While among the Mohawk Jogues met a number of Onondaga to whom he gave presents in the hope they would persuade their chiefs to join in the peace (J. R., Vol. 29:57). On June 16th the Mohawk persuaded Jogues and his party to leave because a force of "Iroquois from above" (beyond the Mohawk) had set off to intercept the Hurons (J. R., Vol. 29:59). It is not entirely clear why the Mohawks were so anxious to get Jogues out of their country. The only recorded incidents along the trade route that summer concerns a small band of Oneidas. At first these attacked some Allumettes in mid August but were apparently routed by a group of Iroquets (J. R., Vol. 28:225) or Hurons (J. R., Vol. 29:233). One Oneida was taken captive. The intention was to send him back to his chiefs in order to arrange a peace similar to that of the Mohawk.

On the 26th of August the first Huron canoe arrived at Trois Rivières followed by eighty others with some 300 men in the beginning of September (J. R., Vol. 28:141, 231; Vol. 29:233). The results of the trade were considered even better than the previous year (J. R., Vol. 28:

141). Apparently some Hurons had to return with their beaver because not enough merchandise was available (J. R., Vol. 28:231). On the return journey one Huron canoe decided to take the Lake Ontario route but was captured by a small band of Iroquois. During the fall 35 canoes of Attikamegues, accompanied by some canoes from a tribe north of theirs who were in contact with groups still further north, arrived at Trois Rivières for trade (J. R., Vol. 29:109, 119-121). About the same time the Christian Indians at Trois Rivières decided to organize themselves into a separate band in order to carry out winter hunting and summer trading more effectively (J. R., Vol. 29:107).

On September 24th, Father Jogues accompanied by Jean La Lande set out for the Mohawk with two specific goals; first, to attempt a peace with the other four Iroquois tribes; and second, failing such a peace, to ask the Mohawk not to give the other Iroquois passage across their territory to the Huron trade routes (J. R., Vol. 29:61, 181-183). As soon as Jogues set foot in Moahwk territory he was taken captive and on the 18th of October murdered along with La Lande (J. R., Vol. 30:219-221). According to Jérôme Lalemant the peace was broken because of the age old rancours of intertribal warfare, because the Mohawk saw more profit and glory in war than in peace, and because anti French Hurons who were living among the Iroquois blamed Jogues' visit on a recent outbreak of disease and crop failure (J. R., Vol. 30:227-229). Immediately the Mohawk fanned out along the St. Lawrence resuming the hostilities of the previous years. The first attacks in the St. Lawrence area occurred on the 17th of November 1646 and continued through the entire next year (J. R., Vol. 30:161, 165, 173, 175, 193, 229-253). The Algonquins, Montagnais and Hurons from the French

settlements along the St. Lawrence of course retaliated (J. R., Vol. 30; 167, 179-181, 187).

Rumours of an attack on Huronia and the knowledge of an Iroquois blockade of the trade routes kept the Hurons from travelling to the French posts in 1647 (J. R., Vol. 30:195, 221; Vol. 32:29, 179; Vol. 33:69). The only news that got through from Huronia was via the Attikamegues (J. R., Vol. 30:189, 193, 221; Vol. 31:209-219). The references make it perfectly clear that Hurons did not travel via any northern route but simplay passed mail to the Attikamegues who delivered it at Trois Rivières.[1]

Early in 1647 the Hurons were contacted by the Andastes with an offer to join them in a mutual alliance against the Mohawk (J. R., Vol. 30: 253; Vol. 33:73). On the 13th of April a Huron delegation travelled to the Andastes, returning on the 5th of October (J. R., Vol. 33:129-131). The agreement with the Andastes was that they should arrange a peace with at least the Onondaga, Oneida and Cayuga, and if possible also with the Seneca (J. R., Vol. 33:133). If the Mohawk refused the peace offers the Andastes were to attack them.

At the same time as the Andastes were trying to arrange a peace, the Hurons sent a delegation to the Onondaga to negotiate a peace that would hopefully include the Oneida and Cayuga as well (J. R., Vol. 33: 71-73; 117-127). This delegation returned to Huronia on July 9th with

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1. Hunt (1960:61) even has Father Claude Pijart travelling over this route in 1647. What Hunt did not realize was that there were two Pijarts. Father Claude Pijart was among the Nipissing in 1647 (J. R., Vol. 30:109-125; Jones 1908:370). Father Pierre Pijart was at Trois Rivières on May 29th, 1647 (J. R., Vol. 30:177); from there he travelled to Montreal, arriving back at Trois Rivières in time to receive the mail from the Attikamegues and bring it to Quebec on August 6th, 1647 (J. R., Vol. 30:189).

instructions to parley. In the meantime the Onondaga, Seneca and Cayuga held back their army to await the outcome of the talks (J. R., Vol. 33: 119). The Hurons were divided on whether to negotiate for peace. The Arendaronons were for it, hoping to exchange prisoners, the Attignaouantan were against it. In general the frontier villages wanted peace, the others not (J. R., Vol. 33:119-121). In other words the Huron confederacy was divided at a time when unity was absolutely essential. Only the tribes and villages who had suffered losses wanted a peace. On the Iroquois side the Onondaga, Cayuga and Oneida were ready to agree to the peace, the Mohawk and Seneca were bitterly opposed (J. R., Vol. 33:121-125). In the end nothing came of it because the Mohawk murdered the Huron ambassadors on their way for the final arrangements (J. R., Vol. 33:125-127).

No major attacks seem to have been launched against Huronia in 1647. The Onondaga, Oneida and Cayuga were awaiting the outcome of the peace negotiations; the Mohawk blockaded the St. Lawrence, and the Seneca were occupied in wiping out one of the Neutral tribes.[1]

During the winter of 1647 to 1648 the Arendaronon abandoned their tribal area and retreated to the central and western Huron villages (J. R., Vol. 33:81). This was the beginning of the end for Huronia.

Early in the spring of 1648 the Huron fleet left for the St. Lawrence, arriving at Trois Rivières on July 22nd (J. R., Vol. 32:97, 179;

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1. The Aondironnon was a Neutral tribe on the northern frontier of the Neutral area. The Seneca attacked them because they had allowed the Hurons to take a Seneca near one of their villages; characteristically the other Neutral tribes did nothing to help the Aondironnon.

Vol. 34;101). The organization of this particular fur brigade shows a definite change in Huron tactics. For the first time the Hurons organized themselves into a single large group that travelled together. Significantly the leadership of the group was not in the hands of the traders but five chiefs (J. R., Vol. 32:179). In all some 250 Hurons had come down to trade in 60 canoes (J. R., Vol. 32:97, 179, 185). On the way to the St. Lawrence the Hurons had run into an Iroquois army which they defeated (J. R., Vol. 32:97, 179-185).

Prior to the Huron arrival the Mohawk had sent out several peace feelers to the French. On the 18th of May they parleyed at Montreal stating that they wanted peace with the French but not with the Algonquins (J. R., Vol. 32:87, 143-149). The matter came to nothing. Apparently all the Mohawks were interested in was to get some French prisoners (J. R., Vol. 32:147-151). On the 20th of June the Mohawk made peace overtures at Trois Rivières (J. R., Vol. 32:153-157). Judging from the ensuing events, the Mohawk were only interested in exchanging prisoners and perhaps lulling the French into a false sense of security (J. R., Vol. 32:153-171).

Trading that year was not quite as successful as in 1646 (J. R., Vol. 32:179), but in all brought in about 22,400 pounds of which one sixth came from Tadoussac (J. R., Vol. 32:103). How much of this was brought by the Hurons is difficult to say. While the Hurons were at Trois Rivières some forty canoes of Attikamegues also arrived (J. R., Vol. 32;283), so that it is perhaps fair to say that the Hurons accounted for half of the furs received by the French in 1648.

On August 6th the Hurons left Trois Rivières accompanied by 26 Frenchmen of whom eight were soldiers (J. R., Vol. 32:99). They arrived

back in Huronia in the beginning of September only to learn that in their absence the Iroquois armies had dispersed the population of St. Ignace I and entirely destroyed two other villages among them the large village of St. Joseph II (J. R., Vol. 33:85-89, 99, 167, 259-269; Vol. 34:87-101). The Jesuits put the blame on the fact that too many men were absent from the villages that summer. Some were off to trade, others had gone hunting and a large number had left Huronia on a raid to the Iroquois (J. R., Vol. 33:259; Vol. 34:87). A further factor seems to have been the reorganization of Iroquois warfare. Instead of small groups of men travelling to Huronia bent on terrorizing and gaining captives, the Iroquois were now moving in larger forces bent on destroying entire villages. Iroquois motives and methods of carrying out warfare had changed substantially during the 1640's.

The fact that 250 men had gone to trade in 1648 probably weakened Huronia to some extent. Why then did they go? The Hurons themselves stated that they needed French trade goods, particularly hatchets (J. R., Vol. 32:179). It is probable that by 1648 they had become to some degree dependent on French goods, particularly goods like hatchets, kettles and iron arrowheads that were superior to their own. Two other factors may have played a role. One of these was the fact noted earlier that the bulk of the traders did not consider themselves warriors, leaving that function to others. Another factor may have been a false sense of security into which the Hurons were lulled by the lack of warlike activity and the peace proposals of 1647.

In 1649 only a few Hurons attempted the voyage to the St. Lawrence. On July 20th some arrived with the news that Huronia had ceased to exist

(J. R., Vol. 23:57). On August the 7th a group of 20 Hurons arrived at Trois Rivières (J. R., Vol. 34:59), and on September 22nd Father Bressani with a group of Hurons and soldiers (J. R., Vol. 34:59-61). Several groups departed for Huronia; one on June the 6th including 34 Frenchmen (J. R., Vol. 34:53), and another August 12th including a number of soldiers (J. R., Vol. 34:59). Father Bressani tried to return to Huronia on September 28th, but his Hurons would not go past Montreal (J. R., Vol. 34:61). Apparently the trade route was relatively free of Iroquois in the summer of 1649.

Instead of blockading the trade route the Iroquois had turned their attention on Huronia. As early as the 16th of March the Iroquois army hit the village of St. Ignace II completely destroying it (J. R., Vol. 34:123). Apparently they had spent the winter near Huronia with an army estimated at 1,000 men. A few hours after St. Ignace II was taken St. Louis was attacked and destroyed (J. R., Vol. 34:125). In the process Fathers Jean de Brébeuf and Gabriel Lalemant lost their lives. After a few skirmishes with a Huron force the Iroquois withdrew (J. R., Vol. 34:127-137).

After a joint decision between Hurons and Jesuits, Ste. Marie I and the remaining Huron villages were burned and abandoned. Huronia ceased to exist.

b) Summary and discussion: 1642-1649.

On summarizing Huron trade between 1642 and 1649 only three years stand out during which trade was carried out successfully. The years 1645 and 1646 were successful because of the Mohawk peace, and 1648 because of the excellent organization of the Huron fur brigade and because the Iroquois armies were busy in Huronia. Virtually no Hurons got through to the St.

Lawrence between the years 1642 and 1644, and in 1647 they did not attempt the journey.

In their attempt to get at the Hurons, the Iroquois divided the task, devoted themselves completely to it and were flexible enough to change tactics for maximum success. The Seneca, Onondaga, Cayuga and at times the Oneida consistently raided Huronia. Few of them were ever reported on the St. Lawrence. In 1642 they began to change their tactics from traditional patterns of warfare consisting of small raids along the Huron frontier to massive well organized attacks bent on destroying entire villages. This new type of warfare became effective in the winter of 1647 to 1648 and continued through 1648, 1649 and 1650. The same tactics were later used to disperse the Petun, Neutrals and Erie. The Mohawk and at times the Oneida were responsible for blockading the trade route to the French settlements. They too changed their tactics. Until 1642 some Hurons had always managed to get through by waiting until the Mohawk army returned to their villages in the late summer. In 1642 the Mohawk split into smaller groups along the entire trade route picking off the small Huron flotillas as they came down to trade. The object of the Mohawk was to get furs. Algonquin counterattacks and the fact that the Mohawk were not getting enough furs through raiding, induced them to seek a peace with the French. Part of the peace agreement was that the Mohawk could hunt in Algonquin territory. The instability of such a peace, or any Indian peace for that matter, was demonstrated by the fact that a few murders could touch off immediate intertribal war.

Over the years Huron weaknesses became very obvious. They were politically divided in the sense that the intertribal councils could not

agree on common defense or peace proposals. They were socially divided between Christian and pagan while before the 1640's the Hurons had at least a common social and religious structure. They were debilitated by disease and had lost at least half of their population. Particularly serious was the loss of many old men and women who were the traditional leaders of the society. Since there was no acceptable means by which young men could gain power, political factions developed which further hindered unified action.

In spite of the problems at home and the Mohawk blockade, the Huron traders actually seem to have expanded the Huron trade network in the 1640's. Three factors seem to have been responsible for this expansion. By the early 1640's the Nipissings stopped travelling to the St. Lawrence to trade. They retained their trade routes to the north and brought their furs to the Hurons at Lake Nipissing and to Huronia where they wintered throughout the 1640's. The importance of the winter trade in Huronia was pointed out by the Jesuits in 1649, namely now that the Hurons were destroyed the Algonquins would no longer come to trade (J. R., Vol. 34:203). By the early 1640's therefore, the Hurons effectively became collectors and carriers of Nipissing furs. Some Hurons may have travelled with the Nipissing to the north, but by and large the northern and western routes seem to have been in the hands of various Algonquin tribes. The Achirigouans and probably the Ottawa traded to the west (J. R., Vol. 30:113), the Saulteurs into the Lake Superior area (J. R., Vol. 33:149) and the Nipissings to the north. The Hurons, instead of travelling these routes, collected the furs and brought them to the St. Lawrence. There was really little point in the Hurons travelling to Lakes

Superior and Michigan. The routes were long and timeconsuming, other tribes controlled the routes, and most importantly other tribes brought the furs to the Hurons thus saving them the trouble.

A second factor in the expansion of Huron trade during the 1640's was the collapse of the Allumettes and Petite Nation. From the beginning of French-Huron contact to the early 1640's these tribes controlled the lower Ottawa. They forced the Hurons to pay toll charges and controlled the trade up the tributaries of the Ottawa except perhaps the Lake Timiskami-g, Dumoine River area. With the depopulation of the Ottawa valley the Hurons established regular meeting places with the tribes of the northern interior. This zone of Huron influence seems to have extended into, but not completely encompassing, the territory of the Attikamegue. The Attikamegue seem to have controlled the trade immediately to the north of their territory as far as the routes leading northwest out of Lake St. John which were in the hands of the Montagnais. During the early 1640's therefore, the Hurons became the middlemen for all the Indian tribes west of about 76° Longitude.

A third factor in the expansion of the Huron trade network was the growth of the Christian colony at Trois Rivières, Quebec and Tadoussac. Here Christian Hurons, Algonquins and Montagnais traded into the areas north of the St. Lawrence particularly into the drainage basin of Lake St. John. It is not entirely clear whether the Montagnais who originally held the trade up the Saguenay shared it with the newcomers or whether they had declined so much in numbers through smallpox that they could no longer carry the trade themselves. In view of the smallpox epidemics that raged in the Tadoussac area the latter seems more probable.

Throughout this period there does not seem to be any evidence for the northern system of Huron routes postulated by G. T. Hunt. Until 1648, the Hurons travelled in small groups from Huronia picking up furs at predetermined meeting places along the shore of Georgian Bay, Lake Nipissing and the northern tributaries of the upper Ottawa. In exchange for the furs some corn, tobacco, fishnets and French trade goods were given. The Hurons then passed down the Ottawa and the St. Lawrence to Trois Rivières. In 1648 the Hurons organized themselves into one large fleet of canoes, but still used the same route. There is no record of Hurons ever getting to the French posts by any other way than the Ottawa and St. Lawrence. It is because only this route existed that the Mohawk were able to seal Huronia so effectively from the French posts.

8. A Summary and Interpretation of Huron Trade

The description of Huron trade presented in this chapter differs in some ways from previous work, particularly that of G. T. Hunt (1960). In the light of a careful rereading of the documentary sources, Hunt can be accused of overestimating the extent of Huron trade and at times of careless handling of his source material. Perhaps his greatest contribution lies in pointing out the fact that economic motives had entered Iroquois warfare leading ultimately to the desintegration of Huronia.

Three basic differences between Huron trade as presented here, and Hunt's interpretation, are the relative speed with which French-Huron trade developed, the extent of the Huron trade network and the extent to which trade was an important Huron economic activity. The first two points are by necessity related and will be treated together.

It is reasoned here that prior to French-Huron contact, Huron trade

relations were primarily with the Algonquin tribes, in particular the Nipissings. The principal products that were exchanged were Huron fishnets, corn and tobacco, for Algonquin skins, fish and perhaps meat. It was essentially an exchange between complementary economies. In the winter Algonquins would camp outside some of the Huron villages; the eastern Algonquin tribes among the Arendaronon and the northern Algonquin tribes such as the Nipissings among the Attignaouantan. In the summer Hurons travelled north to the Nipissings and perhaps as far as the east shore of Lake Superior.

Before the advent of French-Huron trade, Huron trade with other Iroquoian tribes seems to have been minimal. Some tobacco was perhaps traded from the Petun for items the Hurons got from the Algonquins, but otherwise trade relations between such similar economies appear to have been slight.

Huron trade with the French began slowly. It was virtually non existent until Champlain established personal contact with the Hurons in 1615. Up to that time, and certainly prior to 1609, most of the French goods that arrived in Huronia came via various Algonquin tribes, particularly those of the Ottawa valley. The existence of a series of middlemen between the Hurons and the French, and subsequent Huron problems in opening a trade route to the St. Lawrence, demonstrates that intertribal trade regulations and regulations regarding passage through tribal territories predate French arrival. It also demonstrates that Huron trade penetration to the east was weak before French contact and that the routes that were to become the Huron trade network had really been Algonquin routes before 1615.

The deveolpment of Huron trade after 1615 was initially with the Petun and Neutrals. Along the trunk route to the St. Lawrence the Hurons were barely tolerated until the Ottawa valley Algonquins were decimated by smallpox and the Iroquois armies. Until the early 1640's therefore the Hurons were primarily collectors of furs from their own territory, the Petun, the Neutrals and a few tribes along the shore of Georgian Bay such as the Ottawa. The Ottawa in turn brought furs to the Hurons from the west and the northwest. The Nipissings controlled the trade to the north, and until the early 1640's did their own trading on the St. Lawrence. Similarly, until the Ottawa Valley Algonquins were dispersed in the early 1640's, they collected furs from tribes adjacent to the Ottawa and brought them to the French posts. Prior to the 1640's the Hurons may have collected furs in the Lake Timiskaming and Dumoine River areas. Before the 1640's various Montagnais groups traded to the northwest from Tadoussac into the interior of Quebec. There is no evidence that the Hurons ever penetrated very far into the northeastern interior from the Ottawa. On every occasion the Ottawa-St. Lawrence route was used.

After the height of the smallpox epidemics among the Nipissings, Montagnais and Ottawa Valley Algonquins, followed by severe Iroquois raids into the Ottawa Valley, Huron trade began to open up. The Nipissings ceased travelling to the St. Lawrence and the Ottawa Valley Algonquins were dispersed. The Hurons now became the middlemen for all the tribes west of about 76° longitude. The Huron role in this trade must be viewed as that of a middleman between the tribes along the trunk route and the French. Without penetrating into any new territories the Hurons could receive the furs from tribes they would never even see. Those tribes such as the Ottawa, Nipissing, Attikamegue and others would bring the furs from groups still

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further away to regular meeting places with the Hurons. The bulk of the Huron traders had no reason to travel any further than the regular meeting places, nor did they have the time. The Mohawk blockade of the lower Ottawa and upper St. Lawrence area demonstrates very clearly that the Huron did in fact have no routes through the interior of Quebec.

The Huron penetration of the Saguenay area and beyond seems to have been carried out by Christian Hurons, or at least Hurons and Algonquins settled at the French posts, after the smallpox epidemics had decimated the Montagnais of the Tadoussac area. There is no evidence that the old Montagnais trading areas were penetrated by Hurons directly from Huronia.

The development of Huron trade and it's effective execution in spite of the epidemics seems to be founded on two fundamental factors. These were the large population of Huronia and their agricultural economy which provided food for the traders and allowed some to specialize in this occupation. Huron agriculture was largely operated by the women. Between the spring and fall fishing seasons the men could carry out other tasks among which trading was one. This of course was not true for the Algonquins and Montagnais who were largely hunters and gatherers. Among these tribes the men were also the prime providers of sustenance and the gathering and trading of furs was incidental to the provision of food. Of these two tasks (gathering and transporting of furs to the French), gathering of furs could be carried out as a regular part of the hunting and gathering routine. Travel to the fur posts was much more difficult especially after these groups had been hit by smallpox. With the decimation of tribes that already had small populations, travel to the St.

Lawrence became next to impossible.

The smallpox epidemics among the Hurons on the other hand were not nearly as disruptive to trade as among the Algonquins. Even after the Huron population had been cut in half there were still more than enough men to carry out effective trading. The fact is that normally fewer than 300 Hurons carried out the entire trade between Huronia and the French posts. The largest number of Hurons ever to travel to the St. Lawrence for trade was in 1633, just after the English occupation ended. In that year 140 to 150 canoes with 500 to 700 men arrived for trade. The next highest figure was in 1646 when 300 men came in 80 canoes. In all the other years between 1615 and 1649 the usual figure was 60 canoes with perhaps 200 men, or less. Even after the epidemics, 300 men out of a population of 9,000, is not a severe drain on the male population of a society whose subsistence economy during the trading months was operated by the women.

Essentially Huron trade was an efficient system that was operated by a small segment of the population bringing desired goods to the entire population and social recognition and prestige to the trader. The successful execution of trade depended on the Hurons ability to organize the collectors of furs as well as the protection of the primary route to the markets of the St. Lawrence. Although the Hurons managed to put together an effective system for collecting furs, their ultimate failure lay in their inability to come to terms with the Iroquois tribes. The tragedy was that although the Hurons had a sound subsistence economy and a flexible trading system, their political system was too slow to recognize the changing motives and power of the Iroquois confederacy, and too inflexible

to adjust effectively to meet this threat.

CHAPTER VIII

Summary and Conclusions

The stated purpose of this thesis is the reconstruction of the geography of Huronia during the first half of the 17th century. One of the basic approaches to such a problem is to define the spatial extent of the area to be studied in terms of the effective occupance of the culture group that inhabits it, and examine the spatial behaviour of that group and the nature of its interaction with the biophysical environment. All human beings interact with each other and the physical environment over terrestrial space and in so doing organize space into a reflection of their cultural values. The ability of a group to interact with the biophysical environment and the nature and extent of interaction, depend principally on group culture because it is culture that shapes what men perceive in their surroundings. In reconstructing the geography of Huronia the Hurons are therefore examined as the bearers of a culture interacting with the natural environment of the area they occupied to produce a landscape organized according to their perceived needs and wants.

The task of reconstructing the geography of Huronia is subdivided into six broad, interrelated and basically geographical themes: the delimitation of the settled area, the physical characteristics of the settled area in as much as they relate to the Huron occupance, population estimates for the period, settlement patterns, the subsistence economy

and the interrelated phenomena of politics and trade. Where necessary, anthropological factors are introduced in order to interpret some of the geographical patterns.

In assessing the interrelationships between the six major themes the basic point of departure is the area of effective occupance. It is the physical environment of this area and its surrounding waters that satisfied almost all the basic needs, and wants of some 21,000 Hurons. Huron settlement patterns were essentially a reflection of the distribution of perceived resources and social values. Social values influenced the size and morphology of the village while limitations in Huron technology determined construction materials and site requirements, all found in the physical environment of the settled area. The subsistence economy was in turn related to the biotic potential of the settled area, Huron technology, social values and the needs of the Huron population. Huron technology set the limits to which the physical environment could be exploited; Huron social values influenced the organization of labour and field patterns, while the size of the Huron population together with Huron technological capabilities determined the extent and intensity of resource exploitation.

Huron trade presents a complex pattern of interrelationships between culture and environment. While the purpose and operation of trade were rooted in Huron social and political traditions which changed little over time, the articles being traded and the areas from which they were obtained changed soon after contact. Before contact Huron trade was based on a variety of products obtained or manufactured in Huronia, but after contact the Huron trade network expanded and became based on fur resources from most of Ontario and parts of western Quebec. The social

and political basis of trade remained rooted in patterns established before the contact period.

Although the culture of the Hurons changed during the period under discussion, culture change as such is not explored except where it had a direct bearing on geographical phenomena such as changes in population size, politics and trade. As yet there is little evidence to suggest that settlement patterns or the Huron subsistence economy were widely affected by culture change; except perhaps that metal goods made the erection of villages and the carrying out of agricultural pursuits more efficient. This is not to deny the reality of culture change in aspects of religion, family relations, social structure and the like. These changes became particularly evident in the last ten to twleve years of Huronia's existence, but to what degree they affected the geography of Huronia is as yet not known. Basically therefore, this thesis is an attempt to reconstruct the geography of an area in the past by describing it in terms of the geographical behaviour of the people who occupied that area. The remainder of this chapter will be devoted to a brief re-examination of the major themes of the thesis, some of the approaches used in describing these themes, remaining problems and suggestions for future research.

One of the most crucial steps in the geographical study of any society is the delimitation of the area that that society occupied, and an assessment of the natural resource potential of that area. This is particularly relevant for technologically unsophisticated societies such as the Hurons. Except for some trade the Hurons carried on with their neighbours, they were almost completely dependent for everything, from

sustenance to building materials, on the natural productive capacity of their territory. Even though they modified the landscape they occupied, the Hurons had little control over it. They did not fertilize their fields, did not practice irrigation, and did not breed animals or fish. The Hurons subsisted on the natural productivity of the soil, forest, fish and to a lesser extent, game resources of their area of occupance. One of the keys to an understanding of the human geography of Huronia is therefore the delimitation of the area of active occupance and a description of the physical geography of that area in terms of Huron abilities to utilize it.

In the case of this study the criterion for delimiting the area of effective occupance is the distribution of settlements during the period of French contact. Both the distribution of village sites with trade goods and the location of Jesuit missions are used. Of these two criteria the latter is obviously more useful. French trade goods entered Huronia sometime before the period encompassed by this thesis and therefore indicate a larger area of occupance than that of the 17th century. In spite of the shortcomings of the early maps and locations given in the Jesuit Relations, the territory known as le pays des Hurons or Huronia can be delimited fairly accurately. No settlements occurred south of the large frontier villages of La Conception (Ossossane), St. Michel (Scanonaenrat), St. Joseph II (Teanaustaye) and St. Jean Baptiste (Contarea). The village of Ekhiondastsaan is usually placed south of the frontier as defined here. However Ekhiondastsaan appears to be a synonym for Tiondatsae (La Chaudiere or Caldaria) which according to three maps was well north of St. Michel. No contact sites or Huron missions lay north of line joining Matchedash Bay to the "Narrows" of Lake Couchiching. The territory thus

defined encompassed some 340 square miles. It is from this territory and bordering waters that the Hurons derived their food.

It is doubtful whether there are any means by which Huronia can be more accurately delimited than the methods employed here. More precise dating techniques and intense archaeological work on all contact sites might alter the proposed location of some of the Jesuit missions, but would not appreciably alter the territorial limits as defined here. The magnitude of the archaeological work involved would preclude such a study for many years. Whether actual mission villages could be more precisely identified is also doubtful. A few, such as St. Joseph II, may have had a Church which should be archaeologically identifiable; others may show a French influence on house or palisade construction. A precise knowledge of temporal changes in French trade goods and extensive testing of sites in the general area of a mission as indicated by the early maps would be a logical beginning to solving the problem.

In describing the physical environment of Huronia, an effort is made to assess it in terms of conditions at the time of Huron occupance. This is necessary in order to assess what resources the Hurons had at their disposal. Using descriptions in the ethnohistoric sources it is postulated that the climate was essentially similar to that of the present. The inland water table was somewhat higher and swamps more extensive due to the fact that the Hurons did not engage in drainage operations. The forest composition was similar to the present although much more extensive. Since the Hurons showed a high preference for well drained sandy loams in the upland areas, these areas underwent repeated clearance. The landscape of the upland areas during the Huron occupance must have

been a patchwork of corn fields, meadows and second generation deciduous forest. Heavy stands of mixed forest occupied the areas of less desirable soils and a thick tangle of cedar, hemlock, tamarak and alder, the poorly drained lowlands.

The description of the physical geography of Huronia is derived by comparing the ethnohistoric descriptions to present conditions and those of the early part of the 19th century just prior to European settlement. Of course no exact reconstruction can be made. As far as climate is concerned, drought patterns, vegetation, references to the length of seasons, seasonal activities and seasonal abundance of food resources, point to a climate essentially similar to that of the present. The very fact that the staple food source, corn, with a maturing period of 90 to 120 days was grown successfully, indicates a growing period, frost free season and rainfall regime that were for all practical purposes similar to the present.

Without extensive work on palaeosoils and pollen cores in Huronia it is doubtful if our knowledge of the climate and vegetation of the period could be much improved. Such work is now in progress as part of an interdisciplinary project into the prehistory of the Penetang peninsula (Hurley and Heidenreich, 1969). Preliminary results from pollen, soils and snail studies on the Robitaille site one mile west of Thunder Bay, shows a climate similar to that of today, but a larger element of coniferous vegetation in the forest composition. Many more sites will have to be studied but the work conducted at the Robitaille site demonstrates clearly that such studies can give excellent results.

From a Huron point of view one of the great assets of the physical geography of their territory must have been the large and relatively

contiguous tracts of well drained sandy loams and loamy sands. Of the 139 village sites examined, 87% occurred on these soil types. Together these two soils types comprise 66% of Huronia, or some 224 square miles. Although from a modern point of view these are far from the best soils in Huronia, Huron perception of their soil resources was circumscribed by the limits of their technology. No other soils in Huronia are as easily cleared and worked with a digging stick or crude hoe as the sandy loams and loamy sands. An understanding of these soils is crucial to an understanding of Huron agriculture.

In order to clarify later chapters on settlement patterns, economy, external relations and trade a short section has been included outlining the Huron social structure, political organization, migration into Huronia and organization of Huronia into tribal areas. Together with the discussion on the delimitation of Huronia and its physical geography this section is a part of the background on which the later chapters are based.

The essential feature of the Huron social system was kinship solidarity traced through the female line. Kinship operated at three major levels; the extended family, the sib and the clan. The extended family formed the basic residence and economic unit whose physical expression was the longhouse. Similarily the sib structure may have been reflected in the village morphology and sharing of work and produce. Since marriage had to be outside the sib, the sibstructure and marriage rules helped to promote kinship ties between families in the same village and between villages. Similarily clan loyalties would cut across village and tribal boundaries helping to promote social cohesion at the tribal and confederacy level.

Huron government operated at village, tribal and confederacy levels. Of these, village government was the most effective. Government at all levels was mainly by persuasion although at the village level a highly regarded and clever chief could exercise some physical force by accusing dissidents of witchcraft and thereby placing them under the threat of execution. Village matters were debated by a council of men presided over by a chief. At the tribal and confederacy levels the village chiefs met with their advisors to discuss matters of mutual interest. All council decisions were derived by a plurality of votes, but were not necessarily binding on any individual, village or tribe. There was no police force or army to administer the decisions of the councils or chiefs. Rather than being a governing body the councils sounded out opinions and attitudes. Majority opinion simply stated the position a majority of people would take on a particular issue.

At all levels of government great scope was left for individual behaviour. However in a society such as the Hurons, whose smooth functioning depended on co-operation, individual action had to be carefully balanced against majority opinion. The weakness of the Huron concept of government was that it did not permit any person or council to make decisions that were binding on any group of people. This weakness was reflected in the social instability of large villages and Huron relations with other tribes. Ultimately it proved to be a key factor in the disintegration of Huronia.

To a Huron the tribe was an important unit in spite of its loose governing structure. Members of the same tribe shared a common past, some tribes had a distinct dialect, and, what was probably very important

to the Hurons, villages within each tribe were linked together by marriages much more so than villages between tribes. The tribe was therefore a socio-political unit made up of a number of villages with a common past; its geographical expression was the tribal territory.

With few exceptions the boundaries of each tribal territory fall along distinct physiographic boundaries. Since there are no maps of the tribal boundaries these have had to be reconstructed from the known tribal affiliations of each village. Apart from the fact that the Huron tribes varied in population size and the size of their tribal territory, they had somewhat different migration histories. It is not known what other geographical differences existed between them. Intensive archaeological work on contemporary sites with different tribal affiliations would be the only way in which tribal differences could be determined. Such work is absolutely necessary before the problems of tribal migration are tackled. Similar work would be necessary to deliniate the tribal territories with greater precision.

A knowledge of the size of tribal areas and their populations permits a more accurate assessment of the relationship between population size and available soil resources. A discussion of the five tribal areas permits one to derive and compare five separate estimates for population adjustment to the soil resource base, rather than basing such estimates on one area of occupance.

The precise population prior to the smallpox epidemics will probably never be known. Three independent approaches to the problem indicate that the early estimate of 30,000 Hurons is too high. In this thesis a figure of 21,000 is adopted for the pre-epidemic population, and about

9,000 for the post-epidemic population. Barring the discovery of new documents, about the only way these figures could be improved is through intensive and extensive archaeological work. It would in fact be necessary to identify all Huron villages occupied during the contact period; date them as accurately as possible and determine the size of the sites and number of longhouses within them. This is a staggering task which would take a long time to complete.

A reliable estimate of population and its distribution is of obvious importance because these are often related to subsistence patterns and resource use. One of the really gratifying aspects of the population estimates is the close relationship of tribal area to tribal population. This relationship was found to be even closer when tribal area was viewed in terms of preferred agricultural soils. Such a close relationship between population and soil resources lends credence to the population estimates, the fact that the Hurons were highly dependent on agriculture and the possibility that Huronia was approaching a maximum population for the size of the territory. It would be interesting to see if similar relationships existed among other Iroquoian groups. For the Petun and the five Iroquois tribes such a study should be possible.

In selecting a site for their village the Hurons were guided primarily by water availability and soil resources. Other factors such as proximity to navigable waterways, types of vegetation and natural defences seem to have been of secondary importance. Only in the case of the larger more important villages does a natural defensive position seem to have been deliberately chosen. In view of the difficulty of clearing large tracts of mature forest and the need for suitable building

materials, it is more than likely that areas of immature forest growth were sought. This hypothesis could be tested by searching the area around several contact sites for earlier sites, dating them and estimating the location and extent of their cornfields. Work done in the vicinity of a few villages shows that this hypothesis is likely to be true. In general, at least during the contact period, a preferred village location was beside a permanent spring, on a bluff overlooking a navigable waterway with a large hinterland of arable soils under a young secondary forest succession.

While Huron village site selection may be explained through physical factors and a limiting technology, the size and morphology of the village seems to be largely determined by sociological factors. The basic residence unit was the longhouse which varied in length with the size of the extended family that occupied it. As such, the longhouse was the physical manifestation of social solidarity and economic security. The egalitarian nature of Huron society was reflected by the similarity of the longhouses within the village. The chief's house was usually somewhat larger than the rest, but this did not denote special status. The chief's house had to be larger because many of the village functions were held there.

On the basis of societies similar to the Hurons one can postulate that longhouses were grouped within the village according to sibs. In view of the importance placed by the Hurons on their kinship structure such a morphological pattern seems logical. A morphological feature that definitely appears to have been present was an open village meeting place. Careful archaeological work on some of the larger villages in Huronia has

to be done to test these hypotheses.

On the basis of a few known villages, a close relationship between village size and the number of longhouses was demonstrated. Since the number of longhouses may be used as a rough estimate of population, village size reflects population size. Among the Hurons village population densities were in the order of 180 to 220 people per acre. The average village size was about four acres, few exceeding six acres in size. In terms of population this would mean that Huron villages rarely exceeded 1,000 to 1,200 people. The few very large villages appear to have been multiple villages or had chiefs that demonstrated unusual governing ability. An explanation of village size must be sought from environmental and social factors. A strong factor keeping village populations to a level below 1,200 were the social complexities of village life and the lack of coercive institutions to cope with them. This observation is supported by the work of Naroll (1956). Huron agriculture and the extent of arable village hinterlands certainly could have supported larger villages. The existence of a few large and multiple villages in substantially the same environment as the smaller villages rules out the quality of the environment as a general factor placing limits on settlement size well above 1,200 people. Technological limitations and environmental potential probably became more dominant features in placing a maximum size on largest villages in Huronia. Multiple villages were a perfect solution to the problems inherent in large single villages. Social strife was minimized through segregation, yet social interaction, when desired, could easily take place. A multiple village was easier to defend than a large single village and in times of stress a multiple

village had a larger pool of chiefs to draw on for leadership.

Functional differences between Huron villages were slight. What functional differences there were rested on the fact that a few villages were regional strongholds and residences of tribal leaders. Since the Hurons did not have a market oriented economy and all villages were able to engage in foreign trade, economic functions could not be used as a basis for differentiating villages.

The lack of strong functional differences between the villages is reflected by their almost random distributional pattern. Only the regional strongholds (Ossossane, Scanonaenrat, Teanaustaye and Contarea) with their complement of tribal leaders had a distinctive location. All four villages were on the southern frontier of Huronia. The random location of the majority of the villages are a reflection of the self sufficiency of each village and a random to uniform distribution of site requirements.

The extent to which Europeans influenced the construction of Huron villages is not clear. The documentary sources point to European modification of the palisades at Ossossane and St. Ignace II, while Jury claims to have found a strong European influence on the palisade and houses at St. Louis. The usual Huron palisade followed the natural contours of the land and enclosed a village in a rough oval. Palisades varied in complexity, the largest being up to seven rows in thickness with galleries, complex gates and watchtowers. Until the late 1640's, when Iroquois offensive tactics changed, the traditional Huron palisade was fairly effective. Against massive well organized surprise attacks they proved to be totally inadequate.

On the whole a Huron village could be constructed in a few months

work providing the work forces were organized and the village was located in an area where building materials were readily available. Since most of the construction material consisted of posts under ten inches in diameter the task of village construction would have been rendered almost impossible in any area but that of a young growth of secondary forest. It is probable that such forest conditions were a strong requirement for a village site.

Communications between villages in Huronia, to the Petun and the Neutrals was entirely by trails. The canoe appears to have been used only for fishing, long distance trade to the north and journeys to the St. Lawrence. Huronia was covered by an extensive network of trails connecting all the villages. According to the Jesuits, these trails were narrow and poorly marked. In the winter they were extremely difficult to negotiate. The amount of inter village communication is hard to estimate. Except for social occasions and times of war it is difficult to envisage much travel between the villages. Huron villages were economically self sufficient so that inter village activity was largely confined to the social activities of the fall and early winter.

The Huron subsistence economy revolved around agriculture, fishing, hunting and gathering. As was to be expected these activities reflected the complex relationships between sociocultural factors such as a limiting technology and the dynamics of the biophysical environment. Because quantifiable data on the Huron economy is not available, an approach has to be devised that would allow one to make reasonable food production estimates. The approach chosen is to estimate the per cent each segment of the economy contributed to the general diet, the production techniques that were

used to produce this food and finally the amount of food that had to be produced to support 21,000 people.

The initial problem is to estimate the per cent each sector of the economy contributed to the general diet. From the ethnohistoric sources it is apparent that corn constituted at least 65% of the Huron dietary intake, and fish more than meat. Gathering contributed very little except in times of famine. Because the reconstructed Huron diet is an estimate it is open to some argument. At the moment, however, it is difficult to see how this estimate could be improved. The inescapable fact is that approximately 21,000 people lived in an area of 340 square miles. They could not have existed if they did not have a reasonably efficient agricultural system with a high intake of agricultural products. In testing the estimated diet for dietary deficiencies it is apparent that no serious deficiencies were present. This conclusion is supported by skeletal evidence and the writings of the early travellers, none of whom reported dietary deficiencies among the Hurons or themselves.

From the dietary information and the knowledge that about 21,000 people subsisted on that diet an estimate may be made of the amount of food the economy had to produce in order to feed that many people. In terms of corn alone some 189,000 bushels were needed annually. Since the Hurons were so heavily dependent on agriculture, their agricultural system is examined in some detail.

Essentially Huron agriculture followed a classical pattern of slash and burn cultivation. Family plots were cleared by cutting down all vegetation and burning it. Corn, beans and squash were planted together in small mounds spaced closely together. Manuring was not known

and land ownership practices assured that there was no organized system of fallowing or field rotation. Land was used until it was exhausted and then reverted to common ownership.

At least two major corn varieties were grown of which the hardier flint corns were the most common. Except for occasional summer droughts the climate of Huronia was adequate for corn culture. Although the sandy soils utilized by the Hurons are not the best for corn, additional nutrients were added to the soil by burning over the fields every spring and by planting beans in the same mounds as corn. With these agricultural practices it is estimated that the Hurons could cultivate a sandy soil for up to six years and a sandy loam for up to twelve years. During this period the Hurons obtained an estimated average of 27 bushels of corn to the acre. This figure compares favourably with yields obtained by Europeans and American Indian groups in the last century, using agricultural techniques similar to the Hurons.

The problem of village movement can only be approached through a study of environmental and cultural factors. The oft cited causes of soil and firewood exhaustion resulting from an interplay of a limited technology on the physical environment certainly played a dominant role. However these two factors by themselves do not account for village movement. Part of the answer seems to be that after eight to twelve years the number of family plots increased to such an extent, over such a large area that efficient working of the fields was no longer possible. The women who cultivated, weeded and protected the plots from animal pests could no longer do an adequate job nor could they be effectively protected from enemy raids. A form of land inheritance coupled to a planned fallowing

system might partially have overcome this problem, but this would have required a major readjustment of Huron cultural values. It is doubtful if manuring could ever have been introduced without domestic animals.

By necessity, Huron agriculture has to reconstructed in the form of an elaborate hypothesis. The only way this hypothesis may be tested is to conduct experiments in Huron agriculture. This would of course be a long term project which would have to run for at least eight to twelve years. Such an experiment would be of enormous interest not only because it would shed light on the nature of shifting agriculture in northern latitudes, but also because soil nutrient loss, erosion, plant succession and the effects of repeated burning could be studied.

Of the other three aspects of the Huron subsistence economy, gathering was the least important. Gathered produce such as berries was considered a welcome additive to the ubiquitous corn gruel and was a major source of Vitamin C. Only in times of famine were gathered foods, particularly acorns, important. In modifying their environment through continuous cycles of clearing and land abandonment, the Hurons were creating an excellent habitat for a variety of fruits and herbs.

Although virtually every animal was eaten, the major sources of meat were deer, bear and dog. For the efforts expended in hunting, deer and bear brought the highest returns. The most effective means to hunt deer was in organized mass drives during the early spring when the deer "yarded" and in the late fall when they congregated for rutting. Bear were caught in the same drives or hunted singly. Both animals, as well as some others, were considered to be more plentiful outside of Huronia. This was because Huronia was thickly settled and much hunted, and because

there were good grazing areas to the south and east of Huronia.

Dogs appear to have been eaten primarily at feasts. These were the only domesticated animals and therefore the only certain supply of meat the Hurons had. By and large meat can be considered a feast food because of its scarcity. The results of a successful hunt were shared and often precipitated some sort of festive occasion.

In providing a food supply fishing had several distinct advantages over hunting. Pound for pound fish were more plentiful, easier to catch and more predictable in their habits. Moreover fish could be dried and stored. There is no evidence that the Hurons could preserve and store meat for any length of time. Fish was therefore a staple along with corn, and game a seasonal supplement.

Fish were caught most commonly in nets and weirs; less commonly on the line and by spearing. Archaeological and documentary evidence show that the entire "Narrows" between Lake Couchiching and Lake Simcoe was blocked off by weirs. Similar weirs probably existed at the mouths of creeks and streams flowing into Nottawasaga and Georgian Bay. It is difficult to think of more sophisticated fishing methods in these waters. For the type of fish caught, Huron nets and weirs were comparable to those used by commercial fishermen in the early part of this century. According to the Ontario Department of Lands and Forests the techniques used by the Hurons could have netted them anywhere up to 8,000 pounds of fish per day during the spawning runs at the "Narrows" alone.

A study of Huron trade and war is in some respects a departure from the other themes of this thesis because it takes the discussion out of Huronia. Nevertheless a discussion of Huron trade is an essential aspect

of the historical geography of Huronia. The relationships between trade and external politics permit one to outline the wider role of Huronia in the Great Lakes-St. Lawrence area. From space relations that were fairly limited in the area they covered, Huron trade and political relations expanded after French contact to encompass an enormous area. At the same time factors were introduced that led to the destruction of Huronia as a geographical entity and a re-arrangement of the space relations within the Great Lakes-St. Lawrence area.

In most studies trade can be treated as an aspect of the economy. In the case of the Hurons this is not advisable because trade was not primarily economically motivated. Unlike aspects of the subsistence economy, trade also changed rapidly over time and was closely related to external politics and inter tribal relations. From a geographical point of view the value in studying Huron trade lies in assessing the changing space relations between Huronia and its surrounding area as well as the operations of a non market oriented trading system.

Existing documents allow one to reconstruct at least an outline of Huron external political relations and trade. Although a reasonable case can be made for the manner in which trade operated and the types of goods involved, Huron trade routes and the extent of involvement of other tribes is less certain. Even less can be said about quantities of goods involved and the number of men that took part in the yearly trading operations. Since no new documents are available existing documents are re-examined in order to determine if an alternate interpretation to that of Hunt (1961) is possible. The results indicate that Hunt seriously

overestimated the importance and extent of Huron trade at the beginning of the contact period. Huron-French trade evolved slowly over time and Huron dominance in the Great Lakes-Ottawa River area was not really achieved until the early 1640's when the Algonquin tribes in the area between the Hurons and the St. Lawrence were dispersed. In order to document this interpretation of Huron trade it is necessary to examine the events of the contact period year by year.

Prior to direct European contact Huron trade relations were closest with the Algonquin tribes to north, particularly the Nipissings, and a few groups in the Ottawa Valley. With these tribes the Hurons exchanged corn, tobacco, fishnets and other items, for fur (to make clothing), some fish, meat, and European trade goods that the Algonquins were acquiring from Indian and European traders along the St. Lawrence. Since most of these goods were perishable it is impossible to estimate the magnitude of pre-contact trade. The fact that these groups had been trading for a long time before European contact has been proven archaeologically and can be seen by the elaborateness of the rules that regulated trade. Throughout this early period Huron traders went at least as far as Lake Nipissing and the southeastern shore of Lake Superior. As yet there is no proof that they were in direct contact with any parts of the St. Lawrence.

Huron trade with the Petun and Neutrals was slight and mainly confined to tobacco, exotic skins and perhaps wampum beads. References to recurring hostilities during the 16th and early 17th century show that these contacts were not particularly highly valued. The closer contact with the Algonquins is to be expected in view of the fact that the Hurons and Algonquins had complementary economies. The similarity between Huron,

Petun and Neutral economies would have precluded extensive trade relations. This of course changed once the Hurons acquired large quantities of European trade goods.

The motives behind Huron trade were not dictated by economic need except in time of famine. Huron traders regarded their journeys as an adventure, and their gains as a means of achieving prestige and social status. Success in trade or war were ways of gaining recognition and therefore political influence. The goods acquired in trade were gained by barter, but were given away back in the village or used to prepare feasts and festivals. Part of the road to social recognition was generosity, and trade made generosity possible.

The laws governing trade were fairly elaborate. Political alliances had to be concluded before a Huron could trade with any member of another tribe. In this way trade and individuals were protected by the assurance that inter tribal war would result if a trader was harmed. The entire tribe therefore, protected the rights of an individual. Similarily the tribe recognized the rights of an individual and his family to the route and trade contacts he had established. No one was allowed to trade on another person's route unless he had received permission. This system assured a multiplicity of trade contacts and lack of competition. An extremely important aspect of inter tribal trade was the integrity of the tribal territory. In order to trade with tribes beyond the territory of one's nearest neighbour, permission had to be sought to cross that territory. If permission was refused and the refusal ignored war would result. Such a war would have been a very serious matter because of the widespread

system of alliances that existed in Eastern Canada. It was this regulation that prevented early Huron trade contacts on the St. Lawrence and permitted the Ottawa Valley Algonquins and Montagnais to establish themselves as middlemen between the French and tribes in the western and northern interior. In later times French pressure and toll charges allowed Huron travel across the territory of the Ottawa Valley Algonquins. The Hurons in turn exercised their rights by never permitting Petun and Neutrals across Huron territory.

Huron-French trade developed slowly once a political alliance had been made and the French had proven themselves reliable allies in war. Three other factors that contributed to this slow development was Algonquin reluctance to permit Huron traders to travel to the St. Lawrence, Huron fears of Iroquois raids on the lower Ottawa and the fact that during the first years of direct contact Huron warriors and not traders were going to the St. Lawrence. Another contributing factor may have been that the Arendaronon considered French trade their exclusive right until Champlain's visit to Huronia in 1615.

The development of trade after 1615 was initially with the Petun and Neutrals. Along the trunk route to the St. Lawrence the Petite Nation and Allumettes did their own trading, and the Nipissings controlled the trade to the north. The Hurons therefore became the collectors of furs and middlemen to the Petun, Neutrals and a number of Algonquin tribes along the Georgian Bay, among whom the Ottawa were the most important.

After the height of the smallpox epidemics among the Nipissings and Ottawa Valley Algonquins, followed by severe Iroquois raids into the Ottawa Valley, Huron trade began to open up. The Nipissings as well as

the Algonquin tribes to the north and east of the Ottawa, now delivered their furs to the Hurons. Regular meeting places were established and the Hurons got access to furs from the western Great Lakes to James Bay and the western interior of Quebec without ever having to travel very far from their trunk route. Central and Eastern Quebec as well as Labrador were finally penetrated by Huron and Algonquin traders from the French St. Lawrence Valley posts after the power of the Montagnais had declined. Direct Huron penetration from Huronia to these areas is doubtful not only because of a lack of evidence, but also because there was no need for it.

The development of Huron trade and its effective execution in spite of smallpox and Iroquois raids was founded on two fundamental factors. These were the large population of Huronia and the Huron subsistence economy. The economy was important in three ways: it provided a small surplus of corn that could be traded; the division of labour permitted some men to absent from Huronia during the summer to specialize in trade, and corn could be dried and taken along as food for the traders. Since only about 300 men participated in trade, the epidemics which reduced the total population from 21,000 to 9,000 would not appreciably have affected trading operations. It must also be remembered that this drop in population affected the old and young more than the middleaged male population.

The above was decidedly not the case with the Algonquin tribes. Among all the Algonquin tribes the men were an integral part of the subsistence economy. Furs could be gathered in the normal course of hunting, but their transport to the St. Lawrence would mean the absence of a large number of men out of a relatively small total population. This situation became crucial after the smallpox epidemics when the men were needed at

home more than ever.

The failure of Huron trade lay not so much in the mechanics of trade, which were very efficient, but the inter tribal relations that were a part of trade. In spite of sporadic efforts on the part of some of the Iroquois tribes as well as the French and their allies at a peaceful solution to inter tribal war, nothing lasting ever came of it. Old feuds, jealousies and the lack of any coercive power by tribal and confederacy councils to enforce a peace, made the continuation of conflict inevitable. Changing Iroquois motives for war and a reorganization of Iroquois tactics were recognized too late. In spite of a sound subsistence economy and an excellent trading system the Huron political organization was too ineffectual to deal with the situation and as a result the entire confederacy was destroyed.

The reconstruction of Huronia has been presented through the foregoing six themes. It may also be reduced to a generalized statement encompassing two fundamental aspects of a geographical study; the relationship between man and environment and man's spatial behaviour. What follows is such a statement built around Huron seasonal activities.

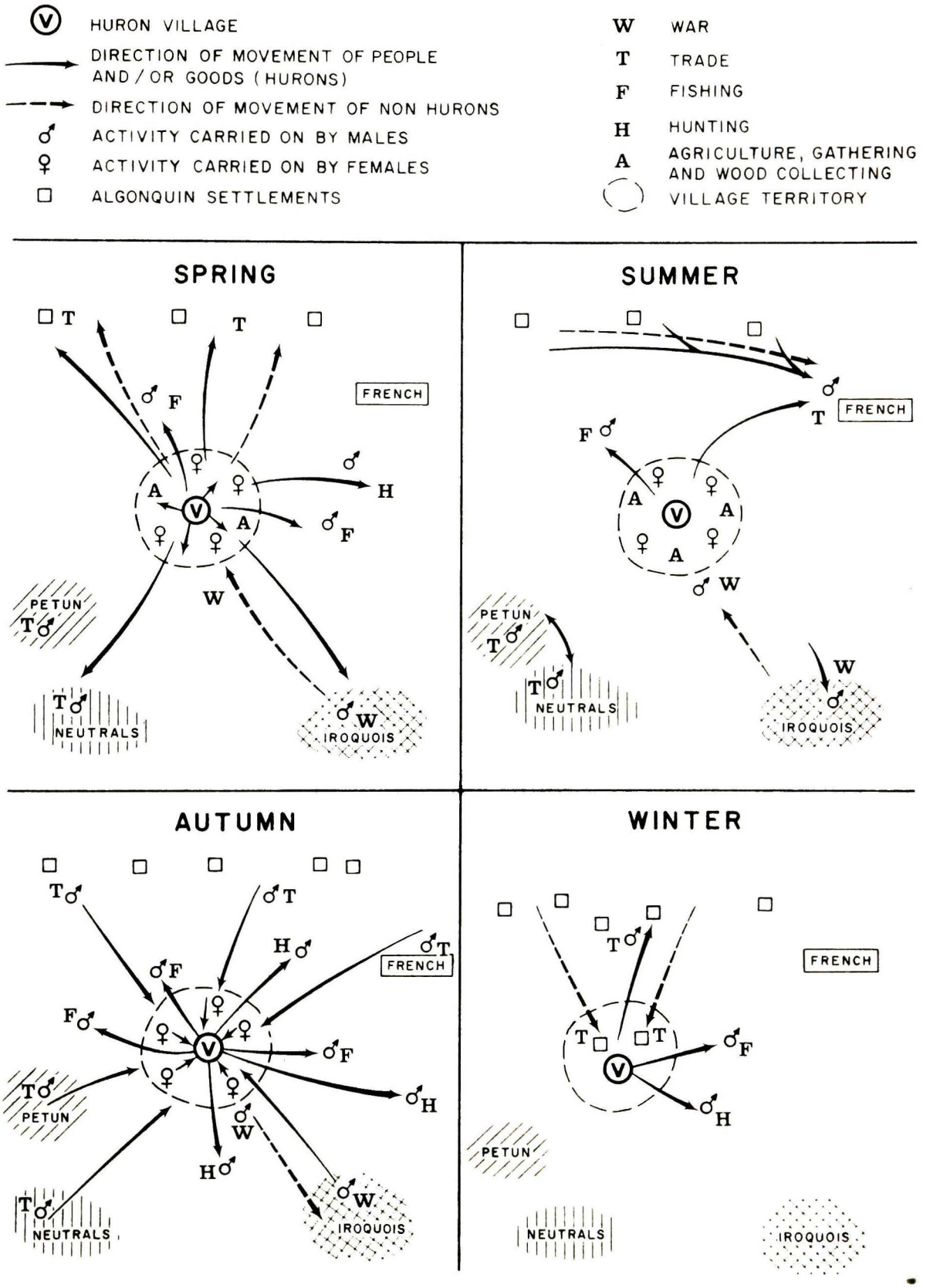
The Jesuits recognized that Huron activities followed a standardized pattern:

> They regulate the seasons of the year by the wild beasts, the fish, the birds and the vegetation (J.R., Vol. 15:157).

It is this pattern of spatial activities that will be generalized from the earlier chapters. At various scales of generalization, each seasonal pattern (Figure 18) may be taken as representing a village, a tribe or the entire confederacy.

Figure 18.

THE SEASONAL CYCLE AMONG THE HURONS



The seasonal cycle of Huron activities began in early March when some of the men went deer hunting in places where deer had "yarded". On returning from the hunt the men went fishing until mid May to take advantage of the spring spawning runs. As soon as the ice broke up, the Algonquins who had wintered among the Hurons departed. During this period the women went to gather firewood and probably maple sap. By mid May the fields were prepared by burning them over, an activity that mainly women participated in, unless new fields had to be cleared. Planting was done by the women in late May. At this time some of the men departed for war and others off to the Algonquins, Petun and Neutrals to trade. A predetermined number of men stayed behind to protect the villages from possible enemy raids. These engaged in summer fishing, odd jobs around the village and some work in the fields. If the Hurons had news of a large impending raid more men would stay home until the threat had passed.

Throughout the summer the women lived in the fields, hoeing the corn, pulling weeds and attempting to chase pests from the crops. During the late summer some gathering took place, notably berries and indian hemp. Children probably helped gather berries, particularly the girls. During the early summer the men completed their trading with the Algonquins and began to make their way to the St. Lawrence where they generally arrived towards the end of July or early August. Back at home small Iroquois war parties made surprise raids on unsuspecting women working in the fields or men hunting and fishing away from the village. Similar raids were carried out by Hurons in the territory of their enemies.

Towards the end of August and early September the corn was

harvested, dried and stored away. Shortly after this activity was completed the men returned from trading and war. From late September to early December some of the men went fishing. Others went hunting in the mast producing areas of Ontario, where the deer gathered for the rutting season. Mass hunts were carried out involving a large segment of the male and female population of a village. Since the rutting season ended in November the returning hunters could engage in the late fall and early winter spawning runs for whitefish, lake trout and cisco. Most of the fish caught would be dried and stored for the winter.

During the late fall various Algonquin tribes settled near the Huron villages to spend the winter. The Nipissings usually settled among the Attignaouantan in western Huronia, and various Ottawa Valley Algonquins among the Arendaronon in eastern Huronia. Once Ste. Marie was established a number of Algonquins from various parts of Ontario wintered there. Similarly the Ottawa regularly wintered among the Petun. On their way to Huronia the Algonquins would lay in a supply of fish and furs to barter for corn and other items. Much of Huron-Algonquin trade was probably carried out during the winter in Huronia.

By late November and early December everyone was back in the village. This was a period of socializing. A variety of feasts took place to celebrate a successful harvest, hunting, fishing and trading. These feasts were accompanied by gambling and gift giving. If war had been successful captives were tortured to highlight the social activities. Few economic activities took place in the winter. Among these was ice fishing and trading with the Algonquins. The women would weave mats, manufacture fishnets and prepare corn for the next season's trade.

Roughly every eight to twelve years this cycle of seasonal activities would be modified for every village through village relocation and the great feast-of-the-dead. Sometimes only one village would be involved, but most commonly several villages would undergo these activities together. Relocation could result in the splitting up of larger villages, or the temporary union of smaller villages. It was a year of social realignments and social reaffirmations.

The cycle of activities outlined above is more or less what one would expect from a society with a subsistence technology such as the Hurons. It reflects an extensive knowledge of, and close adjustment to the natural environment, an adjustment shaped largely by the technological, sociological and ideological aspects of Huron culture. Huron technology limited Huron agriculture to certain soil types while Huron social organization and values determined field patterns and working of the fields. Together these cultural factors exposed limitations in the natural environment that resulted in declining yields over time, fuel exhaustion and village relocation; limitations that could have been avoided with a readjustment of social values and technology.

Huron technology applied to fishing and fish preservation was considerably more efficient than hunting. Due to limitations in the carrying capacity of the physical environment it is difficult to see how yields of meat could have been very much improved. Preservation techniques could have assured a more even yearly meat supply, but this would have necessitated not only a change in technology but also a change in cultural attitudes which regarded meat primarily as a feast food. The lack of

potential domesticates (except the turkey) precluded the invention of a mixed farm economy.

Huron technology severely limited the society in its use of building materials and sociological factors determined the morphology of houses and villages. Until the introduction of the iron axe the Hurons had no means of coping with a mature forest. If large trees were chopped down there was no method by which they could be utilized. Technological limitations in the use of building materials coupled with their agricultural system resulted in transitory villages that constantly had to be rebuilt. Similar to most societies the layout of houses and villages was purely a reflection of social values while the choice of the site reflected physical needs. Ultimately the social system also played a dominant role in determining the size of settlements.

Similar to other shifting cultivators the bulk of the Hurons existed in a fairly circumscribed area. Most of the women never left Huronia. A few accompanied the men on hunting and fishing expeditions as far as perhaps fifty miles from their village. Only a few men travelled any great distances. Before the French contact period some men went as far as 300 miles from Huronia on trading and war expeditions. After contact some men travelled perhaps twice the distance. Except for the traders and warriors, Huron contact with other tribes was limited to those who came to the Huron villages. With the exception of the Andastes, first hand knowledge of other tribes was confined to those that bordered Huronia. After contact Huron intercourse with foreign tribes broadened extensively, especially to the north and northeast.

It is not within the scope of this thesis to draw extensive parallels

between the Hurons and other societies. Most of the generalities made about Huron technology and resource use are also applicable to other societies of shifting cultivators as are Huron social values and political concepts. Only a large comparative study could derive theoretical principles about societies such as the Hurons and outline those aspects of Huron culture that make the Hurons unique.

Future work in Huronia must by necessity be interdisciplinary. No one discipline has the variety of approaches and techniques available that are necessary to solve the multitude of problems which are connected with the reconstruction of an entire society.

Biologists and zoologists could make a major contribution through a study of animal and plant remains in the middens. This would aid our understanding of Huron diet as well as the natural environment of the period. The midden material itself would be an interesting area of work for chemists and biologists. A study of the microbiology, organic matter and inorganic elements of this material might provide some knowledge of the original material that went into the middens.

Palynological studies on bogs near some of the village sites could provide some information on the environment of the period when the site was occupied, as well as an insight into Indian landscape modification. Preliminary work in the Penetang Peninsula demonstrates that the Indian occupance shows up clearly by the presence of Zea pollen and rises in Ambrosia, Plantago, Pteridium, the Graminae and Compositae. The decline in arboreal species was slight, compared to the European sequence higher up in the pollen diagrams.

Soils studies are a particularly promising approach to a variety

problems. Work presently carried out by the author demonstrates that villages and longhouses can be delimited on the basis of soil phosphorus (by calorimetry) and magnesium (by spectrophotometry) analysis. The soils within a village usually have at least twice the phosphorus content of soils outside the village, while the centres of the longhouses and middens usually have at least three times the normal phosphorus content. Due to the ash content of the fireplaces, an analysis of magnesium values allows one to pick out the centres of the longhouses. By running a series of tightly spaced transects the precise size of an average four acre site, and the number and location of houses can be done in a year of work. Previously this would have taken several summers of extensive digging. Soils analysis is also of use in determining the amount of erosion caused by village activity and Indian agriculture. Since buried soils are often found under the depositional material caused by erosion, an analysis of these palaeosoils could provide information on past vegetation. Supporting information on past vegetation and climate can be gained from a comparative study of past and present snail populations out of the midden material and buried soils.

The only way in which the problems relating to Huron agriculture can be solved is to duplicate the process. Corn similar to that of the Hurons could be developed out of strains still to be found on present Indian reserves. A careful experiment would then have to be set up whereby land was cleared, burned and cultivated similar to the practices employed by the Hurons. Soil nutrient loss would have to be noted as well as the effects of burning, erosion, and the interplanting of beans and squash. The most important observations would be those related to changes in yield

over different soil types. After field abandonment, vegetation successions should be studied as well as soil regeneration rates. Such a study could easily take twenty years or more to complete.

In tackling the overall problem of the geography of Huronia the first and most crucial step is a systematic site survey of the area. Such a survey should note in particular the precise location of the site, its size, site characteristics, the degree to which it has been disturbed and its date. Of these, the problem of dating is the most difficult and one on which a great deal of research effort must be expended. For most of the sites in Huronia radio carbon dating is inadequate not only because the sites are too recent, but also because of the large plus or minus factors attached to radio carbon dates. The most logical step is to start with the contact sites and evolve a dating system based on the type and quantity of European trade goods present. At the same time Huron artifact assemblages should be examined by means of attribute analysis and correlated with the chronology based on trade goods. Only by establishing a chronology based on European trade goods independently of Huron artifacts, can the problem of regional differences be examined. European trade goods will vary with time, but not over space for the same time period. This is not necessarily the case with Indian artifacts. Arendaronon pottery may for example, be somewhat different from Attignaouantan pottery within the same time period not only because they were two different tribes, but also because they were spatially separated. Once a chronology based on European goods has been established, correlated with Huron artifacts and regional differences noted, the dating procedures based on Huron artifacts can be extended into the pre-contact period. Underlying the whole problem of

establishing chronologies is the problem of site sampling. The author knows of no site where an effort had been made to obtain a statistically random sample of artifacts. Statistically random samples could be obtained by sampling a quantity of every midden, based on the number and total bulk of midden material on a site. While this method still has problems it is better than simply obtaining a sample from a portion of one or two middens.

After site surveys and dating procedures have been completed, the next step should be a systematic excavation of sites starting with the latest contact sites. Because of the number of sites involved a random sample must be taken. This sample should be representative of different parts of Huronia as well as site size differences. Once the characteristics of the latest sites are understood, earlier sites can be tackled and the whole problem of tribal migration and culture change examined.

The procedures outlined above should lead to a systematic reconstruction of the geography of Huronia. Due to the interdisciplinary nature of such work it should not be an exclusive field for archaeologists. In general, Ontario archaeologists have regarded the ultimate aim of their work an attempt at reconstructing past social behaviour. Very little thought has been given to the relation of man to the natural environment, subsistence patterns, theoretical aspects of settlement and spatial relationships. All of these are aspects of human behaviour to which a geographer can make a contribution. No one discipline can possibly encompass the variety of approaches and techniques that are necessary to interpret the variety of material available for a comprehensive study of past society and area. It is hoped that this thesis demonstrates that a

geographical approach to the problem of reconstructing aspects of the past is a valid one which is capable of deriving significant results. Reconstructing the geography of past periods always creates special problems, most of them arising out of a lack of adequate data. The approach used in this thesis has to be a compromise between the elements that constitute a geographical study and the available material. Throughout the study special problems are raised and hypotheses formulated that can be solved with future field work. However before these special problems are tackled it is necessary to have an overall survey of the period and area. This thesis provides such a survey.

APPENDICES

APPENDIX I

Linear Measurements Used in the Early 17th Century

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Linear Measurements Used in the Early 17th Century

There has been a great deal of confusion regarding the exact length of the French league as used by Champlain and in the Relations. This is understandable in view of the fact that there was no standard league in the 17th century. The best discussion on the subject is by Jones (1908:114-115).

Jones lists some eight different leagues in vogue at that time. Of these he decided on the French lieu d'une heure (4.872 km. or 3.03 English statute miles) which is roughly equivalent to the French land league (4.827 km. or 3.00 English statute miles). His decision was well founded. The early travellers had of course no way of measuring a distance exactly. Instead they seem to have estimated the length of time it took them to cover the distance between two points. one hour being roughly equivalent to a league. Hence Jones's preference for the lieue d'une heure.

The rough scale on Bressani's map (Map No. 13) allows one to make a direct comparison between French leagues and Italian miles. Jones places the Italian geographical mile at 1.852 km. or 1.09 English statute miles (Jones, 1908:102). On Bressani's map five leagues are marked as equivalent to 15 Italian miles, or one league to three miles. This is the first concrete evidence we have for equating the league of the Relations to about three miles. At any rate the leagues in the Relations were estimates and should be treated as such. Throughout the thesis the

league is used as a flexible unit denoting about three miles. There seems little point in treating the league with such exaggerated accuracy as was done by Jury and Fox (1947:78), where cyclometers were used to measure leagues to the accuracy of a yard.

Other linear measurements that sometimes occur in the contemporary documents, are the toise and brasse. Both are roughly equivalent to the English fathom. While the brasse, toise and fathom are now nautical measurements, in the 17th century they were also used to describe terrestrial distance. According to Webster's International Dictionary the archaic meaning of the brasse or French fathom was about five to five and a half feet. or the distance between the fingertips of a man's outstretched arms. Since the 17th century the brasse has been standardized at 1.62 meters or 5.32 feet. Thomson (1966:47), places the toise of New France at 6.395 feet. Like the league, Champlain and the Jesuits probably estimated short distances such as the toise or brasse. All such measurements will be treated as estimates; the brasse as meaning about five and half feet and the toise about six feet.

APPENDIX II

List of Maps Relating to Huronia

APPENDIX II

List of Maps Relating to Huronia

DATE OF MAP	AUTHOR	TITLE OF MAP	APPROXIMATE AREA COVERED Latitude	Longitude	APPROXIMATE SCALE OF MAP	DATE OF INFORMATION ON MAP
1612	Champlain	Carte Geographique de la Nouvelle France	45°N-50°N?	50°W-80°W?	1 cm: 9 leagues	1603-1612
1613	Champlain	Carte Geographique de la Nouvelle France en son vray meridie	40°N-65°N	40°W-85°W?	1 cm: 22 leagues	1603-1613
1616	Champlain	No Title	37°N-65°N	45°W-90°W	1 cm: 20 leagues	1603-1616
1632	Champlain	Carte de la Nouvelle France....	37°N-65°N	45°W-8[illegible]°W	1 cm: 9 leagues	1603-1629
1631-1651	None	Description du Pais des Hurons	43°40'N-45°N	79°10'W-81°40'W	1 cm:2.5 leagues	1631-1651
No Date	None	Corographie du Pays des Hurons	44°10'N-45°N	79°10'W-81°40'W	1 cm: 1 league	1639-1648
1643	Champlain Boisseau	Description de la Nouvelle France	37°N-65°N	45°W-85°W	1 cm: 9 leagues	1603-1629
1650	Sanson	Amerique Septentrionale	5°N-75°N	10°W-120°W	None	1603-1650
1653	Champlain Du Val	Le Canada	37°N-65°N	45°W-90°W	1 cm: 20 leagues	1603-1616
1656	Sanson	Le Canada ou Nouvelle France	33°N-65°N	45°W-86°W	None	1603-1656
1657	Bressani	Novae Franciae Accurata Delineatio	37°N-50°N	57°W-86°W	1 cm: 8 leagues 1 cm: 25 Italian miles	1603-1657

		Huronum Explicata	43°40'N-	79°10'W-	1 cm:	2.6 leagues	
1657	Bressani	Tabula	45°N	81°40'W	1 cm:	8 Italian miles	1615-1650
1660	Du Creux	Tabula Novae Franciae	37°N-83°N	50°W-86°W		None	1603-1660
		Chorographia Regionis	43°30'N-	79°10'W-			
1660	Du Creux	Huronum	45°N	80°30'W		None	1639-1648
	Champlain						
1669	Laignet de Fer	La Nouvelle France	37°N-65°N	45°W-85°W	1 cm:	9 leagues	1603-1629

APPENDIX III

Translation of Huron Village and Place Names

APPENDIX III

A) Huron Village Names and Their Translations

Adiatae (Andiata, Adiatac) - "At the bridge" or "Bridgetown" (Jones, 1908:150).

Angoutenc (Angwiens, Angouteus) - "Beyond (aside) the rapids (torrent)" (Jones, 1908:131).

Anonatea (Anenatea, Aneantea) - 1. "The village of abundance: (Jones, 1908:142).
2. "Guardian of the water."*

*2. - annon ["signas garder quelque chose ou quelque personne, en avoir soin" (Potier:308) - to guard something or some person, to take care of]; atea ["eau, liqueur" (Potier:454) - water] = "Guardian of the water."

Arendaonatia (Anendaonactia) - 1. "The mouth (arch) at the flat rock" (Jones, 1908:144).

Arent (Arentat, Arrente, Arenta) - 1. "At (in) the mouth of the river" (Jones, 1908:134).

Arethsi (Aretsi, Arhetsi) - 1. "The straggling village" (Jones, 1908:152).
2. "The long clearing" (Jones, 1908:152).

Arontaen (Taruentutunum) - 1. "The town where many trees lie felled." (Jones, 1908:54).

Ataratiri - 1. "The place supported by mud."*

*1. - atara ["terre fange" (Potier:453) - mud, mire, dirt]; atiri ["appuyer" (Potier:191) - to prop up, support, stay, consolidate] = "Mud supported" or "The place supported by mud."

Cahiague - 1. "The fish spearing place" (Jones, 1908:195).
2. "The place always divided (in two)."*
3. "The place on the lesser trail."*

*2. - C [never used without h, i.e.: Ch; used here as the hard K, pronounced Kha or Xa (Potier:1) - "hic, haec, hoc, hi, hae, haec" - here, this, in this place or spot]; ahia [here not given in its complete form; could mean several things] - aiaxon ["to spear fish" (Potier:264);

"to break or divide" (Potier:263)]; if ahiati ["to fear or tremble" (Potier:163)]; if ahiation ["to write" (Potier:261)]; if Kaia or Kaiaxe [to divide in two," (Potier:264)]; - que [probably koue, written k8e meaning "something always going on: or simple plurality (Potier:766)] - the final meaning could be "the place always divided (in two)," or Kaiak8e. This fits very well because the archaeological site of Cahiague is a double village.

*3. - The meaning was derived by P. J. Robinson (Orillia Historical Society, 1966:17), but he does not state his references. The root ahia does not seem to exist in that form in Huron.

Carhagouha (Carragouha) - 1. "The great forest walled town: (Jones, 1908:192).
2. "The great palisaded fortress" (Jones, 1908:192).

Carmaron (Karenhassa, Karenhaysa, Ekarenhatasa) - 1. "The place of the little treetops" (Jones, 1908:59).

Chantie - 1. "The place where one goes fishing."*
2. "The place where one goes upstream."*

*1 and 2. - Chantie could be transposed to Achandi ["remonter un riviere," or "monter un riviere" (Potier:211) - to go upstream]; or Achenti ["aller à la peche en tel lieu" (Potier:211) - to go fishing at a certain place]; - e ["ad, apud" - in].

Contarea (Kontarea, Contareia) - 1. "Where there is a little lake," (Jones, 1908:74).

Ekhiondastsaan (Khiondaesahan, Ekhiondaltsaan) - 1. "The places (lands) which exude water," (Jones, 1908:148).
2. "The place where kettles are owned."*
3. "The domain of the kettles."*

*2. - Ekhi [rendered by Jones (1908:48) as, "the place where" (see Potier:2, 26). This means the same as Ti (Potier:242). Ti and Ekhi are therefore interchangeable].
Ondastsa [no such word; the closest is andatsa meaning "chaudiere" - kettle (Potier:499); Ekhiondastsaan could therefore read Tiandatsaan]. - An [place names do not have such an ending; if an means aen then (possessivum personale - "avoir quelque chose à soi, en avoir, le domaine, la propriete, la posseder," - to have something to come to, to have, the domain, property, etc. (Potier:221)].

2. "The place where kettles are owned."

3. "The domain of the kettles."

Iahenhouton - 1. "The one skillful manager of many important affairs," (Jones, 1908:146).

Ihonatiria - 1. "The little village above the loaded canoe," (Jones, 1908:187).

Kaotia (Kaontia) - 1. "Behold the village" (Jones, 1908:196).
2. "All the paraphernalia of the medicine man," (Jones, 1908:197).

Koutarcanō - 1. "The place guarded by the swamps."*

*1. - Kou [must be rendered as K8 (Potier:5), denoting the infinitive of verbs admitting te dual or affirmative (Potier:28)]; - tar [from atara "terre fange," swamp (Potier:453)]; canō [from xa and annon; the bar over the ō denotes omission of an n (Jones:196); xa, "hic, haec, hoc," - here, at this place, etc., (Potier:1); annon ("signas garder quelque chose ou quelque personne, en avoir soin," (Potier:308) - to guard something, to take care of etc.] - 1. "Much swamp guards this place," or, "The place guarded by swamps." Note: This is an excellent description of the site of Ste. Marie I. The two names denote the same place on the Description.

Oenrio (Wenrio, Ouenrio) - 1. "The great spruce plantation," (Jones, 1908:140).
2. "The beautiful firs" (Jones, 1908:140).

Onnentisati - 1. "The village located in the mountain hollow," (Jones, 1908:135).
2. "The village located in the evergreen glade," (Jones, 1908:135).

Ossossane (Osasan, Ossosane, Ossossarie) - 1. "Where the corn tops (tassels) droop into the water," (Jones, 1908:183).
2. "Where the corn tops wave," (Jones, 1908:183).

Quieunonascaran (Khinonaskarant) - 1. "Entrance to the thunder channel," (Jones, 1908:189).
2. "The beginning of the trolling grounds," (Jones, 1908:190).

Scanonaenrat (Scanouenrat, Scanonaentat) - 1. "The bone white cabin," (Jones, 1908:179).

Taenhatentaron (Tahententaron) - 1. "Where the dry poles lie in the way," (Jones, 1908:196).

2. "Where the two dry poles lie in the way," (Jones, 1908:196).

Taentoaton - 1. "Where the shore disappears."*

*1. - Te [denotes place: i.e.: "the place where" (Potier:76)]; aenton ["etre à terre," (Potier:222) - to be on land, ashore]; aton ["se dissiper, s'effacer, se detruire," (Potier:194) - to disappear] - 1. "The place where the shore dissappears," or, "The place where the land ends."

Teanaustaye (Teanaostaiae) - 1. "The guardian of the beautiful spring," (Jones, 1908:176).
2. "The beautifully shaped cliff," (Jones, 1908:177).
3. "The beautifully coloured cliff," (Jones, 1908:178).

Teandatetsia - 1. "The long village."*

*1. - Te [denotes place; where (Potier:76)]; andata [village, (Potier:448)]; etsia ["etre long," (Potier:385) - to be long]; = 1. "Where there is a long village."

Teaontiae - 1. "The only place at the two waters."*

*1. - Te [denotes duality if followed by the affirmative (Potier: 76)]; ea ["liqueur, eau," (Potier:454); - water]; ontia [affirmative of ontion; "a specific place, the very site of, the one place, (Potier: 424)]; e [contraction of ae denoting number or quantity (Potier:242)]; = "The only place at the two waters." Note: this village is located at the entrance to the Wye River; it is therefore located by the two lakes (Wye Lake and Huron). (See Huronum Explicata Tabula).

Tequenonquiaye (Quieuindohian, Tequeunonoikuaye) - cannot be deciphered.

Tiondatsae - 1. "The place at the kettles."*

*1. - Ti [denotes many things including "the place where (Potier:104; Jones, 1908:118)]; ondatsa [from andatsa; "chaudiere," (Potier:449) - kettle]; e [contraction of ae denoting plurality or numbers (Potier:242)]. = 1. "The place at the kettles," or "La Chaudiere," or "Ekhiondastsaan."

Toanche (Otouacha, Troenchain, Teandeouiata) - 1. "Opposite the sand-white point," (Jones, 1908:194).
2. "The sand-white point," (Jones, 1908:194).

Tondakea (Tundatra, Etondatra, Tondakhra) - 1. "The land gives out," (Jones, 1908:54).

2. "Lands end," (Jones, 1908:54).
Note: Tondakea is identical in meaning to Taentoaton,

Touaguainchain - cannot be deciphered.

B) Huron Place Names Other Than Villages

Anaouites (Anaotte, Anaoisey) (Cranberry Lake) - 1. "There the swarms of canoes being continually paddled about," (Jones, 1908:204).

Anatari (Thora Island?) - 1. "The dry firewood island," (Jones, 1908: 205).

Ascensionis (Hope Island) - 1. "Ascension Island"; Huron name not known.

Chion Kiara (Khionchiara) (Area along the eastwest flowing part of the Severn River) - 1. "There in the distance where the great sun rises," (Jones, 1908: 208).

Contarea (1. Lake Couchiching; 2. Midland Park Lake) - 1. "The little lake," (Jones, 1908:74).

Ekaenouton (Manitoulin Island) - 1. "Where many things are washed up (littering) the shore," (Jones, 1908:200).

Ethahonra (1. Pefferlaw Brook, or 2. Black River) - 1. "The channel into the meadows."*

*1. - Etha [Eta or EΘa (Potier:23); "champ, prairie," (Potier: 454) - meadow]; ahonra ["l'esophage" (Potier:447) - throat, channel]; = "The channel into the meadows," or "the meadow channel."

Ethaionte (Holland Marsh) - 1. "The arrival place at the meadows."*

*1. - Etha [meadow (Potier:454)]; ion ["arriver" (Potier:314)- to arrive]. te [denotes place (Potier:76)]. = "The meadow arrival place," or "the arrival place at the meadow."

Ethaouatius Pagus (Etha ati) (North shore of Lake Simcoe area at the Lake Couchiching Narrows and east of it). - 1. "The deeply indented meadow lands," (Jones, 1908:201).

Etiaantarisati (Kempenfeldt Bay) - 1. "The coming and going place on the very deep bay of the lake."*

*1. - Eti ["aller ou venir en tel lieu" (Potier:378), - to go or

come in such a place.]; a [signifies "grandeur ou grosseur" (Potier:161), - great.]; ontar [from ontara, ontare or atontara - "lac ou mer" (Potier:61; 455) - lake.]; isati [heurter quelque chose, donner contre la toucher, lui donner q'attainte; etre enfonce, avoir des enfoncemens, des coins, enfonces," (Potier:398) - a deep hollow or bay (literally)]. = 1. "The great deep bay of the lake where one comes and goes," or, 2. "The coming and going place on the very deep bay of the lake."

Etondatrateus Pagus (Northwestern tip of the Penetang Peninsula) - 1. "Edge of the water and beach," (Jones, 1908:56).

Gahoendoe Insula (Ahoendoe, Gahandoe, Gahuendoe, Gahoedoe) (Christian, Charity, St. Joseph's, Island). - 1. "There is an island in the lake," (Jones, 1908:172).

Haskaont (Georgina Island?) - 1. "The place where meat and fish are stored."*

*1. - askont ["retir de la viande, du poisson," (Potier:353) - storage place of meat and fish.] = "The place where meat and fish are stored."

Isiaragui (Wye (Mud) Lake) - 1. "The sunbeams dancing on the water." (Jones, 1908:198).

Ouentarionk (Oentaronk, Oentarenk, Oentaronius) (Lake Simcoe). - 1. "The fish spearing lake," (Jones, 1908:203).
2. "The beautiful big lake."*

*2. - Oentar [from ontare "lac ou mer," (Potier:455), - lake]; io ["etre beau...bon...grand," (Potier:396) - beautiful, good, greatness, grandeur, sublime]; nk [onk, present indicative, (Potier:63)] = 1. "The beautiful big lake."

Ondioe (Snake Island?) - 1. "The point of land where one arrives by water."*
2. "Where one arrives at the lake's edge."*

*1. - Ondia ["pointe de terre" (Potier:455) - point of land]; oe [could be a contraction of oen, signifying arrival at the water (Potier:404)] = "The point of land where one arrives by water."

*2. - ondi ["l'eau arriver jusqu'a tel endroit," or, "arriver au bord de l'eau d'un lac d'une riviere," (Potier:402) - to arrive at the edge of the water; the water comes up to this place]. oe [the o signifies water (Potier:401); the e

answers the question "where?" (see explanation for oe endings in: (Jones, 1908:172-173).] = "Where one arrives at the waters' (lake) edge."

Ondiontannen (Ondichaouan) (Giants Tomb Island). - 1. "The island in view of our point," (Jones, 1908:29).

Skiondechiara (Khiondechiara, Schiondekiara)(Beausoleil Isl.). -1. "The land to appear floating afar," (Jones, 1908:207).

Tandehouaronnon (Lafontaine (Randolph) Hill). - 1. "The place of the sand dwellers," (Jones, 1908:137).
2. "The place of the beaver skin people," (Jones, 1908:137).

Tannenraki (Mouth of the Beaverton River). - 1. "The place where the sun rises."*
2. "East (direction)."

*1. - T [signifying place]; annen [asking the question "where?" (Potier:88)]; raki [from arak8i - "designat partem horizontis in qua reventur" (Potier:325), - designates part of the horizon where the sun rises.]. = 1. "The place where the sun rises," or
2. "East."

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APPENDIX IV

TABULAR SUMMARY OF THE DISTRIBUTION OF JESUIT MISSIONS AND HURON VILLAGES.

A. Huron Villages.

B. Jesuit and Recollet Missions.

C. Jesuit Missions (Sites Unknown).

A. HURON VILLAGES

Name of Huron Village	Mission Name	Approximate Location Lot	Concession	Township	Tribe
Andiatae	St. Fr. Xavier?	93	2	Tiny*	Attignaouantan
Angoutenc	?	101	2	Tiny*	"
Arendaonatia	?	East of L. Farlane		Tiny	"
Anonatea	?	5	17	Tiny*	"
Arent	?	18	13	Tiny*	"
Arethsi	?	20	8	Medonte*	Attinguenongahac
Arontaen	Ste. Cecile?	17	18	Tiny*	Attignaouantan
Ataratiri	St. Jean?	6	10	Tay*	Ataronchronon
Cahiague	None	10	14	Medonte*	Arendaronon
Carhagouha	St. Joseph I (Recollet)	112-113	1	Tay*	Attignaouantan
Carmaron	None	8 or 7	18 or 19	Tiny	"
Chantie	?	?	?	Oro	?
Contarea	St. Jean Baptiste	10	3	Orillia*	Arendaronon
Ekhiondatsaan	La Chaudiere	84 or 85	1	Tay	?
Iaenhouton	?	Near Ossossane		Tiny	Attignaouantan
Ihonatiria	St. Joseph I	2 or 3	20	Tiny	"
Kaotia	?	4	3	Tay*	Ataronchronon
Karenhassa	see Carmaron				
Koutarcano	Ste. Marie I	16	3	Tay*	Ataronchronon

*The asterisk indicated the presence of a known archaeological site of about the right period.

Name of Huron Village	Mission Name	Approximate Location Lot	Concession	Township	Tribe
Oenrio	?	9	18	Tiny	Attignaouantan
Onnentisati	?	8 or 9	15	Tiny	"
Ossossane 3	La Conception	16	7	Tiny*	"
Ossossane 4	La Conception	16	7	Tiny*	"
" 5	"	17	10	Tiny*	"
Otouacha	see Toanche				
Quieunonascaran	St. Joseph II (Récollet)	17 Park lot 37	1	Tiny*	"
Scanonaenrat	St. Michel	74 or 71	1	Medonte*	Tohontaenrat
Taenhatentaron	St. Ignace I	19	8	Medonte*	Attinguenongahac
Teanaustaye	St. Joseph II	12	4	Medonte*	"
Teandatetsia	?	15	15	Tiny*	Attignaouantan
Teaontiae	?	North of Ste. Marie I		Tay	Attignaouantan
Tequenonquiaye	St. Gabriel (Récollet)	Near Spratt Point		Tiny	Attignaouantan
Tiondatsae	La Chaudiere	2	3	Tay*	?
Toanche	St. Nicholas (Récollet)	4	20	Tiny*	Attignaouantan
Tondakea	?	19	20	Tiny*	"
Touaguainchain	None	?	?	Tiny	"

*The asterisk indicates the presence of a known archaeological site of about the right period.

B. JESUIT AND RECOLLET MISSIONS

Jesuit and Récollet Missions	Approximate Location Lot	Concession	Township	Tribe
Ste. Anne	9	3	Tay*	Ataronchronon
Ste. Cecile	17	18	Tiny*	Attignaouantan
St. Charles	29 or 30	3	Tay	"
St. Denis	3	5	Tay*	Ataronchronon
Ste. Elizabeth	?	?	Orillia	Algonquin
St. F. Xavier	93	2	Tiny*	Attignaouantan
St. Gabriel	Near Spratt Point		Tiny	"
St. Ignace I	19	8	Medonte*	Attinguenongahac
St. Ignace II	4 or 5-6	7 or 9	Tay*	"
St. Jean	6	10	Tay*	Ataronchronon
St. Jean Batiste	10	3	Orillia*	Arendaronon
St. Joachim	2	9	Tay*	"
St. Joseph I (Récollet)	112-113	1	Tay*	Attignaouantan
St. Joseph II (Récollet)	Lot 117 Park lot 37	1	Tiny*	"
St. Joseph I (Jesuit)	2 or 3	20	Tiny	"
St. Joseph II (Jesuit)	12	4	Medonte*	Attinguenongahac
St. Louis	11	6	Tay*	Ataronchronon
Ste. Magdelaine	11	10	Tiny*	Attignaouantan
Ste. Marie I	16	3	Tay*	Ataronchronon

*The asterisk indicates the presence of a known archaeological site of about the right period.

Jesuit and Récollet Missions	Approximate Location Lot	Concession	Township	Tribe
Ste. Marie II			Christian Isl.*	All tribes
St. Michel	74 or 71	1	Medonte*	Tohontaenrat
St. Nicholas	4	20	Tiny*	Attignaouantan

*The asterisk indicates the presence of a known archaeological site of about the right period.

C. JESUIT MISSIONS (SITES AND HURON NAMES UNKNOWN).

Jesuit and Récollet Missions	Approximate Location Lot Concession Township	Tribe
Ste. Agnes	Tiny	Attignaouantan
St. Antoine	Tiny	"
Ste. Barbara	Tiny	"
Ste. Catherine	Tiny	"
St. Etienne	Tiny	"
Ste. Genevieve	Tiny	"
St. Martin	Tiny	"
Ste. Therese	Tiny	"

APPENDIX V

CLIMATIC STATISTICS FOR HURONIA

APPENDIX V

CLIMATIC STATISTICS

A. Temperature (^{o}F) and Precipitation (inches)

Barrie (45)*	J	F	M	A	M	J	J	A	S	O	N	D	AVE
Precipitation	3.25	2.08	2.49	2.02	2.54	2.77	2.77	2.79	2.69	2.69	3.19	2.92	32.20
Temperature	18	16	26	40	52	63	68	66	59	48	35	24	43

Orillia (38)*													
Precipitation	2.63	2.21	2.00	1.95	2.68	2.80	2.79	2.56	3.09	3.16	3.40	2.99	32.26
Temperature	17	14	26	40	53	63	68	66	59	47	34	21	44

*Years observed.

Source: Canada Dept. of Agriculture, and the Ontario Agricultural College (1962); Report No. 29, Soil Survey of Simcoe County. Guelph, 1962: 17-18.

B. Monthly Precipitation Data (inches) for Orillia, 1951-1960.

	J	F	M	A	M	J	J	A	S	O	N	D	AVE
1960	4.28	3.50	1.56	3.07	7.36	4.47	1.51	2.31	1.28	2.80	2.62	2.37	37.13
1959	0.89	0.00	1.29	2.73	3.74	2.83	3.12	2.75	3.40	2.97	2.63	1.63	27.98
1958	1.67	1.46	0.90	0.74	1.39	2.66	3.18	2.33	2.94	3.19	3.04	4.81	28.31
1957	2.40	2.07	1.35	2.51	2.35	5.41	2.14	1.05	7.38	3.19	2.51	2.58	34.94
1956	1.40	1.90	1.69	3.70	3.09	2.88	4.95	4.11	2.31	1.54	2.50	2.40	32.47
1955	?	?	?	3.58	3.58	0.74	1.75	7.76	1.68	8.42	2.36	1.58	?
1954	1.97	2.32	5.13	5.03	1.76	3.48	2.51	4.17	4.99	6.60	1.85	?	?
1953	3.34	2.67	4.69	2.68	3.89	3.87	3.18	2.93	3.97	1.74	2.68	4.39	40.03
1952	2.00	1.68	2.49	3.21	4.26	1.35	4.34	3.39	3.81	0.98	5.25	2.45	35.21
1951	3.01	2.54	3.58	6.11	1.84	2.82	4.14	3.66	5.37	3.89	3.65	4.72	45.33

Source: Ontario Department of Agriculture (1951-1960).

C. Climatic Statistics for Eastern and Western Huronia.

Sources: 1-12; Chapman and Brown (1966)

13-14; Putnam and Chapman (1938)

		Western Huronia	Eastern Huronia
1.	Start of Growing Season	April 20	April 15
2.	End of Growing Season	Oct. 31	Oct. 28
3.	Length of Growing Season (Days)	194	196
4.	Degree Days above 42°	3,200	3,300
5.	Mean Spring Frost Date	May 16	May 18
6.	Mean Fall Frost Date	Oct. 5	Sept. 30
7.	Frost Free Period (Days)	142	135
8.	Average Annual Precipitation	32" - 36"	32" - 36"
9.	Average May to September Precipitation	14"	16"
10.	Potential Evapotranspiration	23"	23"
11.	Ave. Ann. Actual Evapotranspiration	20"	21"
12.	Ave. Ann. Water Deficiency	3"	2"
13.	Total Snowfall	115"	100"
14.	Frequency of Droughts (May-Sept; <1" per month)	10%	8%

APPENDIX VI

ACREAGES OF TEXTURE AND DRAINAGE CLASSES

BY PHYSIOGRAPHIC AREA.

MEDONTE-ORILLIA UPLAND

TEXTURE CLASSES

Drainage Classes	Gravel		Sand and Loamy Sands		Sandy Loams		Loam and Silt Loams		Clay and Clay Loams		Muck		Water		Totals	
	No. of Acres	% of Area	No. of Acres	% of Area	No. of Acres	% of Area	No. of Acres	% of Area	No. of Acres	% of Area	No. of Acres	% of Area	No. of Acres	% of Area	No. of Acres	% of Area
Good	2,950	7.2	8,168	20.0	15,571	38.1	6,933	16.9	-	-	-	-	-	-	33,622	82.2
Fair	-	-	-	-	430	1.1	100	0.3	-	-	-	-	-	-	530	1.3
Poor	-	-	-	-	840	2.0	120	0.3	400	1.0	4,104	10.0	-	-	5,464	13.4
Water	-	-	-	-	-	-	-	-	-	-	-	-	1,300	3.2	1,300	3.2
Totals	2,950	7.2	8,168	20.0	16,841	41.2	7,153	17.5	400	1.0	4,104	10.0	1,300	3.2	40,916	100.0

MOUNT SAINT LOUIS RIDGE

Good	606	3.9	358	2.3	14,000	89.5	-	-	-	-	-	-	-	-	14,964	95.7
Fair	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poor	-	-	-	-	230	1.5	-	-	310	2.0	130	0.8	-	-	670	4.3
Water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Totals	606	3.9	358	2.3	14,230	91.0	-	-	310	2.0	130	0.8	-	-	15,634	100.0

VASEY RIDGE

Good	2,602	9.3	2,717	9.7	18,856	67.4	-	-	-	-	-	-	-	-	24,175	86.5
Fair	-	-	-	-	767	2.7	-	-	-	-	-	-	-	-	767	2.8
Poor	-	-	-	-	100	0.3	-	-	2,266	8.0	650	2.3	-	-	2,916	10.4
Water	-	-	-	-	-	-	-	-	-	-	-	-	80	0.2	80	.3
Totals	2,602	9.3	2,717	9.7	19,723	70.4	-	-	2,266	8.0	650	2.3	80	0.2	27,938	100.0

PORT McNICOLL UPLAND

Good	332	11.5	409	14.1	1,766	61.1	384	13.3	-	-	-	-	-	-	2,891	100.0
Fair	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Poor	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Totals	332	11.5	409	14.1	1,766	61.1	384	13.3	-	-	-	-	-	-	2,891	100.0

VICTORIA HARBOUR UPLAND

Good	400	22.1	332	18.3	1,000	55.2	-	-	-	-	-	-	-	-	1,732	95.6
Fair	-	-	-	-	-	-	-	-	80	4.4	-	-	-	-	80	4.4
Poor	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Totals	400	22.1	332	18.3	1,000	55.2	-	-	80	4.4	-	-	-	-	1,812	100.0

PENETANG PENINSULA

Good	6,765	7.7	35,957	40.8	30,860	35.0	4,016	4.0	-	-	-	-	-	-	77,598	88.0
Fair	-	-	-	-	3,045	3.5	120	0.1	1,125	1.3	-	-	-	-	4,290	4.9
Poor	-	-	-	-	2,341	2.6	1,142	1.3	800	0.9	906	1.0	-	-	5,179	5.9
Water	-	-	-	-	-	-	-	-	-	-	-	-	1,100	1.2	1,100	1.2
Totals	6,765	7.7	35,957	40.8	36,246	41.1	5,278	6.0	1,925	2.2	906	1.0	1,100	1.2	88,167	100.0

LOWLAND OF THE NARROWS

Good	40	1.2	-	-	-	-	460	13.8	-	-	-	-	-	-	500	15.0
Fair	-	-	-	-	-	-	-	-	665	20.0	-	-	-	-	665	20.0
Poor	-	-	-	-	-	-	-	-	970	29.2	1,190	35.8	-	-	2,160	65.0
Water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Totals	40	1.2	-	-	-	-	460	13.8	1,635	49.2	1,190	35.8	-	-	3,325	100.0

COLDWATER VALLEY

Good	550	5.3	3,730	35.8	480	4.6	1,455	14.0	-	-	-	-	-	-	6,215	59.7
Fair	-	-	-	-	1,434	13.8	-	-	844	8.1	-	-	-	-	2,278	21.9
Poor	-	-	-	-	1,170	11.2	-	-	580	5.6	170	1.6	-	-	1,920	18.4
Water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Totals	550	5.3	3,730	35.8	3,084	29.6	1,455	14.0	1,424	13.7	170	1.6	-	-	10,413	100.0

STURGEON VALLEY

Good	-	-	3,879	49.5	700	8.9	-	-	-	-	-	-	-	-	4,579	58.4
Fair	-	-	80	1.0	1,750	22.4	480	6.1	-	-	-	-	-	-	2,310	29.5
Poor	-	-	-	-	-	-	750	9.6	-	-	200	2.5	-	-	950	12.1
Water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Totals	-	-	3,959	50.5	2,450	31.3	1,230	15.7	-	-	200	2.5	-	-	7,839	100.0

HOGG VALLEY

Good	100	1.6	1,356	22.0	1,070	17.4	-	-	-	-	-	-	-	-	2,526	41.0
Fair	-	-	-	-	640	10.4	-	-	332	5.4	-	-	-	-	972	15.8
Poor	-	-	-	-	793	13.0	-	-	1,865	30.2	-	-	-	-	2,658	43.2
Water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Totals	100	1.6	1,356	22.0	2,503	40.8	-	-	2,197	35.6	-	-	-	-	6,156	100.0

WYE VALLEY

Good	307	2.5	-	-	2,000	16.1	1,024	8.3	-	-	-	-	-	-	3,331	26.9
Fair	-	-	-	-	4,124	33.3	-	-	1,331	10.7	-	-	-	-	5,455	44.0
Poor	-	-	-	-	1,104	8.9	-	-	250	2.0	1,356	10.9	-	-	2,710	21.9
Water	-	-	-	-	-	-	-	-	-	-	-	-	900	7.3	900	7.3
Totals	307	2.5	-	-	7,228	58.3	1,024	8.3	1,581	12.7	1,356	10.9	900	7.3	12,396	100.0

TOTAL HURONIA

Good	14,652	6.7	56,906	26.2	86,303	39.7	14,272	6.6	-	-	-	-	-	-	172,133	79.1
Fair	-	-	80	-	12,190	5.6	700	.3	4,377	2.0	-	-	-	-	17,347	8.0
Poor	-	-	-	-	6,578	3.0	2,012	.9	7,441	3.4	8,706	4.0	-	-	24,737	11.4
Water	-	-	-	-	-	-	-	-	-	-	-	-	3,380	1.6	3,380	1.6
Totals	14,652	6.7	56,986	26.2	105,071	48.3	16,984	7.8	11,818	5.4	8,706	4.0	3,380	1.6	217,597	100.2
															339,995 sq. mi.	

APPENDIX VII

Calculation of Increasing Land Requirements after "n" Years of Continuous Cultivation on Three Soil Types

APPENDIX VII

Calculation of Increasing Land Requirements after "n" Years of Continuous Cultivation on Three Soil Types

Assumptions:

1)-Need remains constant at 9 bushels per person per year.

2)-Yields decline at a predictable rate as depicted in Figure 15.

3)-Maximum yield reached in first year on a sandy loam is 46 bu./acre; minimum yield is reached in 10 years at 8 bu./acre.

-Maximum yield reached in first year on a loamy sand is 34 bu./acre; minimum yield is reached in 7 years at 8 bu./acre.

-Maximum yield reached in first year on a coarse sand or gravel is 24 bu./acre; minimum yield is reached in 5 years at 8 bu./acre.

-Yearly loss (bu.) from one acre of sandy loam = $\frac{46-8}{9}$ = 4.2 bu.

Yearly loss (bu.) from one acre of loamy sand = $\frac{34-8}{6}$ = 4.3 bu.

Yearly loss (bu.) from one acre of coarse sand = $\frac{24-8}{4}$ = 4.0 bu.

Calculations (sandy loam)

-Acreage needed by one person in the first year of clearance with a yield of 46 bu./acre = $\frac{9}{46}$ = .19 acres.

-let (a) = .19 acres, be the field cleared in the first year.

-yearly loss from one acre = $\frac{46-8}{9}$ = 4.2 bu.

-yearly loss from .19 acres = $\frac{4.2 \times .19}{1}$ = .8 bu.

-acreage on which .8 bu. can be grown = $\frac{.19 \times .8}{9}$ = .017 acres

-let (b) = .017 acres, be the amount of land cleared in the second year.

-By the end of the second year the amount of cleared land is (a) + (b).

-by the end of the third year field (a) declined by another equivalent to field (b), and field (b) declined by $\frac{4.2 \times .017}{46}$ = .0015 acres.

-Let (c) = .0015 acres, be the amount of land cleared in the third year.

-By the end of the third year the amount of land under cultivation is (a) + 2(b) + (c) = .19 + 2(.017) + .0015 = .226 acres.

-Similarily figures may be calculated for the ten years of the cycle, or:

= (a) + 9(b) + 8(c) + 7(d) + 6(e) + 5(f) + 4(g) + 3(h) + 2(i) + j

= .19 + 9(.017) + 8(.0015) + 7(.000135) + 6(.000012) + 5(.0000011) + 4(.000000099) + 3(.0000000089) + 2(.00000000080) + .000000000072

= .356 acres.

-By the end of 10 years, .356 acres are under cultivation.

Calculations (loamy sand)

-Acreage needed by one person in the first year of clearance with a yield of 34 bu./acre = $\frac{9}{34}$ = .265 acres.

-Calculations proceed in the same manner as described above.

-After 7 years the acreage under cultivation is:

= (a) + 6(b) + 5(c) + 4(d) + 3(e) + 2(f) + g

= .265 + 6(.033) + 5(.0039) + 4(.00047) + 3(.000056) + 2(.0000068) + .00000082 = .484 acres.

-By the end of 7 years, .484 acres are under cultivation.

Calculations (Coarse sand-gravel)

-Acreage needed by one person in the first year of clearance with a yield of 24 bu./acre = $\frac{9}{24}$ = .375 acres.

-Calculations proceed in the same manner as described above.

-After 5 years the acreage under cultivation is

= (a) + 4(b) + 3(c) + 2(d) + e

= .375 + 4(.0625) + 3(.0106) + 2(.0018) + .0003

= .661 acres.

-By the end of 5 years, .661 acres are under cultivation.

APPENDIX VIII

The Primary Source Material: A Discussion

1. Contemporary Descriptions.
2. Contemporary Compilations.
3. Maps.

APPENDIX VIII

The Primary Source Material: A Discussion

Introduction

The major primary source materials dealing with the Hurons can be divided into five convenient categories; 1) First hand travellers' descriptions, of which the works of Champlain, Sagard and the Jesuits are the most important; 2) Secondary contemporary accounts compiled from published works and interviews such as the works of Du Creux and Le Clercq; 3) Published and manuscript maps dealing with the period; 4) Archaeological monographs; 5) Field work. The first three sources will be discussed in this Appendix; the last two, plus pertinent secondary sources, are discussed in the body of the thesis.

1. Contemporary Descriptions

The first contemporary descriptions of Huronia are those of Champlain. His published works include the Brief Discours (Champlain, 1859), Des Sauvages (Champlain, 1603), Les Voyages (Champlain, 1613), Voyages et Descouvertures (Champlain, 1619); and Les Voyages (Champlain, 1632). The first complete English edition of Champlain's Works appeared between the years 1922 and 1935, edited by H.P. Biggar under the auspices of The Champlain Society (Champlain, 1922-1935). This edition includes both the French text and an English translation of all of Champlain's Works as well as his Traité de la Marine and a number of contemporary documents. It is this edition that was used in this thesis. Other documents relating to Champlain have been published by the Archives of

Canada, but these are of secondary interest (Le Blant and Baudry, Vol. 1, 1967).

The two best biographies on Champlain are those by Bishop (1963) and Dionne (1963). Of these, the Bishop volume is the better, because it is primarily a paraphrasing of Champlain's own writings. An excellent summary of Champlain's life and achievements can be found in the Dictionary of Canadian Biography, (Brown, 1966, Vol. 1:186-199).

Champlain's visit to the Hurons lasted from August, 1615 to May, 1616. During this period he was away for 106 days on a raid to the Onondaga Iroquois (September 8 to December 23rd, 1615), but during the rest of the time he travelled extensively about Huronia and even visited the Petun and Cheveux-relevés in the Collingwood area. As a result of this visit Champlain gives a brief, but good description of Huron life. Not being able to speak Huron, his best descriptions are confined to those elements of Huron life that he could observe himself. His accounts on Huron religion and social customs are sketchy and at times misleading. Both Sagard's accounts and those of the Jesuits are better on those subjects.

Champlain's estimates of distance are fraught with difficulties. One cannot even be sure which of the many French leagues he was using.[1] Specific cases of Champlain's estimates will be discussed where they occur in the thesis. In any case, all his figures should be treated as estimates and never as absolute.

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1. For a discussion of linear distances used in the source materials see Appendix I.

The pictures which accompany Champlain's Works must also be treated with caution. Even though he refers to them in the text of his writings, one cannot be sure how much was lost in the process of transferring these sketches to the engravings, or if indeed he drew them himself. Most of these pictures include such obvious inaccuracies that one wonders if Champlian ever saw them before they were printed.

On the whole, Champlain seems to have been an accurate observer, who simply stated what he saw without the usual moralizing and literary embellishments common to this period. It reflects a mind trained in observing detail and recording it in a precise and logical manner. The general accuracy of his observations can be substantiated through the writings of Sagard and the Jesuits.

Gabriel Sagard was a friar in the Récollet Order, a reformed branch of the Franciscans. He arrived in Huronia with his superior Joseph Le Caron on August 20th, 1623, and departed for Quebec in the beginning of June, 1624. His sojourn in Huronia resulted in two books, Le Grand Voyage (Sagard, 1632) and the Histoire Du Canada (Sagard, 1636). Appended to the Grand Voyage was a short dictionary of the Huron language. An English translation of Le Grand Voyage by H. H. Langton and edited by G. M. Wrong appeared in 1939 as part of the Champlain Society series (Sagard, 1939); it is this edition which was used in the thesis. The Histoire has never been translated. The section of the Histoire dealing with Huronia is virtually a reprinting of the Grand Voyage and adds very little. Since the Champlain Society edition of the Grand Voyage includes all the minor differences between the two books it was not considered necessary to consult the Histoire for additional information.

The best detailed biographical information on Sagard can be found in the Dictionary of Canadian Biography (Brown, 1966:590-592) and the introduction to the Champlain Society edition of the Grand Voyage. For a more general treatment on the role of the Récollets in Canada the best source is Jouve's, Les Franciscains et le Canada (Jouve, 1916).

Of all the early writers on Huronia, Sagard was perhaps the most sympathetic and understanding of what he saw. Tooker for example, calls him "a participant observer," one who "perhaps resembled most closely the modern anthropologist" (Tooker, 1964:6). Consequently the difference between the writings of Sagard and those of Champlain and the Jesuits is quite striking. Because Sagard could speak some Huron his descriptions are much more complete than those of Champlain; and in contrast to the Jesuits his writings are almost entirely free of moralizing and lengthy descriptions of religious conversions. This lends a greater air of objectivity to Sagard's accounts. As a follower of St. Francis, Sagard was also interested in nature, and it is in the Grand Voyage that we get the earliest and most complete description of the climate, vegetation and fauna of 17th century Huronia.

Even a cursory examination of the Grand Voyage will show that Sagard copied some information from Champlain's 1619 edition of the Voyages. Because Sagard was in a position to judge the accuracy of Champlain's statements, his plagiarism lends support to Champlain's veracity.

In 1626 the Jesuits began their work in Huronia. For the next three years they shared the mission with the Récollets. However, all mission activity came to an end in July, 1629 when Champlain was forced

to surrender Quebec to the English. For the next three years there seems to have been little contact between Europeans and the Huron country. In August, 1634, two years after Quebec had been returned to France, the Jesuits again arrived in Huronia to renew their mission. From that year on some Europeans were always present among the Hurons, and it was in this year that the Jesuits began to write their accounts of the progress of the Church among the Hurons.

The Jesuit Relations and Allied Documents were first published in English in 1899 under the general editorship of Reuben Gold Thwaites. In 1959 this edition was republished with no editorial changes (Thwaites, 1959). It is the second printing that was used in this thesis. Although the original Thwaites edition was meticulously edited and indexed it is very unfortunate that no re-editing took place for the 1959 printing. In other words there is no edition of the Jesuit Relations that incorporates any of the research done on Huronia since the latter 1890's. Even Rev. A. E. Jones and A. F. Hunter, who had assisted Thwaites with the Huron section of the Relations (Vol. 7 to Vol. 40), did most of their research and writing after 1900 and changed their minds on many of the points they had made in the Thwaites edition.

A great deal has been written on the usefulness of the Relations for historical research and there seems little point in repeating it here (Jones, 1908; Hunt, 1960; Trigger, 1960; Tooker, 1964). Unlike Champlain and Sagard, who tried to set down a fairly concise description of Huron life for the entertainment of their readers, the Jesuits, with the exception of Brébeuf, Ragueneau and Jérôme Lalemant, made no such attempt. The purpose of the Relations was to present a report of the progress of

the Church among the Hurons; consequently useful geographical information slipped into their writings only incidentally. As a result the Jesuit Relations are much more difficult to use than either Champlain or Sagard. Fortunately the Thwaites edition contains an excellent index.

Naturally it goes without saying that any primary sources such as the Relations, Champlain or Sagard must be used with care. It is doubtful if they contain any outright lies because there was little reason for any of these men to lie. They do however contain exaggerations and material that is incomplete or faulty simply because of a lack of knowledge or because of a lack of interest on the part of the writer. Another thing that must constantly be kept in mind is that all the information related in these sources comes to us through the eyes of 17th century Europeans. The ultimate usefulness of such information can only be checked by cross references to other writers, the archaeological record, and common sense.

Four works that find themselves inevitably into any study on the Iroquoian tribes are the Voyages of Radisson (Scull, 1885), La Hontan's New Voyages (Thwaites, 1905), Lafitau's Moeurs des Sauvages (1724) and Hennepin's New Discovery (Thwaites, 1903). None of these deal directly with the Hurons and all were written well after the destruction of Huronia. They are however first hand accounts of the New York Iroquois and as such may offer some information on their cultural relatives, the Hurons.

In the same vein as the above are three collections of documents some of which, although they also deal with the New York Iroquois, are sufficiently early in time to shed some light on Huronia (O'Callaghan,

1856-61; Jameson, 1909; Trelease, 1960).

The last of the primary sources to be discussed here are Potier's Elementa Grammaticae Huronicae and his Radices Huronicae. The Elementa Grammaticae was written in 1745 while the Radices was written in 1751. Both manuscripts have been published in photocopy form by the Ontario Bureau of Archives (Potier, 1920). Together these two manuscripts are an indispensable aid in deriving Huron place names. With the aid of Potier's manuscripts Rev. A. E. Jones interpreted all of the Huron place names known at that time (Jones, 1908). In this thesis attempt has been made to decipher the place names found on some of the newly discovered maps. A list of all place names with their translation can be found in Appendix III.

2. Contemporary Compilations

The two most important of the early compilations on matters dealing with Huronia are Father Du Creux's Historia Canadensis (1664) and Le Clercq's Premier Etablissement de la Foy dans la Nouvelle France (1691).

The Historia Canadensis is in fact the official Jesuit summary of the Relations, and covers the period from 1625 to 1658. The purpose behind its publication was to publicize the Jesuit effort in New France. The value of Du Creux's work lies not only in presenting his audience with a more readable account of the Relations, but also in that he interviewed some of the Jesuits who had actually been in Huronia. He does then furnish some additional information not found in the Relations.

The only English translation of Du Creux's work appeared in 1951-52 under the auspices of the Champlain Society (Robinson and

Conacher, 1951-52). The introduction to this edition contains a good analysis of the work and a short biography of its compiler.

Unlike Du Creux, Father Chrestien Le Clercq actually spent some eleven years in New France (1676-1687). His visit was primarily confined to the Micmacs of the Gaspé and to the Quebec area. This sojourn resulted in two books, the Nouvelle Relation de la Gaspesié (Le Clercq, 1691) and the Premier Establissement de la Foy dans la Nouvelle France (Le Clercq, 1691). Of these the Nouvelle Relation deals solely with the Micmacs. The Premier Etablissement however, is a history of New France from 1615 to 1691. Le Clercq divided his work into three sections: the first deals with the early efforts of the Récollets from their first arrival in 1615 to 1629 when the French were expelled from Quebec by the English; the second part runs from the return of the French to Quebec in 1632, to 1663 when the colony was placed under royal administration; the third part deals with the return of the Récollets to New France and the main events touching on the colony until Le Clercq's departure. Only the first two parts have any relevance to the thesis and unfortunately Le Clercq was not a witness to the events he described. As far as this thesis is concerned the most valuable part of Le Clercq's work are his references to diaries and letters written by the Récollet Joseph Le Caron who laboured among the Hurons from 1615 to 1616 and 1623 to 1624. Except for the extracts preserved by Le Clercq, Le Caron's writings on his stay in Huronia have been lost. The rest of Le Clercq's work is largely a history compiled from Sagard, Champlain and the Relations. One of the more interesting aspects of Le Clercq's writings is the bitterness with which he (and presumably other Récollets) regarded the intrusion of the

Jesuits into the North American missionary field. Le Clercq's criticisms of the Jesuits is particularly relevant in a discussion of the religious history of New France. He does not seem to invalidate the observations made by the Jesuits of the Hurons.

Throughout the thesis all references to the Premier Etablissement came from the only English translation of the work edited by J. G. Shea (Le Clercq, 1881).

3. Maps

a) Small scale maps relating to Huronia, 1615-1660.

The first attempt to portray the lands lying adjacent to the eastern Great Lakes, based on personal experience rather than interviews with Indians and preconceived notions, was Champlain's map of 1616 (Map No. 3). The Ontario section of this map was based on his explorations of 1615-1616 which took him via the Ottawa-Nipissing-Georgian Bay route to Huronia, and from there via the Kawartha Lakes to northern New York State. On his return to Huronia he visited the Collingwood area and may have penetrated as far as the base of the Bruce Peninsula. The 1616 map was never completed properly and in that state was probably never intended for extensive circulation. It is however the first map depicting a large portion of Ontario based on personal observations, and for its scale depicts the areas Champlain visited fairly well.

In 1632 Champlain published a map which differs little in outline from the 1616 map, but is more elaborate in its descriptive detail (Map No. 4). It is in fact a fitting summary of the explorations and cartographic skill of this great man. Unfortunately Champlain made no large scale maps after his 1611 map of the Lachine Rapids. He was highly

trained in cartography and keen observer of detail. Many questions raised by his written descriptions of Huronia could have been cleared up by one map.

Champlains's maps seem to have been remarkably successful. Even though better maps existed after 1650, Champlain's maps were faithfully copied for many years. Some of the best known copies are Pierre Du Val's 1653 copy of the 1616 map (Map No. 5); Jean Boisseau's copy of the 1632 map published in 1643 (Map No. 6); and finally a copy of the 1632 map published in 1669 by I. Laigniet and A. de Fer (Map No.7). Du Val's map of 1653 is slightly more than a copy. He actually used the original plate of Champlain's incomplete 1616 map and simply added place names from other sources. Further editions of this map appeared in 1664 and 1677. These copies have little scientific value, because they show nothing of the geographical discoveries made after Champlain, and repeat all of his imperfections. They are however eloquent testimony of the influence Champlain had on his contemporaries.

The difference between Champlain's attempts to depict the Great Lakes and N. Sanson d'Abbeville's celebrated map Amerique Septentrionale, 1650, is enormous (Map No. 8). From a chart on which only Georgian Bay and Lake Ontario are recognizable, we suddenly have a fairly accurate portrayal of the whole Great Lakes system except the western end of Lake Superior and the southern reaches of Lake Michigan. A more detailed map entitled Le Canada, ou Nouvelle France was published by Sanson in 1656 (Map No. 9). Unfortunately one can not be sure where Sanson got his information. The Jesuits were certainly aware of the extent of the Great Lakes area by 1640 at the latest (J. R., Vol. 18:229-235). They

could have obtained this information from Jean Nicolet who had explored the western Great Lakes in 1634-35 (Brown, V. 1, 1966:517). In 1636 Nicolet turned over his diaries to the Jesuits, but it is not known whether he had made any maps (J.R., Vol. 9:215). It would have been quite extraordinary if Champlain had sent an explorer on a trip such as Nicolet's and the explorer was not trained to make maps.

There are several references in the Jesuit Relations to show that maps were being made, and some of the Jesuits were eminently competent to make them. For example in 1626 C. Lalemant refers to a map he sent back to France (J. R., Vol. 4:227); in 1640 Le Jeune cites place names from a "Huron Map" sent to him by Father Paul Raqueneau (J. R., Vol. 18:233); and in 1641 Fathers Brébeuf and Chaumonot seemed to be using a map on their journey to the Neutrals (J. R., Vol. 21:189-191). Only a few of the Jesuit maps are known today; and none that fits the foregoing references. The only other Europeans in Ontario and points west before 1650 were a few fur traders and soldiers. Whether any of these were literate enough to produce the base maps necessary for Sanson's maps is unknown. If they were they have left no trace of themselves. For these reasons it would seem that Nicolet or some unknown Jesuit probably furnished Sanson's base maps.

The last two small scale maps to be discussed here are a map entitled Nova Franciae Accurata Delineatio, 1657 (Map No. 10), and Du Creux's famous map Tabula Novae Franciae, 1660 (Map No. 11). Both of these maps have insets of Huronia, which will be discussed later.

To the knowledge of the author, the 1657 map of Nova Franciae has received very little attention by scholars. Yet it was listed as

early as 1892 in a catalogue of maps relating to America:

> #58 Novae Franciae accurata delineatio. 1657. 75x51 cm (Avec de nombreuses figures et notamment les supplices de PP. Brébeuf et Gabriel Lallement). Archives. Depot des Cartes. Affaires étrangères, 8580. (Bibliotheque Nationale, 1892).

That this map has received no previous attention is surprising. Its cartography, accuracy and scale are all better than any other maps until Dollier and Gallinée's map of 1670. The 1657 map also has an inset of Huronia and possibly the earliest engraving of the martyrdom of Brébeuf and Lalemant.

Although the author's name does not appear on the map, it seems to have been Father Francesco Bressani, an Italian Jesuit who arrived in New France in 1642. On his way to Huronia in 1644 he was captured by the Iroquois and after incredible tortures ransomed by the Dutch who returned him to France. In 1645 Bressani returned to New France and made his way to Huronia where he worked among the Hurons until 1649 when he returned to Quebec. After the fall of Huronia, Bressani returned to Italy and in 1653 published his Breve Relatione (J. R., Vol 38-40). Like Du Creux's Historia Canadensis this book is a short history of the activities of the Society of Jesus in New France, describing in particular the missions to Huronia. Both books are in a sense shortened versions of the Jesuit Relations, but unlike Du Creux who never set foot in Canada, much of what Bressani wrote about he derived from personal experience. In the last sentence of the Breve Relatione Bressani promises the reader a map:

> The whole (of the book) would have been made clearer with the map which I was hoping to add here, but it is not ready. Those who shall desire it can have it

> a little later, in separate form, with the pictures of the Barbarians and their cruelties. (J. R., Vol. 39:37).

The 1657 map with its inset of the martyrdom of Brébeuf and Lalemant is the only known map which answers this description. Other evidence that Bressani is the author of this map is a bit more circumstantial. Bressani was the only Italian Jesuit in Huronia and his book was first published in Italian in Macerata, Italy. The engraver of the map was also an Italian, Giovanni Federico Pesca. That the map was intended at least partially for an Italian audience is attested to by the fact that the map scales are both in French leagues and Italian miles. The distances given in the Breve Relatione are also in Italian miles.

Earlier in his Breve Relatione Bressani discusses the Great Lakes system and states that he has described them, "according to the new chart or map which has recently been engraved at Paris" (J. R., Vol. 39:37). Since Bressani was writing sometime between 1650 and 1653 the chart he referred to can be none other than Sanson's map of 1650. That the author of the 1657 map had either Sanson's map of 1650 or 1656 is shown by the great similarity between them; with two important differences; the 1657 map is more detailed and also more accurate. This shows that the author of the 1657 map, while he may have had Sanson's map, also had personal knowledge of the geography of the Great Lakes area or at least had access to some of the Jesuit manuscript maps. Father Bressani was in an excellent position to acquire a good knowledge of New France and certainly had access to any manuscript maps. Like many of his Jesuit colleagues he was highly educated having at one time taught literature, philosophy and mathematics. Judging from the Breve Relatione he was also more than

usually interested in geography.

Thus far one and one half copies of the 1657 map have come to light. The Canadian Public Archives has a photo copy of the complete map from the Depot Géographique, Ministère des Affaires Etrangères in Paris and an original print of the left hand portion. The only difference between the two is that the Ottawa copy has the engraver's name in the lower left hand corner of the inset and a canoe with two Indians in the western arm of Mare Dulce (Lake Superior).

De Creux's famous map Tabula Novae Franciae, 1660 really needs no discussion. It was first published with his book Historia Canadensis in 1664, and has since become one of the best known and most widely used maps by archaeologists and historical geographers. The reason for this popularity lies with Du Creux's inset map Chorographia Regionis Huronum, which was widely believed to be the only map in existence showing the location of some of the Jesuit Missions in Huronia. This mistaken belief had been so firm that scholars working on 17th century Ontario have never made any serious search for other maps. Consequently Bressani's map has been overlooked as have two others which will be discussed later.

Like Sanson and Bressani, Du Creux does not say where he got the information for his map. It is certainly not a mere copy of Sanson's maps. The maps are similar in some respects and have most probably been derived from similar sources. Du Creux includes a great deal of information on the navigable waterways of Northern Ontario and Quebec which are not on the other maps. Crouse (1924:28) feels the Du Creux obtained this information from Father Druillettes who was in a position to know where the northern trade routes lay. Again, it is impossible to give

a conclusive answer to this question until more of the Jesuit manuscript maps are found.

An interesting question that now arises is whether Du Creux had access to Bressani's map. That Du Creux knew Bressani is beyond doubt because he refers to interviews with Bressani in preparing the Historia Canadensis (Du Creux, Vol. 1:396). Furthermore, the picture depicting the martyrdom of Brébeuf and Lalemant on the Bressani map is almost identical to Du Creux's famous engraving in the Historia; only the backgrounds differ. If Du Creux or his French engraver Greg. Huret had Bressani's map they certainly made no use of his inset map of Huronia. Similarly the cartography of the rest of Du Creux's map bears little resemblance to the fine work on the Bressani map. The place names are also substantially different. In all likelihood Du Creux and Bressani had a common picture depicting the martyrdom of the Jesuit Fathers, and similar sources for their maps. Since Bressani refers to the picture in his Breve Relatione the original must be older than 1653.

b) Large scale maps relating to Huronia, 1615-1660.

Thus far four maps relating to Huronia in the first half of the 17th century have come to light. These are: Du Creux's inset map Chorographia Regionis Huronum (hodie desertae), engraved in 1660 (Map No. 12); Bressani's inset map Huronum Explicata Tabula, engraved in 1657 (Map No. 13); and two manuscript maps, Corographie du Pays des Hurons, no date (Map No. 14); and Description du Pais des Hurons, 1631 with the date corrected to read 1651 (Map No. 15). Of these only the Du Creux map is well known. The Description appeared in the Champlain Society edition of the Historia Canadensis with the mistaken claim that it was

the map Du Creux used to make his inset map. Even a minimum of research and common sense would have told the editors of the Historia that this could not be true. The geography and place names on the two maps are too different. The other two maps (Corographie and the Bressani inset) have never appeared in print and of the four maps only Du Creux's inset has received scholarly treatment.

The similarity between Du Creux's map and the undated Corographie du Pays des Hurons is striking. There can be no doubt that this is the map Du Creux copied for his inset. Not only are the physiographic details of the two maps similar, but also all the place names; the only difference being that Du Creux latinized them. However a few minor differences between the two maps must be pointed out. These exist primarily because Du Creux's lettering was too large for the map. Consequently on Du Creux's map Arent and S. Magdalene appear as one village, which they are not and Quenrio was placed too far south. The Corographie also places another village between Kaotia and Ste. Marie, which is a likely candidate for the Ste. Anne of the Relations. In his book Old Huronia Rev. A. E. Jones speculated at great length on the meaning of Du Creux's Caldaria. The Corographie shows that this word is simply the latinized version of the French La Chaudiere, which was one of the solutions offered by Jones (1908:163). These are all minor differences arising out of faulty copywork; the only real difference between the two maps concerns the island marked Ins. Ondiatana or Ascensionis. Since this island is not mentioned on the Corographie, Du Creux probably got the names from the written Relations or an informant. In any case he is wrong; these should be two separate islands: Ins. Ondiatana being Giants Tomb Island and

Ascensionis, Hope Island.

The Corographie du Pays des Hurons is an important map and should henceforth be used for research in preference to Du Creux's. It was first listed in the 1[illegible]2 Catalogue of maps cited earlier:

> #223 Corogra[illegible] (sic) du pays des Hurons. Manuscript. 19x27 c[illegible] Bibl. nat. Cartes, B462(38).

Public Archives at O[illegible]wa lists the original as being in the Bibliotheque du Roy, Section des Cartes et Collections Geographiques. The date of the map is not too difficult to determine. It could not have been drawn earlier than 1639 (the date of the establishment of Ste. Marie and most of the other missions on the map) or perhaps 1642 when Ste. Elizabeth became a permanent mission. Since St. Ignace II is not shown (established in 1648) and St. Joseph II is depicted (destroyed in 1648), the map must predate the winter of 1647-1648. We thus have a bracketing date of 1639 or 1642 to 1648. The precise date in this case is unimportant, because the map shows the more or less stable Huronia before its destruction in 1649-50.

Who made the map? The question can only be answered very tentatively. Since Du Creux used the map it could have come either from the manuscript letters of the Jesuit Relations or from one of the Fathers he interviewed in preparation for the Historia Canadensis. Among the Jesuit Fathers who advised Du Creux were Isaac Jogues, Francesco Bressani and probably Paul Le Jeune and Jérôme and Charles Lalemant.[1] Any of these

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1. Throughout the Historia Du Creux makes references to conversations with some of the Jesuits, particularly Jogues and Bressani. The others were all resident in France after the fall of Huronia. It would have been little trouble for Du Creux to consult them.

may have drawn the map or brought it from Huronia with them. In checking specimens of handwriting from fourteen Jesuits who had been to Huronia, the closest to that of the map seems to be the writing of Gabriel or Jérôme Lalemant.[1]

That this map predates Du Creux and is therefore not a copy of his printed map is obvious from Du Creux's subtitle where he describes Huronia as hodie desertae (today deserted). No such subtitle appears on the manuscript map.

The map entitled Description du Pais des Hurons evidently came from the collection of Henry Harrisse. It is listed in a work by Gabriel Marcel (1885) and in the Catalogue from the Bibliotheque Nationale. In the latter it is described thusly:

> #182 Description du pais des Hurons. 1631. Ms sur parchemin. 26x21 cm. Appartient à M. Henry Harrisse.

The map is not listed in Harrisse's Notes (Harrisse, 1872). It is now in the possession of the Library of Congress, Washington, D. C.

The original date of the map seems to have been 1631 which was later changed to 1651. With the exception of Etondatra (Tondakhra or Tondakea of the Relations), Oenrio and La Conception (Ossossane), the other missions were all established after 1639. The location of La Conception is probably the one it had during the days of Champlain and Sagard, because in 1634 and again in 1640 this village was moved up the shore of Nottawasaga Bay to where it appears on the Corographie. The

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1. These specimens of handwrting are reproduced in the Thwaites edition of the Jesuit Relations.

location of Oenrio is different from that of the Corographie and may represent a change of sites in the early 1640's. Since St. Ignace I is not listed and St. Joseph II still appears, the main part of the map must have been drawn between 1639 and 1648. An "x" appears on Christian Island (I. Gahoendoe) marking the spot where Ste. Marie II was established in 1649 and indicating therefore that a slight revision took place after 1650. This probably accounts for the revised date of 1651.

Although the geography of Huronia as depicted on this map is not nearly as good as that of the Corographie, it is in some respects extremely interesting and informative. Except for Ekarenniondi, the "standing rock," this is the first mention of any place names in the area between La Conception and the northern tip of the Bruce Peninsula. Similarly, except for Anatari Island, the place names in and about Lake Simcoe are new. An interpretation of these names has been attempted in Appendix III. An interesting problem solved by this map is the identification of St. Jean Baptiste with Contarea. The Relations are somewhat ambiguous on this point and Rev. A. E. Jones tried to make a case that they were separate villages (Jones, 1908:77-81). Jones has also wondered where and what Aretsi was (Jones, 1908:151-152). This map seems to identify it with St. Ignace I. Since the Huron name for St. Ignace I was Taenhatentaron it is not likely that Aretsi was an alternate name for that village. According to the Corographie, Aretsi was a minor village very close to St. Ignace; perhaps it was so close that it was sometimes called by the name of its larger neighbour. Similarly the map seems to identify Ste. Marie with the name Koutarcanō and St. Jean with Ataratiri. Neither of these Indian names appear in the Relations. A translation of Koutarcanō

(Appendix III) suggests that it was the Huron name for Ste. Marie. Two other puzzles are the seeming identification of Oenrio with Ste. Magdalaine and the location of a village named Chantie. Oenrio in an earlier location could have been the same as Ste. Magdalaine, but the word Chantie occurs nowhere else.

Finally, who drew the map? One guess is as good as another. The handwriting most closely corresponds to Father Brébeuf's, but because the map is partially printed this is at best a rough guess.

Bressani's inset map Huronum Explicata Tabula is in many respects a curious map. Even though we know it was engraved in 1657 the only indication that it might be a late map is a little cross symbolizing Ste. Marie II on Christian Island. In fact the map depicts a number of villages of early and late origin giving it the appearance of having been constructed for a history of Huronia rather than as a map depicting a particular period in time. This certainly supports the theory that the map was made by Bressani for his Breve Relatione. But why does the map include so many obvious mistakes and omissions? St. Ignace and St. Fr. Xavier are both in the wrong place and St. Joannis (St. Jean) and St. Joachim are probably on the wrong river. Neither Tiondatsae, Teaontiae or Ataratiri appear in the Relations, and why are the important villages St. Joseph II, St. Michel and St. Louis not mentioned?

On the positive side we have reaffirmation for the location of St. Jean Baptiste, Rupella (the early La Conception or Ossossane), the later Oenrio, Tundatra (Tondakea) and Karenhassa. Furthermore, we now have locations for Ihonatiria (which ceased to exist in 1639), Teandatetsia (Teandeouiata or Toanche II), the two Petun villages of Ekarenniondi and

Etharita, and a somewhat problematical location for Champlains's and Sagard's Carhagouha. Other interesting aspects of this map are the naming of Lake Couchiching Lacus Contarea, near the village of St. Jean Baptiste or Contarea, and the identification of Ascension Island with Hope Island.

One of the great contributions of this map concerns the scales. This is the first concrete evidence we have that the league of the Relations was in fact equal to about three standard Italian miles (Milliar Italicorum, Comunium Mediocrium) or 3.27 English statute miles. In other words, the Jesuit Fathers were using the French land league or lieu d'une heure, as Rev. A. E. Jones quite rightly surmised. This rough measure represents the distance a strong man could walk in an hour and is usually taken as three miles.[1]

Did Bressani use the sketch map Description du Pais des Hurons? The two maps are so similar in outline that one could easily jump to such a conclusion. But if he did why are the place names so different? The most likely explanation is that Bressani used the outline of this map or a similar one and placed on it the distribution of missions as he remembered them.

The last maps to be discussed here are a series of manuscript maps produced by an unknown scholar sometime before 1700. According to Mr. P. Dumas, map archivist, Map Division Public Archives of Canada, they were originally found in the archives of Guillaume Del'Isle and may have been used to produce Del'Isles' map Carte Du Canada ou de la Nouvelle

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1. For a fuller discussion of the various French leagues and Italian miles see Appendix I.

France, 1703 (Map No. 16). All of these maps are stamped with the seal of Depot des Cartes, Plans et Journaux de la Marine. These maps illustrate Sagard's voyage to Huronia, every year of the Jesuit Relations, the voyages of Hennepin and the geography of Le Clercq. From the cartography of the maps and the information written on them it is obvious that the map maker did not have any original maps to guide him (for example see Map Nos. 17 to 21). These maps are strictly a graphic description of the published journals which were available in the latter part of the 17th century. The maps are therefore more of historical than scientific interest because they contain nothing that cannot be obtained from published works. They are however the first attempt that anyone made to reconstruct the geography of Huronia.[1]

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1. A full list of maps relating to Huronia can be found in Appendix II.

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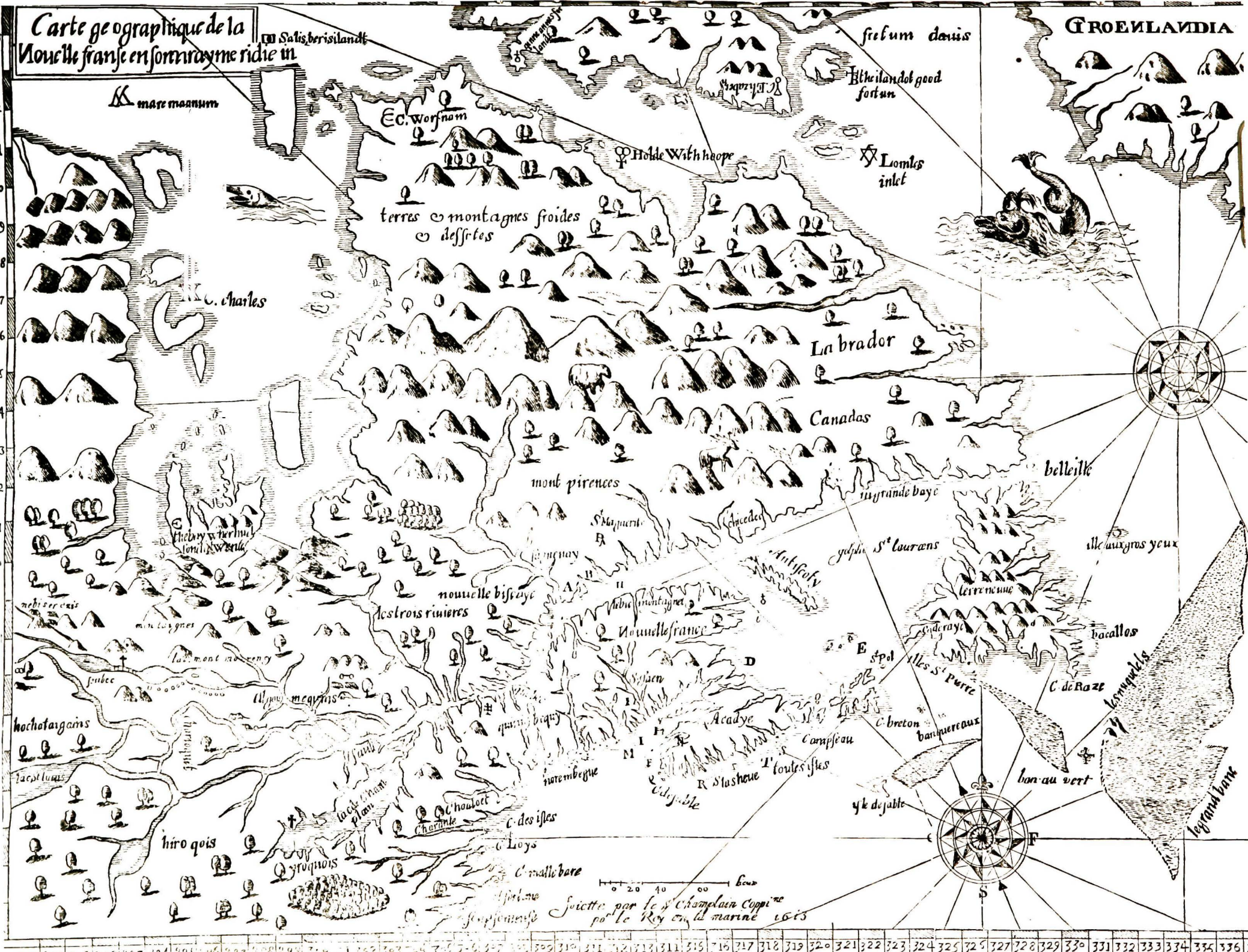
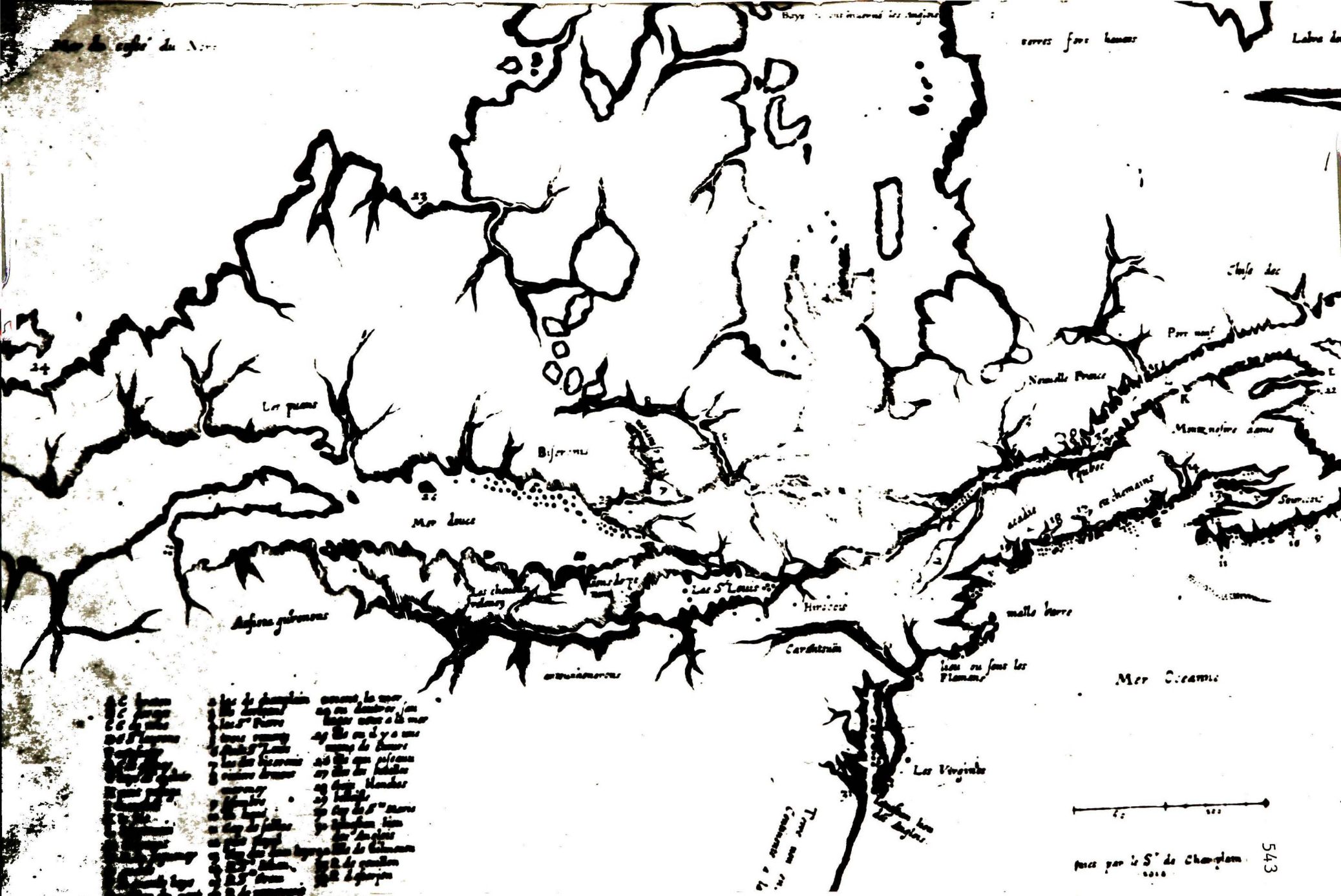
MAPS

MAP NO. 1 Ontario Portion of Champlain's map of 1612 (Public Archives, Ottawa; Cat. # H3/900-1612).



(1) Matou-ouescariny.
(2) Gaspay.
(3) Ouescariny.
(4) Quenongebin.
A Tadouffac.
B Lesquemain.
C Isle percee.
D (5) Baye de Chaleur.
E Isles aux gros yeux (6).
H Baye Françoise.
I Isles aux Oyseaux.
L (7) Riuiere des Etechemins.
M Menane.
N Port Royal.
P Isle Longue.
Q Cap Fourchu.
R Port au mouton.
S (8) Port du rossignol.
SS (9) Lac de medicis.
T Sesambre.
V Cap des deux bayes.
3 L'isle aux coudres.
4 (10) Saincte Croix.
4 (11) Riuiere des Etechemins.
5 Sault.
6 Lac sainct Pierre.
7 Riuiere des Yroquois.
9 Isle aux lieures.
10 Riuiere platte (12).
11 Mantane.
40 (13) Cap saincte Ma

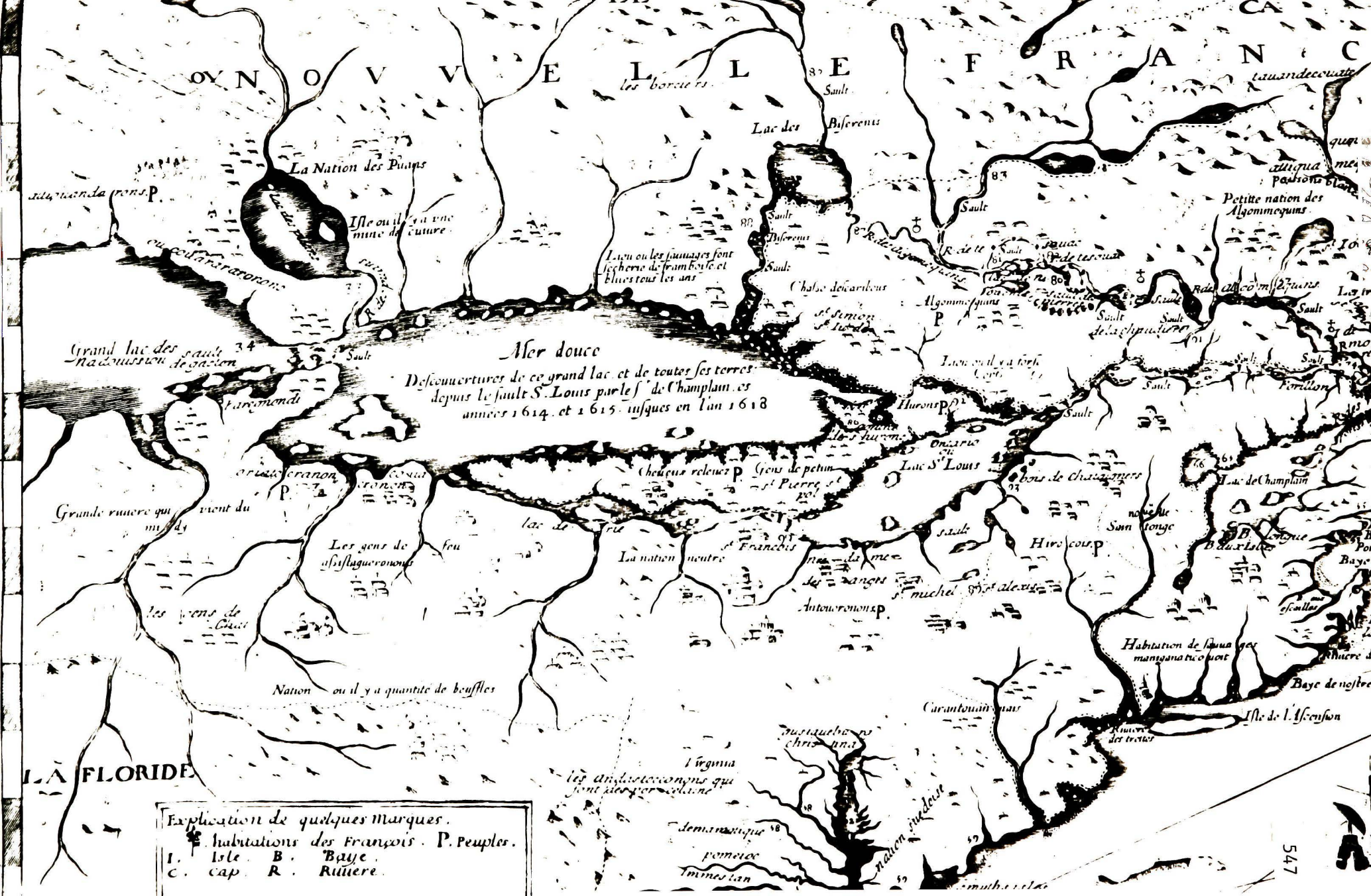


MAP NO. 3 Eastern Canada. Champlain, 1616 (Public Archives, Ottawa; Cat. # H3/900-1616).

MAP NO. 4 Lake Ontario area from Champlain's map of 1632. (Public Archives, Ottawa; Cat. # BK-900-1632).

MAP NO. 5 Eastern Canada. Du Val, 1653. (Public Archives, Ottawa; Cat. # K12/900-1653).

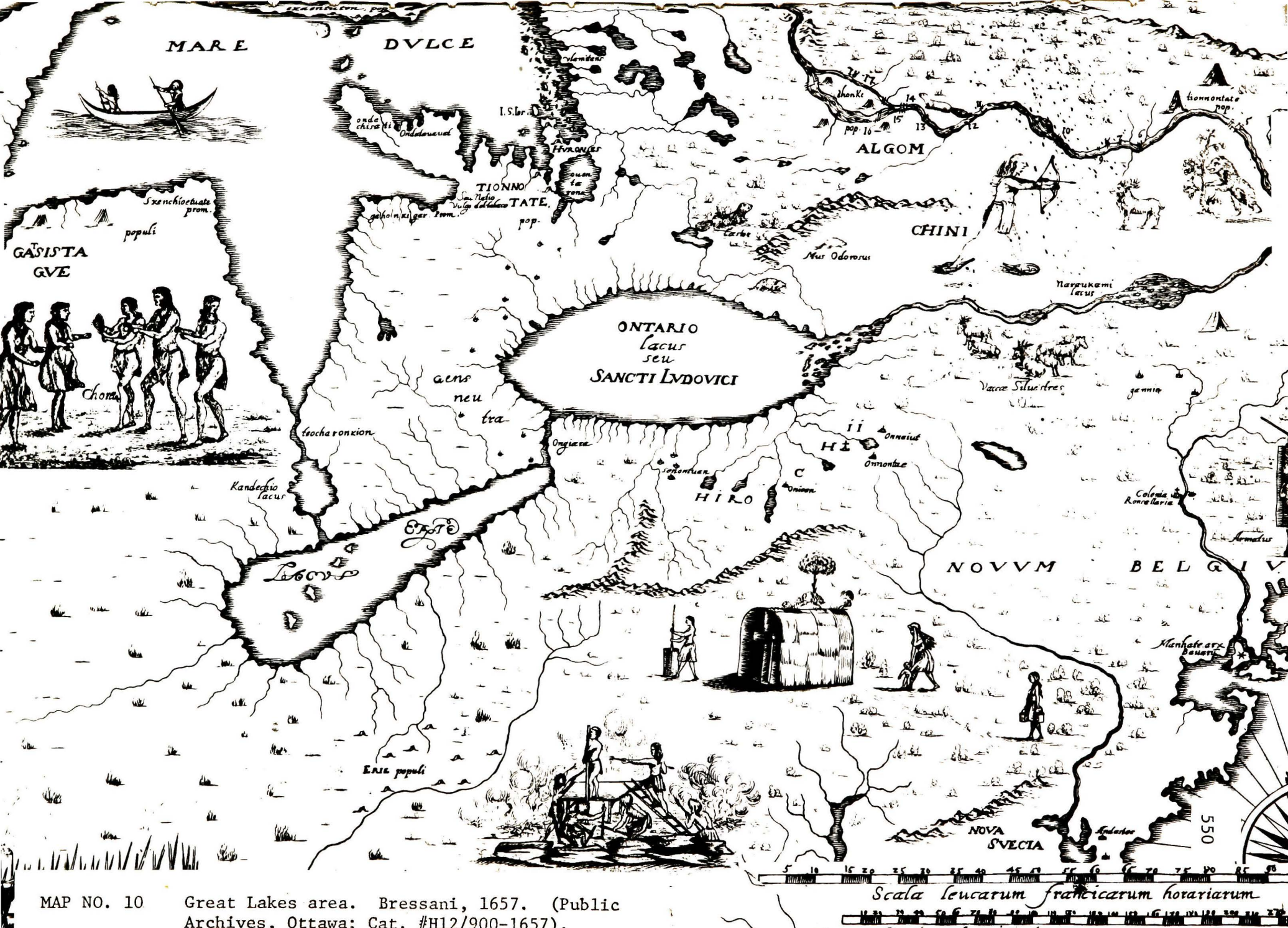
MAP NO. 6 Eastern Canada. Boisseau, 1643 (Public Archives, Ottawa; Cat. #H12/900-1643).



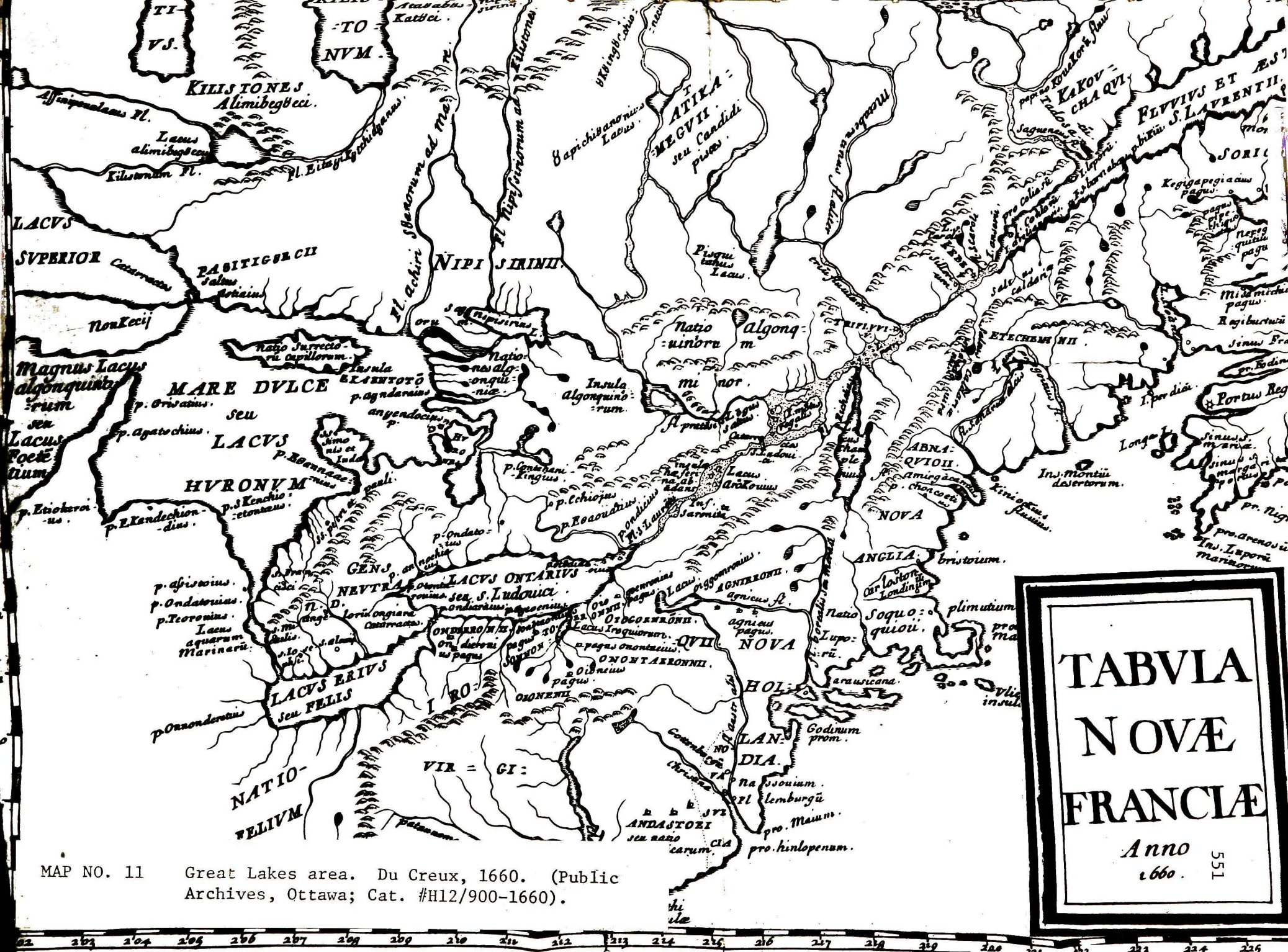
MAP NO. 7 Lake Ontario area from Laigniet and de Fer's map of 1669. (Public Archives, Ottawa; Cat. #H2/900-1669).

MAP NO. 8 Eastern North America. Sanson, 1650.
(Public Archives, Ottawa; Cat.#H3/1000-1650).

MAP NO. 9 Great Lakes area. Sanson, 1656. (Public Archives, Ottawa; Cat. # H12/900-1656).

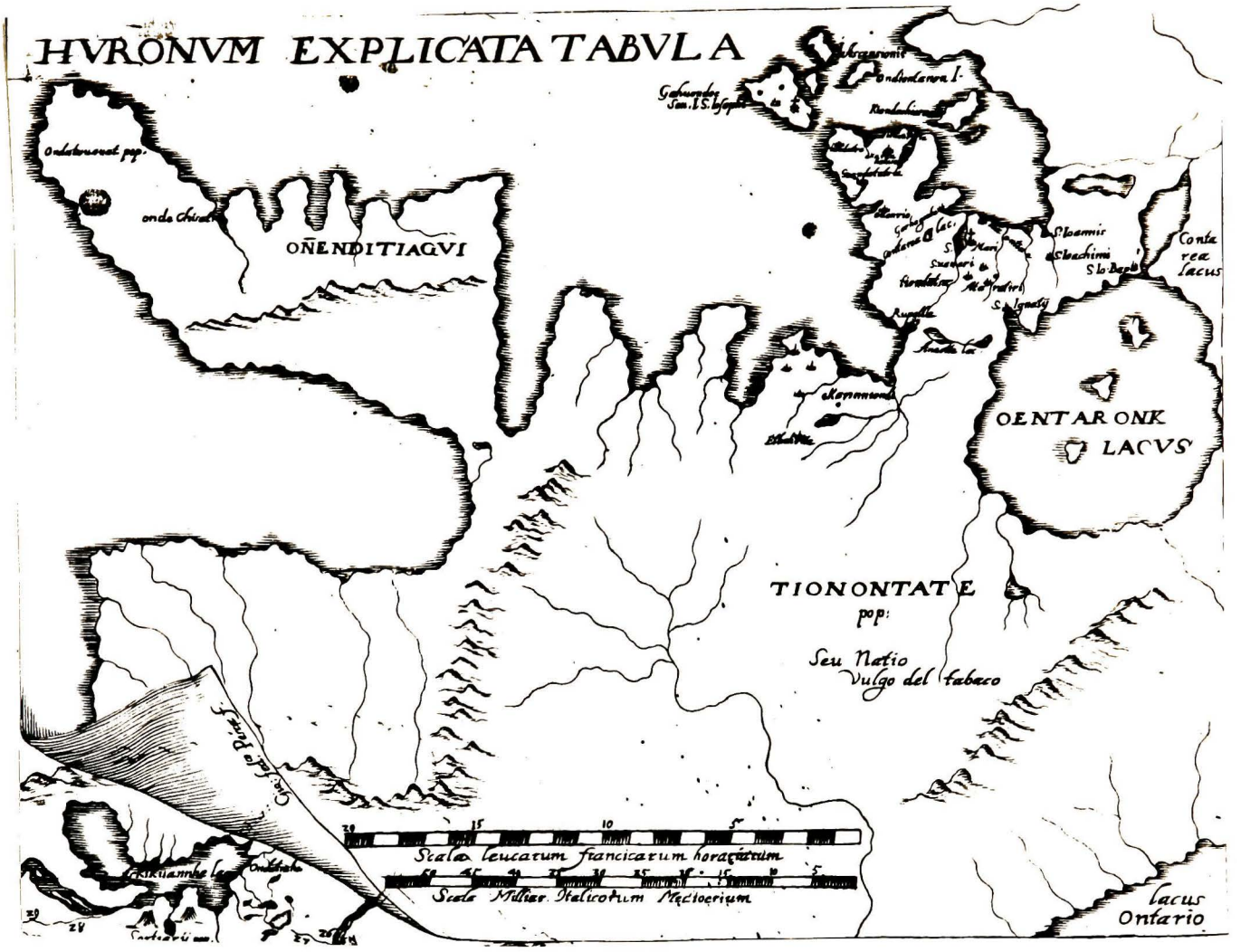


MAP NO. 10 Great Lakes area. Bressani, 1657. (Public Archives, Ottawa; Cat. #H12/900-1657).

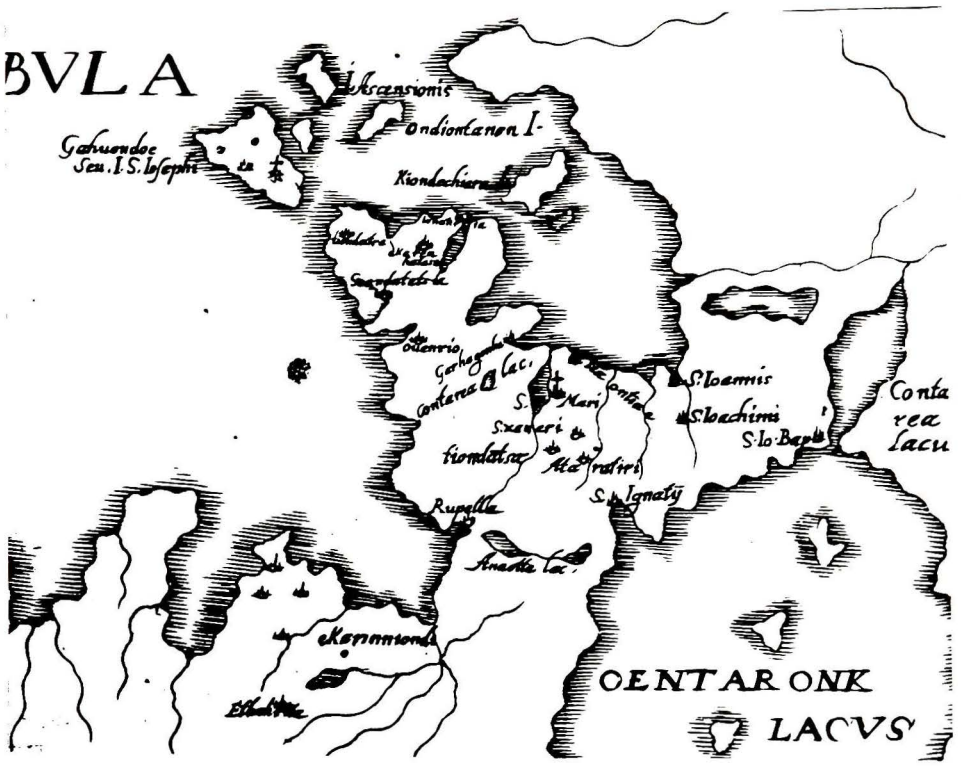


MAP NO. 11 Great Lakes area. Du Creux, 1660. (Public Archives, Ottawa; Cat. #H12/900-1660).

MAP NO. 12 Du Creux's Chorographia Regionis Huronum, 1660. (Public Archives, Ottawa; Cat. #H12/900-1660).

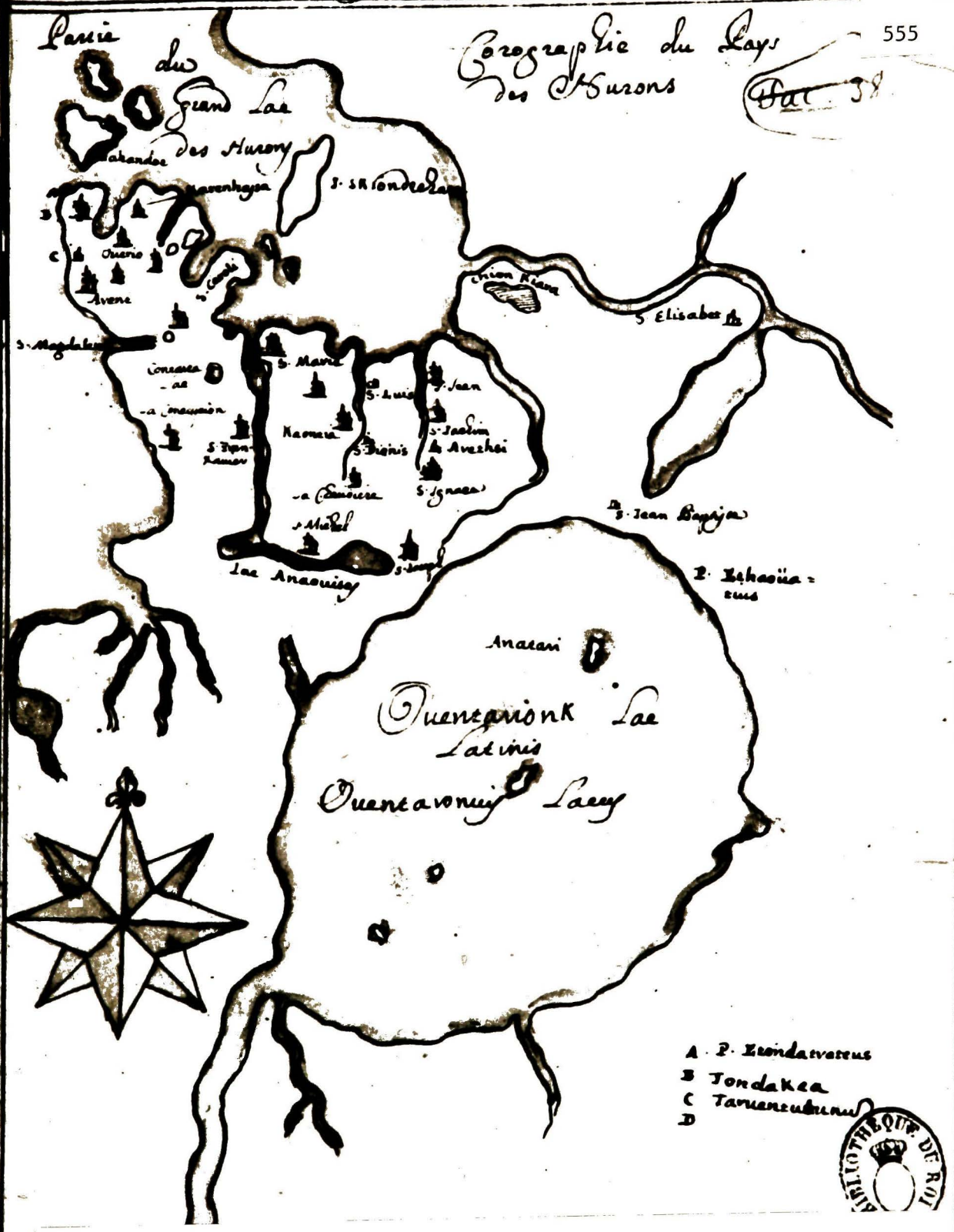


MAP NO. 13a Bressani's Huronum Explicata Tabula, 1657. (Public Archives, Ottawa; Cat. #H12/900-1657).



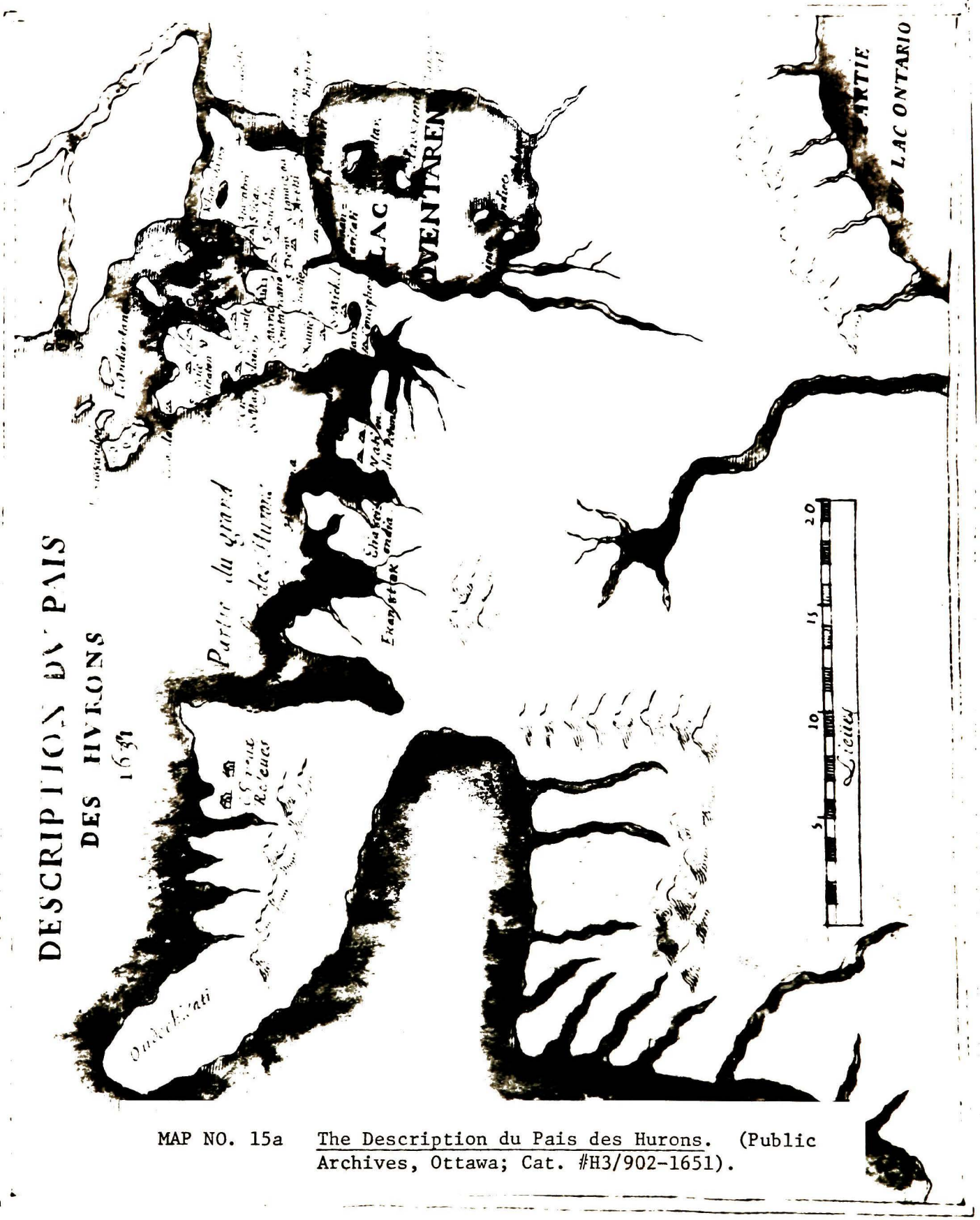
MAP NO. 13b Enlargement of the settled portion from Bressani's map of Huronia.

Ge. F.



MAP NO. 14a The Corographie du Pays des Hurons. (Public Archives, Ottawa; Cat. #H3/902-1637).

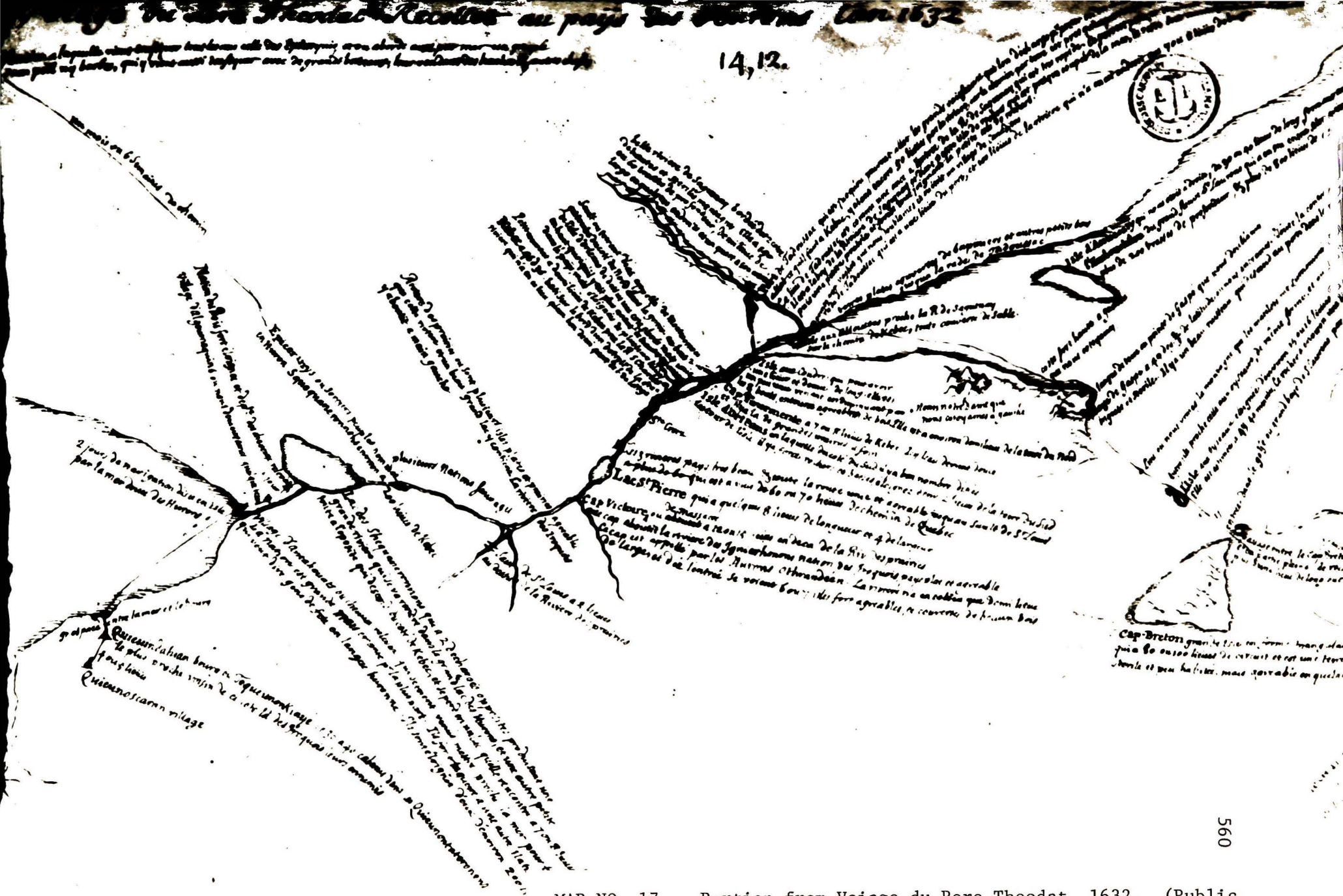
MAP NO. 14b Enlargement of the settled portion of Huronia from the Corographie.



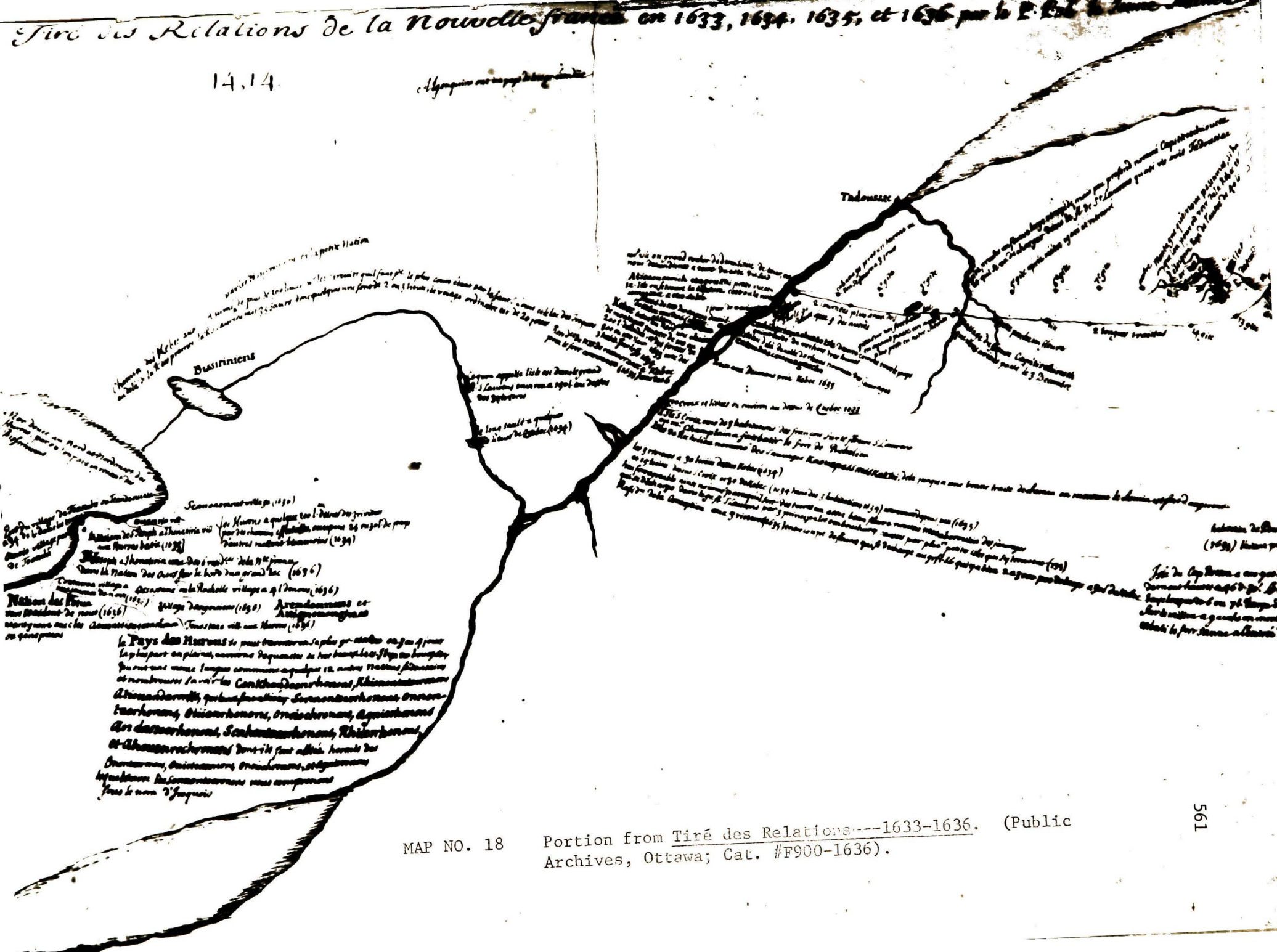
MAP NO. 15a The Description du Pais des Hurons. (Public Archives, Ottawa; Cat. #H3/902-1651).

MAP NO. 15b Enlargement of the settled portion of Huronia from the Description.

MAP NO. 16 Great Lakes area from Del'Isle's Carte du Canada, 1703. (Public Archives, Ottawa; Cat. #V1/900-1703).

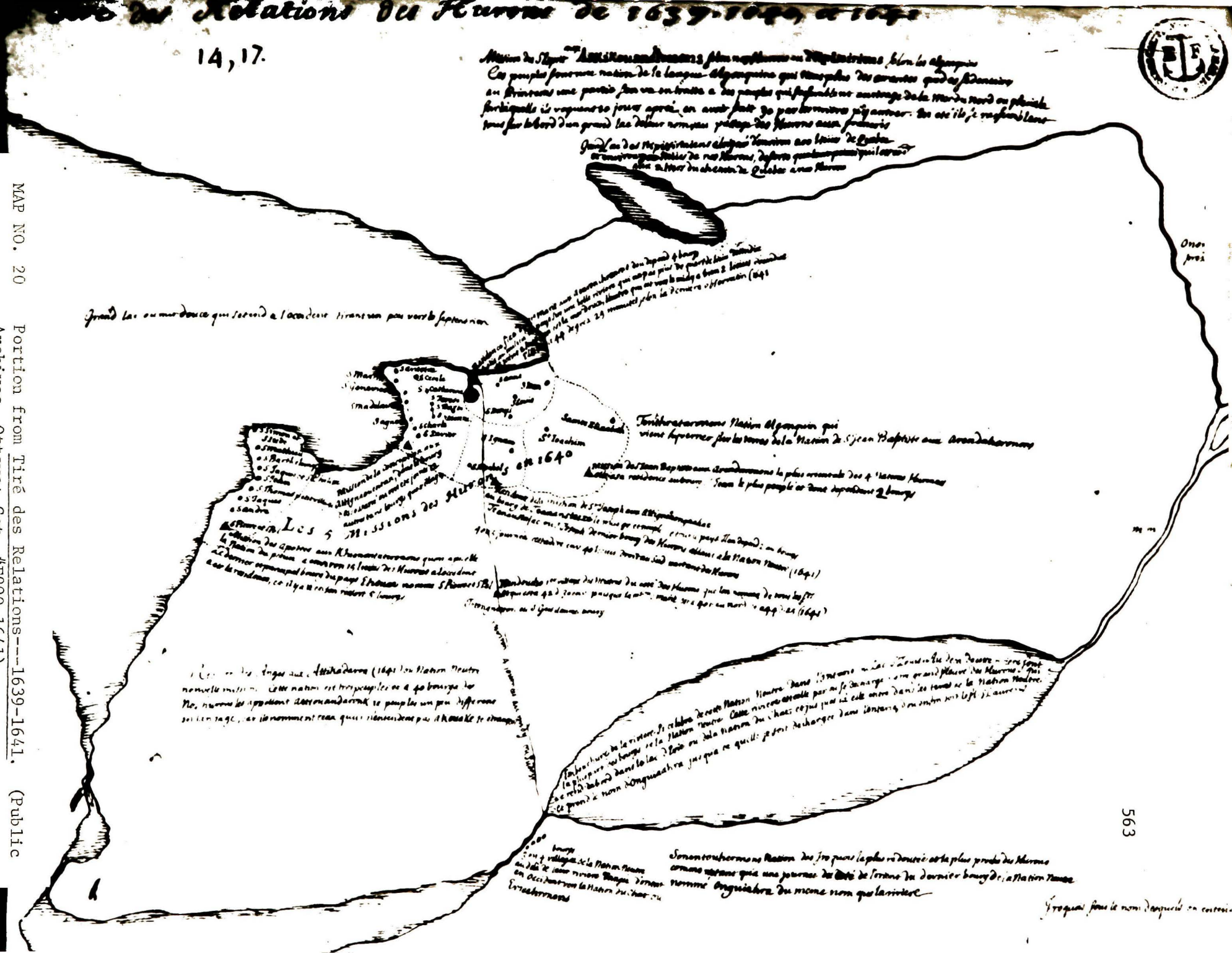


MAP NO. 17 Portion from Voiage du Pere Theodat, 1632. (Public Archives, Ottawa; Cat. #F900-1632).

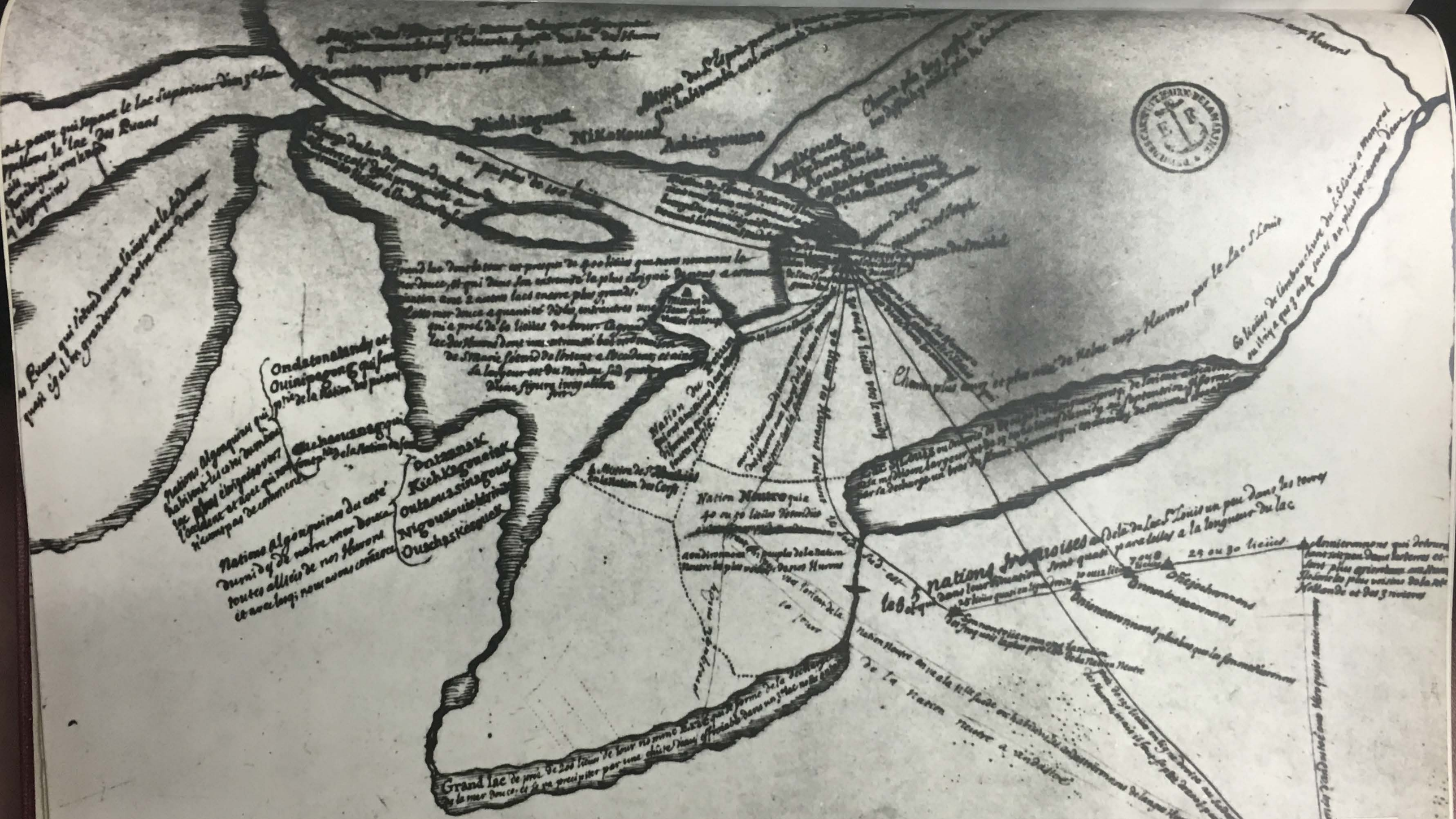


MAP NO. 18 Portion from Tiré des Relations----1633-1636. (Public Archives, Ottawa; Cat. #F900-1636).

MAP NO. 19 Portion from Tiré des Relations---1637-1639. (Public Archives, Ottawa; Cat. #F900-1639).



MAP NO. 20 Portion from Tiré des Relations---1639-1641. (Public Archives, Ottawa; Cat. #F900-1641).

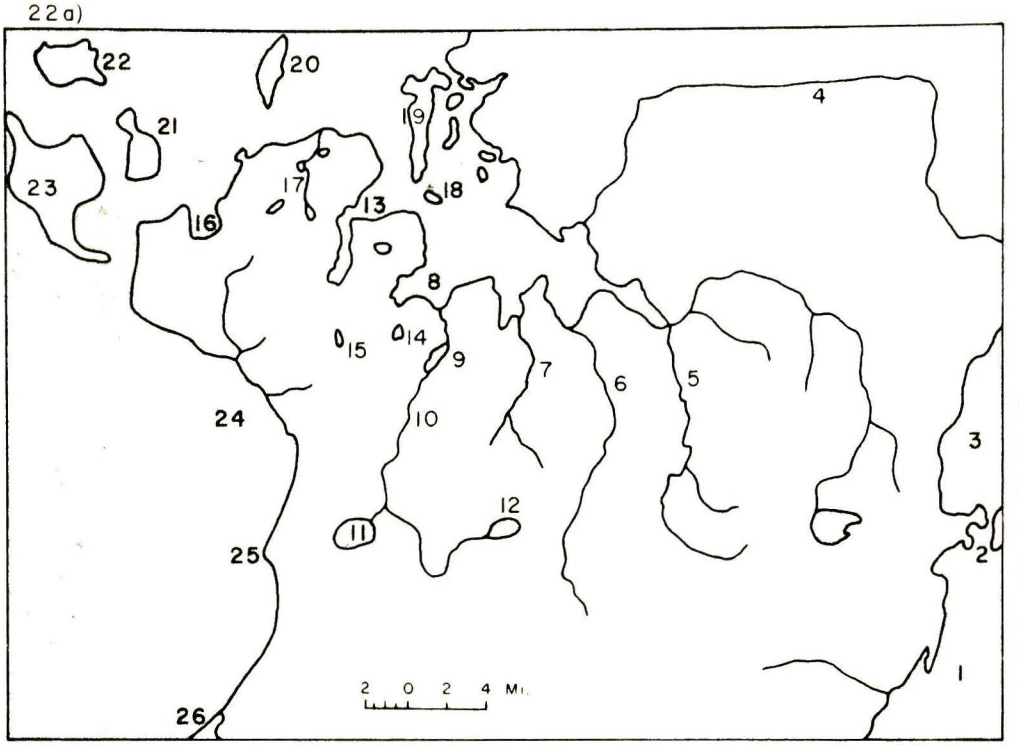


MAP NO. 21 Portion from Tiré des Relations---1647-1648. (Public Archives, Ottawa; Cat. #F900-1648).

MAP No. 22 a & b

COMPARISON OF THE *COROGRAPHIE DU PAYS DES HURONS* WITH A MODERN MAP OF HURONIA

22 a)



22 b)

1. Lake Simcoe
2. The "Narrows"
3. Lake Couchiching
4. Severn River
5. Coldwater River
6. Sturgeon River
7. Hog River
8. Midland Bay
9. Wye (Mud) Lake
10. Wye River
11. Cranberry Lake
12. Orr Lake
13. Penetang Bay
14. Midland Park Lake
15. Lalligan Lake
16. Thunder Bay
17. Farlain, Second and Gignac Lakes
18. Present Island
19. Beausoleil Island
20. Giants Tomb Island
21. Beckwith Island
22. Hope Island
23. Christian Island
24. Nottawasaga Bay
25. Spratt Point
26. Nottawasaga River