# HUMAN SETTLEMENT

# IN THE

# LONG POINT REGION, 1790-1825

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by

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Scope and Contents: Examining human settlement in the Long Point Region of Ontario, the author attempts to frame the analysis in terms of a general theory of human settlement. Significant variables are isolated, analysed and explained in terms of regularities of human behaviour. To test the logic and content of the study, the analysis is then inverted.

## Acknowledgements

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# Introduction

The Purpose and Reason for the Study.

The purpose of this study is to examine human settlement through time, in the Long Point area (Norfolk County) of Ontario. The philosophy behind the analysis is that in the majority of cases the spatial behaviour of mankind has certain regularities that can be described, measured and predicted. Thus, an attempt has been made to examine data in the frame work of generalised formulations of settlement and human behaviour made elsewhere.

The method of analysis is conducted initially in verbal style; as the data becomes more precise, simple statistical methods are employed to analyze it. This philosophy and attempts at a more precise analysis were adopted since it was felt that in the majority of settlement studies conducted in Ontario so far, much has been contributed to our knowledge of settlement in certain areas, but little has been contributed to understanding the basic principles involved in human settlement. It is hoped that this study will contribute to the framework of the more systematic approach to settlement studies that is emerging. It was also felt that attention should be drawn to the wealth of detailed information that exists in the Province of Ontario - particularly in respect of individual settlers - the majority of which constitute the basis of general formulations.

The time period 1000-1825 was adopted partly to show that regularities of settlement are not confined to one time period and also to show that they are a feature of quite different cultural and economic systems.

This study was stimulated by recent trends in geographical thought and analysis (and their relation to settlement studies). Since these trends have a direct bearing upon the conduct of the following enquiry, it will be pertinent to review them, to assess them in the light of settlement studies, and especially in relation to settlement studies undertaken in Ontario.

Recent trends in Human Geography

Human geography is concerned with the spatial character of human activity. The actual conduct of geographical inquiry has been the subject of intense discussion in recent years. The previously accepted concept that,

> 'no universals need be evolved other than the general law of geography that all areas are unique;[1]

has been challenged on the grounds that uniqueness is a point of view.[2] The traditional philosophy has been replaced with the 'search for order', made possible through the introduction of quantitative methods to identify, describe, analyse and explain phenomena of geographic interest.[3] This introspection and subsequent reorientation were prompted partly by the questions that arose concerning

geography's position in the institutions of higher learning,[4] and partly by the diffusion effects of the quantitative revolution that had been sweeping other disciplines in the social sciences.[5]

Historical Geography.

If historical geographers agree to join the search for order and conduct their inquiry in precise (statistical) terms, certain problems arise. The accepted concept of historical geography is, 'the study of past circumstances' (of spatial activity).[6] However, where human activity through time is concerned, the material available is often incomplete and in a non-quantitative form. As a direct result will this deficiency perpetuate historical studies styled in verbal terms of analysis?[7] While this method is in keeping with the Darwinian tradition of evolutionary explanation, description and analysis have been styled in the verbal terms of the historian.[8] Therefore, we can identify a threefold problem,

i. the form of data - generally considered non-quantitative.
ii. the method of analysis - verbal historical
iii. exceptionalism, focus on unique areas.

Studies of Human Settlement.

Having identified some of the problems associated with the 'examination' of the "past circumstances" attention will now be paid to one particular aspect of historical geographical studies; namely, the study of

settlement evolution. It is hoped that it will illustrate the lack of an analytical framework, the recent attempts to seek a solution, and bearing that this has upon a study of human settlement in the Long Point area.

Historical development.

The study of settlement patterns developed in Europe in the late 19th century, associated with the work of Meitzen,[9] Gradmann,[10] and the French School, particularly the work of Demangeon.[11] This basic work was characterised by a historical approach conducted in verbal terms of analysis. However, the great diversity of 'types', the seemingly numerous exceptions to the rule and the intellectual climate of the times (as far as geography was concerned) precluded any general formulations of settlement evolution.

The resulting problems associated with categorization and nomenclature, necessitated some cartographic measure to differentiate between types. Thus, Demangeon, Zierhoffer and others, developed formulae of nucleation and dispersion.[12] Despite this attempt at greater precision, the emphasis was still on historical explanation styled in verbal terms of analysis.

In North America, where the time scale of European settlement was much shorter, with rapid phases of economic growth and settlement on an organised scale, emphasis was placed upon studying the changes that took place.

Settlement studies as such were really studies in geohistory, with the traditional verbal analysis. The evolution of the different phases of occupation were interpreted in terms of the different sequences of occupance by certain areas.[13] Therefore, although the method was verbal-historical and study concentrated upon unique areas, it was an attempt to seek some order in the expanding volume of description.[14] This approach can be considered as a simple verbal model. Other studies of settlement still concentrated upon the investigation of settlement types.[15]

The development of models.

A growing dissatisfaction with this type of analysis prompted Kohn to state,

> "as yet no analytical framework (in settlement studies) has been developed comparable to the principles of location in industrial geography."[16]

The point of departure insofar as settlement studies are concerned, comes with Chisholm's revival of earlier theories of land use and economic rent[17] and the investigations of settlement and diffusions being conducted in Sweden.

The development of models has been the main feature of recent trends in geographical analysis. Models as serving as descriptive and analytical frameworks and even for the cognitive process.[18] Where settlement studies are concerned both deterministic and stochastic models are being developed. Chisholm revived von Thunen's ideas, applying the basic principles to the whole range of the

economic system, from the individual farm unit to the world pattern.[19] In addition, the study incorporated the ideas of Zipf concerning human (mass) behaviour and efficiency.[20] These recent studies have great significance in relation to our consideration of individual locations in the Long Point area.

At approximately the same time that interest was reviving in the earlier 'deterministic' ideas, Bylund was developing models of settlement evolution; based upon empirical evidence gathered in Sweden, he sought a concise formulation of settlement evolution.[21] Models of settlement evolution were constructed; certain assumptions, such as uniformity of terrain and the ordinal progression of locations, were made: reality was gradually introduced into the model by varying the terrain and accessibility of the locations. (c.f. von Thunen) While Smith has expressed some doubts as to approximating real systems to the theoretical, and would seem to want to continue the 'classification and types' approach, he does agree that this approach may be the beginning of a more systematic framework.[22]

In contrast to these deterministic models have been those developed through the framework of probability theory. In these models the framework of settlement is developed through a process of random numbers to simulate a general pattern of settlement rather than the exact locations.[23]

In view of the lack of detailed empirical

investigations of settlement in Southern Ontario it was felt that the former 'type' of models would best serve as the framework of the analysis.

Previous Settlement Studies in Ontario.

Studies of settlement in Southern Ontario have not been solely the domain of the geographer: a fact hardly surprising in view of the stage of development of the country. Land settlement and the associated social and political forces involved, form one of the main subjects of constitutional and social historical studies.[24] The main criticism of such studies is that they are exceptional and the processes of land settlement are only ascertained and analysed verbally. Historians are generally wary of 'general theories' and pin faith on the case study approach.[25] While this may add to the field of knowledge of settlement, it seldom increases understanding of the problem.

A comprehensive historical treatment of settlement in Southern Ontario was made by Patterson (1921).[26] This study dealt mainly with the legislative forces at work and their change through time. Numerous early accounts by original settlers and their descendants were often written in a geohistorical style, that is, the clearing and alteration of the land and problems of accessibility, were important topics of reminiscence. Such material is often raw material and can add colour to official returns, which form the basis of most studies of settlement.[27]

The first comprehensive geographical treatment of settlement was made by Schott.[28] Although his style of analysis was classificatory (i.e. types) he did attempt to understand the problem in view of the physical background, the contribution of the Indian period and the social groups moving into the area. Although his examples are detailed, the study as a whole is generalised; nevertheless, it is a pity that such a wealth of information is unavailable in English.

An attempt to study the early European settlement of Southern Ontario was made by Jackson.[29] Again, the main criticism is the generalised nature of the analysis whereby settlement was 'explained' by relating it to the usual factors of settlement. In addition, little attention was given to the contribution of the Indian period, surprising in view of Schott's earlier contribution and the philosophy of the American School of anthropo-geographers. Similar criticism can be levelled at Richard's study of settlement patterns on the fringe of the shield in Southern Ontario.[30] Although not specifically concerned with settlement, Reeds drew attention to the contribution of the primitive period in the evolution of agriculture and the essential continuity of man's occupation, of the area.[31]

The first attempt at greater detail in attempting to understand the problem came with Wood's reconstruction of the growth of early settlement in Dumfries township.[32] While Wood attempted to correlate individual settlement

locations with the physical background, he made no attempt to correlate the pattern with other variables, although he did identify them.

Although concerned with changes in the Mennonite settlement of Southern Manitoba, it is pertinent to discuss Warkentin's study since it is a recent example of an investigation of locational changes in verbal terms of analysis.[33] The first significant feature of this study was the detailed thought given an an introduction: furthermore the emphasis was on detailed analysis. Warkentin was concerned with examining the change in settlement pattern (the breakdown of the Gewan and the Kagel to the Canadian system) through time. The weakness of verbal analysis was indicated in Warkentin's study since he was dealing with the change from an inefficient system of rural location to the general pattern of locations,[34] which required a spatial analysis in precise, measured, (mathematical or statistical) style.[35]

In Eastern Ontario, Ray studied the historical evolution of settlement as an introduction to analyzing the out-migration during the late 19th century. Since the settlement was investigated in verbal terms it did not provide a satisfactory basis for determining the "push" factors significant in rural out-migration. In the second section a more precise analysis was attempted, using mathematical models for calculating net migration rates.[36]

The emergence of sequence methodology was implicit in Gentilcore's study of early settlement in the Niagara Peninsula, with his emphasis upon the "new" geography of European settlement.[37] This emergence of sequence methodology, after the other studies in Ontario had been exceptional in time as well as place, it also apparent in Heidenreich's reconstruction of the Huron occupance of Simcoe County.[38]

Gibson applied the sequence methodology to a study of the Norfolk sand plain with special regard to the evolution of the functions of the small central places.[39] Emphasis was placed upon the contribution of the oak plains to the relative development of these centres and their functions, but without regard to the locations of individual settlers. Since original land survey records were not used, the precise extent of the plains was not determined, nor the pattern of pre-settlement trails and their subsequent contribution to the European pattern.

It can be seen that the earlier studies of settlement in Ontario have been generally exceptional in time and place. In recent studies an attempt to organise analyses within a simple verbal model of sequence occupance is apparent: in addition, emphasis is now upon verbal precision, often re-inforced with descriptive statistics. Settlement patterns have generally been related to certain well-established factors in addition to the local unique attributes, and then these were offered as an explanation.

In the following analysis a unit area, Norfolk County, was taken as the basis for examining human settlement. There is only one Norfolk County, (in Canada) but the two variables man and land can be examined as regularities, through time and space. The time dimension is treated in the form of a sequence of two occupance periods, the Indian and the Early European, to show the essential continuity of man's occupation of certain areas. The first variable, the land, is examined first. The Indian period is discussed verbally; if more data had been forthcoming from certain unpublished sources, a more precise analysis would have been undertaken. However, sufficient material was available to isolate one important relic variable that survived to influence the European period, the Indian trail.

With the onset of European settlement, the analysis is framed within its spatial context in terms of a simple model of settlement evolution. The modifications significant in the area under analysis are discussed in precise terms, based upon actual measurement.

Since the analysis is upon a detailed scale and is concerned with a relatively large number of locations, it was considered justified to offer an explanation for the observed pattern in terms of a general theory of efficiency.

Finally, the analysis is inverted to see whether by taking certain variables the general pattern of settlement could have been predicted.[40]

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# Part I.

## The Physical Background to Settlement.

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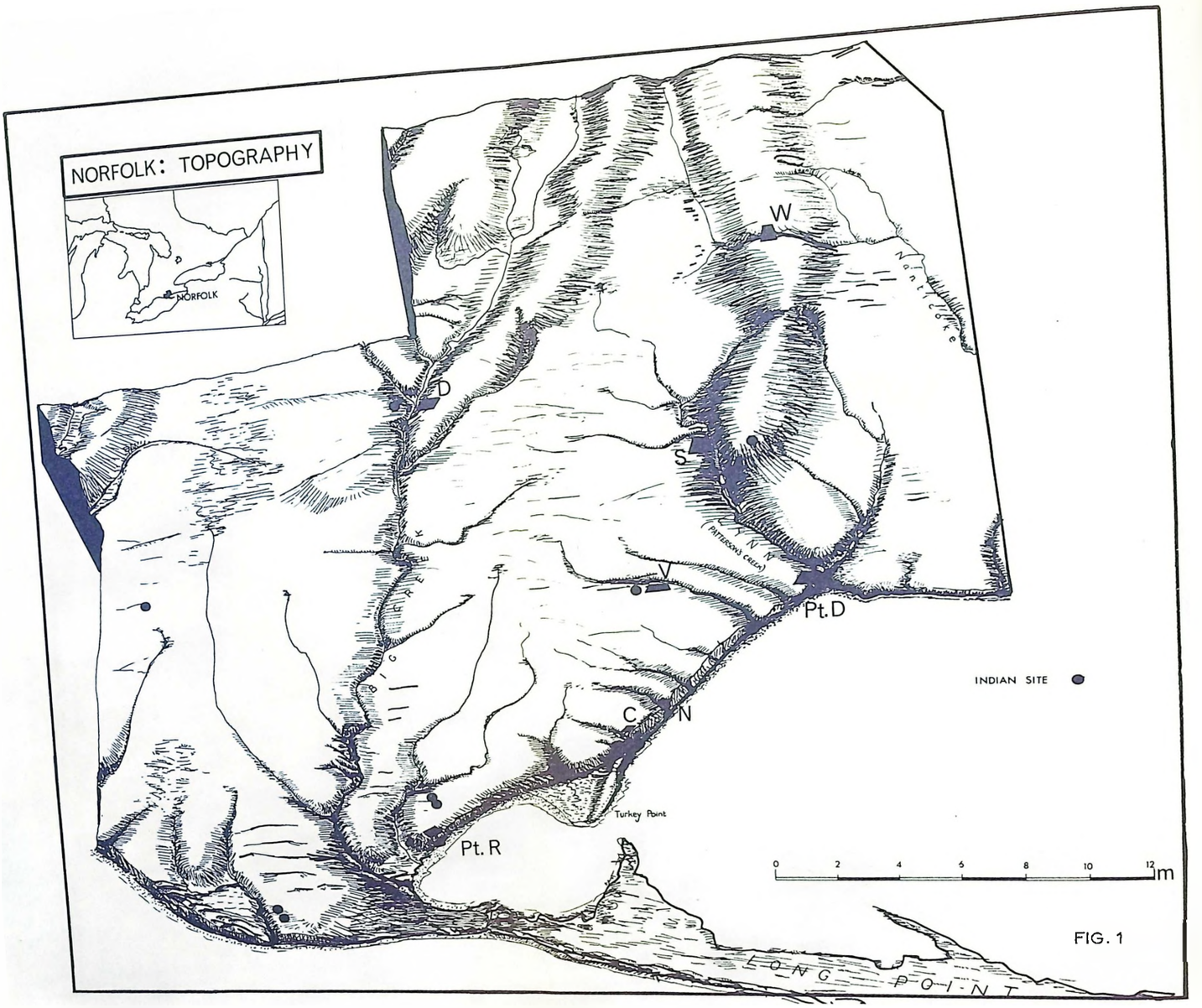
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LONG POINT

FIG. 1

## I.1. Early References to the Topography and Vegetation

Norfolk County is located along the northern shore of Lake Erie, equidistant from Niagara and Windsor. (fig.1) The topography consists of level sand plains that meet the lakeshore in a series of 'cliffs' that vary from 50-125 feet in height. Several morainic ridges run north to south through the area, rising above the generally level sand plain.

The shoreline has several significant depositional features, Long Point and Turkey Point being the most important. Long Point is a sand spit with numerous distal ends that extends eastwards into Lake Erie for about twenty miles. Turkey Point is a sand bar that has become infilled with an interior marsh. (fig.1)

In the 18th century the greater part of exploration was conducted by canoe along the water courses of the Great Lakes region. Thus, descriptions of the shoreline of Norfolk County are quite detailed, while references to the interior are few.

Exploring the shore of the Long Point area for the Governor of the Western District, Patrick McNiff remarked on the interior,

> "On the back of Long Point very good land, not so hilly as what I have passed.....but marshy in front for twenty chains." [1]

The high shoreline impressed Lt. Gov. Simcoe as a potential site for a fortified strongpoint within the framework of his plan for settling and defending Upper Canada.[2] Elsewhere along the lake, the shore was either too low with a shallow approach, or was inaccessible from the interior.

As a preliminary investigation, Chewett was ordered to survey the shore from the Grand River to Long Point for a site suitable for fortification and settlement. He entered in his diary on the 28th June, 1794,

> "Patterson's Creek (Lynn River) is a good harbour for batteaux, having from two to three feet (of water) over the barr, but none of the smaller creeks can be seen any distance from the shore." [3]

The following day the party proceeded westwards and found that Young's Creek was silted up with sand. Turkey Point was, "a more excellent piece of low land."[4]
Long Point itself was too marshy to be fortified in Chewett's opinion, but the carrying place over the neck of the peninsula was,

> "only eight chains across, and three feet five inches above the level of the lake. The transport of batteaux is easily carried into execution." (Plate ).[5]

A sketch of the Turkey Point area was made by Chewett for the actual visit of Simcoe to Turkey Point. (Sept. 1795) The original sketch map can be seen in the Provincial Archives, while a copy is reproduced in the Simcoe Papers.[6] The map shows soundings made in the bay, the high bank, and the 'oak plains' of the interior. PLATE )

The land surveys that were made in the area were straightforward chain surveys that located streams, vegetation and soil types. References were also made to the nature of the terrain such as 'level', 'broken', 'descending' and 'ascending'. These references correspond to the general pattern of relief.

The Long Point promontory was such a distinguishing landmark that it became the regional term of reference for the area now known as Norfolk County, both in governmental documents and contemporary accounts.[7]

Early references to the vegetation.

Early references to the vegetation show that travellers were impressed by the great variety of tree types and fauna. The Dollier-Galinee Expedition of 1669-1670 noted,

> 'Les bois y sont clairs entremesles de fort belles prairies arrousees de rivieres et du ruisseaux remplis de poissons et de castors, quantite de fruits, et.... si plein de bestes.'[8]

Dollier and Galinee were two Sulpitians who had set out from Montreal in an attempt to find the Ohio river. Although they failed in their objective, they did manage to explore the eastern edge of Lake Huron and the northern shore of Lake Erie. On the trip southwards the severity of the winter forced them to shelter at Black Creek. (fig.1 )[9]

In the following century (1721) Charlevoix the distinguished French traveller described Long Point and Big Creek as having 'many vines'.[10]

Towards the end of the 18th century Patrick McNiff, surveyor for the Western District Land Board, was instructed to explore the shoreline and report on likely places for settlement;

he wrote,

> 'on the back of Long Point, very good land, not as hilly as what I have passed. Timber, bass, black walnut and hard maple'.[11]

Chewett's preliminary survey for the military establishment to be developed at Turkey Point noted that,

> 'the mainland from where it joins Long Point to Patterson's Creek is high, very easy to clear and full of excellent springs. The timber is Black Walnut, Chestnut, Maple, Hickory, Butternut, Oak etc.'.[12]

The sketch made at the time of Simcoe's visit to Turkey Point shows that the area behind the point was covered with 'High White Oak Plains'.[13] References to the vegetation of the interior as opposed to the lakeshore zone come later, although in 1793 while making a journey from Niagara to Detroit a member of the Simcoe party noted that,

> 'some fine open plains, said to be frequented by immense herds of deer'.[14]

Apart from the references of the Sulpitian explorers of 1669 actual knowledge of the plains probably preceded the surveys by a few years. Once the areas had been surveyed, descriptions of the plains appear in most early accounts of Upper Canada, such as D. Boulton[15] and Bouchette. Bouchette has one of the best descriptions,

> 'In the heart of the dense woods and on the borders of the rivers, extensive plains suddenly present themselves, that lay open to view a beautiful area of natural meadow delightfully relieved by occasional clumps of lofty pine, white oak and poplar. In the neighbourhood of Long Point and along the banks of the Grand River are situated the most extensive of the vast and fertile plains which are generally in a growing state of cultivation'. [16]

The early accounts give some insight into the way in which the area was regarded; generally, the remarks are favorable in regard to both the topography and the vegetation, since the variety of tree types and game would appeal to the pioneers. The frequent reference to the 'high' land would add further attraction not only in view of defensive considerations, but also for reasons of health; low lying areas were often avoided for fear of marsh fever.[17]

## I.2. Land Survey Records and Reconstructions.

The contemporary accounts of the topography and vegetation are limited and sketchy but do provide an indication of those elements that impressed the early travellers. Remarks about the vegetation show an awareness of the great variety and contrasts that existed. More substantial material on drainage, soils and natural vegetation is provided by the original land survey records. These field notes provide an important source of data for the reconstruction of certain elements of the of the pre-European geography.

The use of survey notes is not a new development, since extensive use has been made of them by historians, archaeologists, botanists and geographers, mainly confined to studies made in the United States.[18] The historians and archaeologists have used the information to locate Indian sites and trails.[19] The botanical studies have been mainly from an ecological viewpoint and usually omit any discussion of the effects of human agencies upon the vegetation. For example, Sears used original survey records to reconstruct the natural vegetation of Ohio. With such a large area only a generalised map is shown, with the predominant species in each township marked by a symbol, since Sears was concerned with the areal evolution of certain plant types.[20] Another study in the vicinity of the Great Lakes is that by H.J. Lutz who used the original survey notes to reconstruct the vegetation of a small area in north-west

Pennsylvania. However, despite being an intensive study of a small area Lutz prepared no maps of the final distribution of vegetation.[21]

The use of original land survey records by geographers has been more extensive both for biogeographical and anthropalaeobotanical studies, the latter often in the form of occupance reconstructions. Extensive use of survey data has also been made by R.W. Finley in Wisconsin who sought to reconstruct the pre-European vegetation, so as to complete the sequence of post-glacial vegetation evolution.[22] Information from the survey records has also been used in reconstructions of human occupance. Trewartha used the information to establish the relative amounts of cultivation in different areas of the Cuesta Hill land of Wisconsin, as noted by the surveyors.[23] In his study of the Kankakee Marsh of Northern Indiana and Illinois, Meyer used survey information to reconstruct the physical background in relation to the sequence of human occupance of the area in an attempt to show human adjustment to and of the environment, in a nondeterministic manner.[24] He also used survey information in his later sequent occupance study of the Calumet Region of northern Illinois and Indiana.[25]

There have been criticisms of the use of original land survey information chiefly by E. Bourdo. He concluded that there are often inaccuracies and that their reliability varies considerably due to bias and even fraud. However,

Bourdo restricted his study to the surveys conducted in the United States where large tracts of land were sold to speculative land companies so that the surveys were open to considerable abuse.[26] In Ontario, surveys may have been less open to abuse. The Crown had a monopoly of land sale and sought to protect its own interests and those of the Indians, by having accurate official surveys. Where mistakes were made, they were usually in the form of compass errors. The lines run were usually incorporated in the survey system so that there is no difficulty in plotting original notes along survey lines. Retracement surveys were made later in the 19th century by Crown surveyors mainly to re-establish boundary markers that had been lost through time and neglect.[27]

Where mistakes with large deviations from the official plan were made, they were usually corrected within a few years of the original survey. In Norfolk for example Aitkin surveyed onetownline with an error of about $2^{o}$. William Hambly re-surveyed the line two years later in 1795.[28]

Surveys in Upper Canada.

The exodus of Loyalists to Canada after the American Revolution created an increase in the population of the Province so that an organised system of land allocation became necessary. Since the Crown had a monopoly of land control, official surveyors were sent out to survey the land west of Montreal. The parties were instructed to lay out townships of six miles square, subdivided into concessions and lots; suitable notes of soil and timber conditions had to be made as well.[29] The pressure of immigration by the late 1780's led to further surveys along the shores of Lake Ontario and then in the early 1790's along the shores of Lake Erie.

The four Land Boards organised in 1788 were reorganised and renamed, so that the Long Point became the division line between the Western and Home Districts. With the expansion of the surveys, the area was open for settlement and immigrants began to increase after 1792. Over a period of time it became necessary to ensure that immigrants were correctly located. This was achieved by a system of location certificates and filed patents; naturally some abuse occurred.[30] As settlement filtered into a new area and demands for locations increased, a survey was undertaken so that the boundaries were run and the concessions and lots were laid out.

The pattern of concessions and lots within a township

varied with the expansion westwards and northwards of settlement. The early township surveys were in eastern Ontario and the Niagara area. Townships were usually of six concessions, each concession having twenty-four lots of two hundred acres each. Later surveys produced larger townships of twelve and fourteen concessions. Townships were surveyed in such a manner that they were at right angles to the lakeshore; resulting in irregular pieces of land known as 'gores'. Thus, in the case of Norfolk County, Woodhouse township is at right angles to the lakeshore, but in order to keep Charlotteville township at right angles to the shore, which trends south at this point, an irregular piece of land or a 'gore' is produced. (fig. 2 ) The same thing happens again between Walsingham and Bayham townships to give the gore subsequently surveyed as Houghton township.[31] The township survey system gave the rectangular pattern of settlement in Ontario, discussed in greater detail by Schott.[32] The rectangular pattern of settlement is readily apparent on topographical maps of Southern Ontario.

Several studies using Ontario land Survey information have been made. The publications of the Champlain Society are collections of historical documents related to certain areas of Ontario such as the Grand River Tract, Muskoka and Haliburton, and York.[33] In these collections, the survey information is used as an introduction to the historical documents concerning the area under study. Naturally, the

survey material is not used for purposes of reconstruction.

Kirk used survey information to describe the natural basis to the settlement of Southern Ontario and also to show how the surveys were related to the bridgeheads of settlement.[34] Again, this study was not concerned with using the material in great detail. In his study of North Dumfries Township, D. Wood used the material to reconstruct the vegetation of the late 18th and early 19th centuries.[35] The finished map was then correlated to the pattern of settlement that developed during the period 1816-1852.
R.L. Gentilcore used original land survey information to analyse the basis of the 'new geography' created by the foundation of European settlement in the Niagara Peninsula (1782-1792).[36]

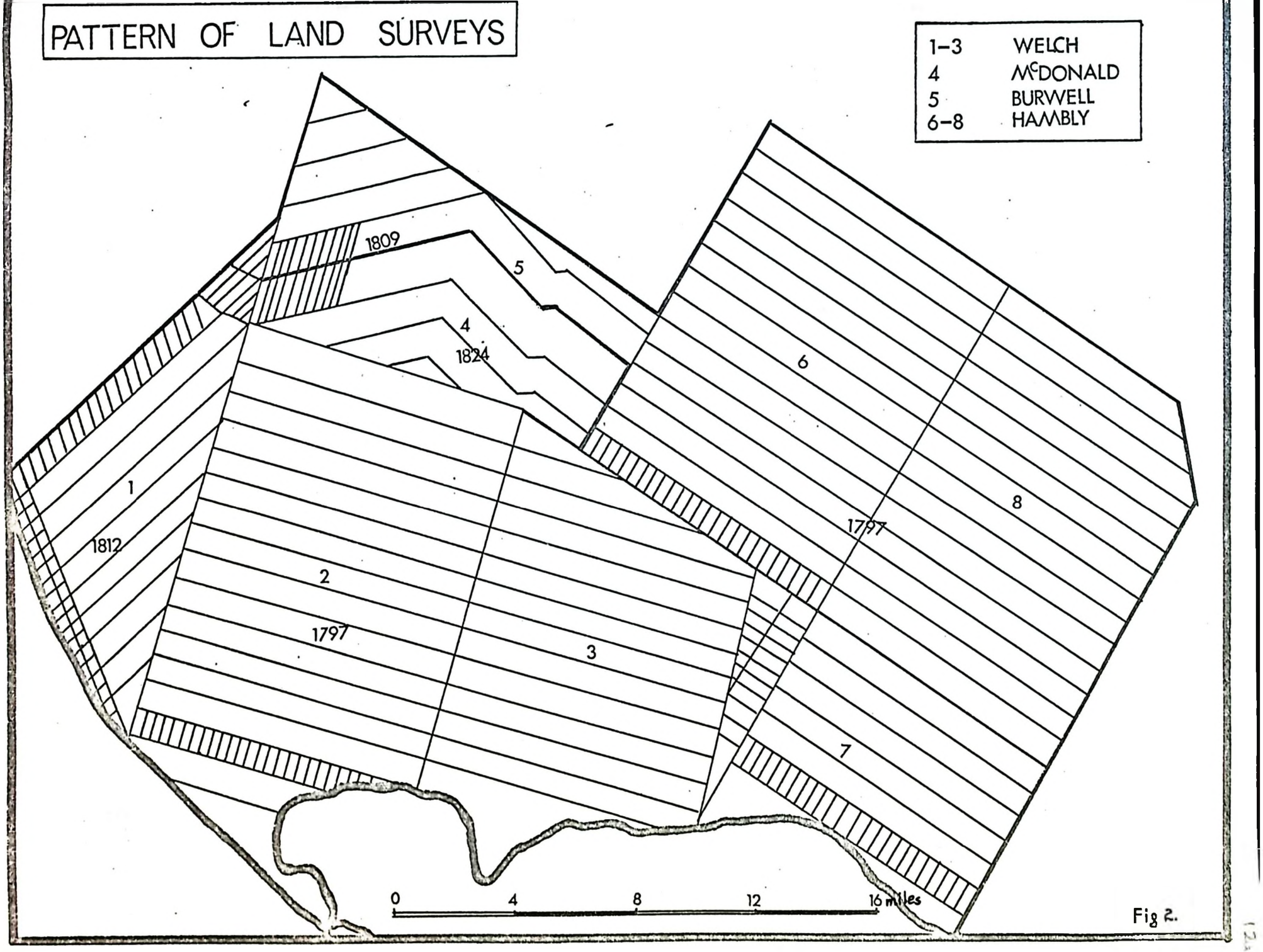

PATTERN OF LAND SURVEYS
1-3 WELCH
4 McDONALD
5 BURWELL
6-8 HAMBLY
1809
5
4
1824
6
1
1812
2
1797
3
8
1797
7
0
4
8
12
16 miles

Fig 2.

## I.3. Surveys in Norfolk County

The surveys conducted in Norfolk County were a response to the westward expansion of population and the military settlement encouraged by Lt. Gov. Simcoe.[37] Even before the first surveys had been run, (1793-4) a few squatters had penetrated the area building log cabins along the lakeshore.[38] Therefore, surveys were necessary to take care of the squatters and locate the new settlement. The date of survey and the surveyor are shown in figure 2, while the degree of detail is indicated below.

| Township | Surveyor | Date | Detail |
|---|---|---|---|
| Woodhouse | Hambly | 1795 | Vegetation and soil notes |
| Townsend | " | 1797 | " " |
| Windham | " | " | " " |
| Walsingham* | " | 1795 | none (stream courses only) |
| Charlotteville | Welch | 1797 | extent of plains only |
| Houghton | " | 1812 | veg. and soil notes |
| Middleton | McDonald | 1825 | " " |
| " (Talbot Road Section) | Hambly | 1809 | " " |

In the case of Walsingham, additional information was provided by Welch's Masting survey (1795) which describes the type of timber for each lot in the township.[39] The survey notes for Charlotteville township also lack vegetation

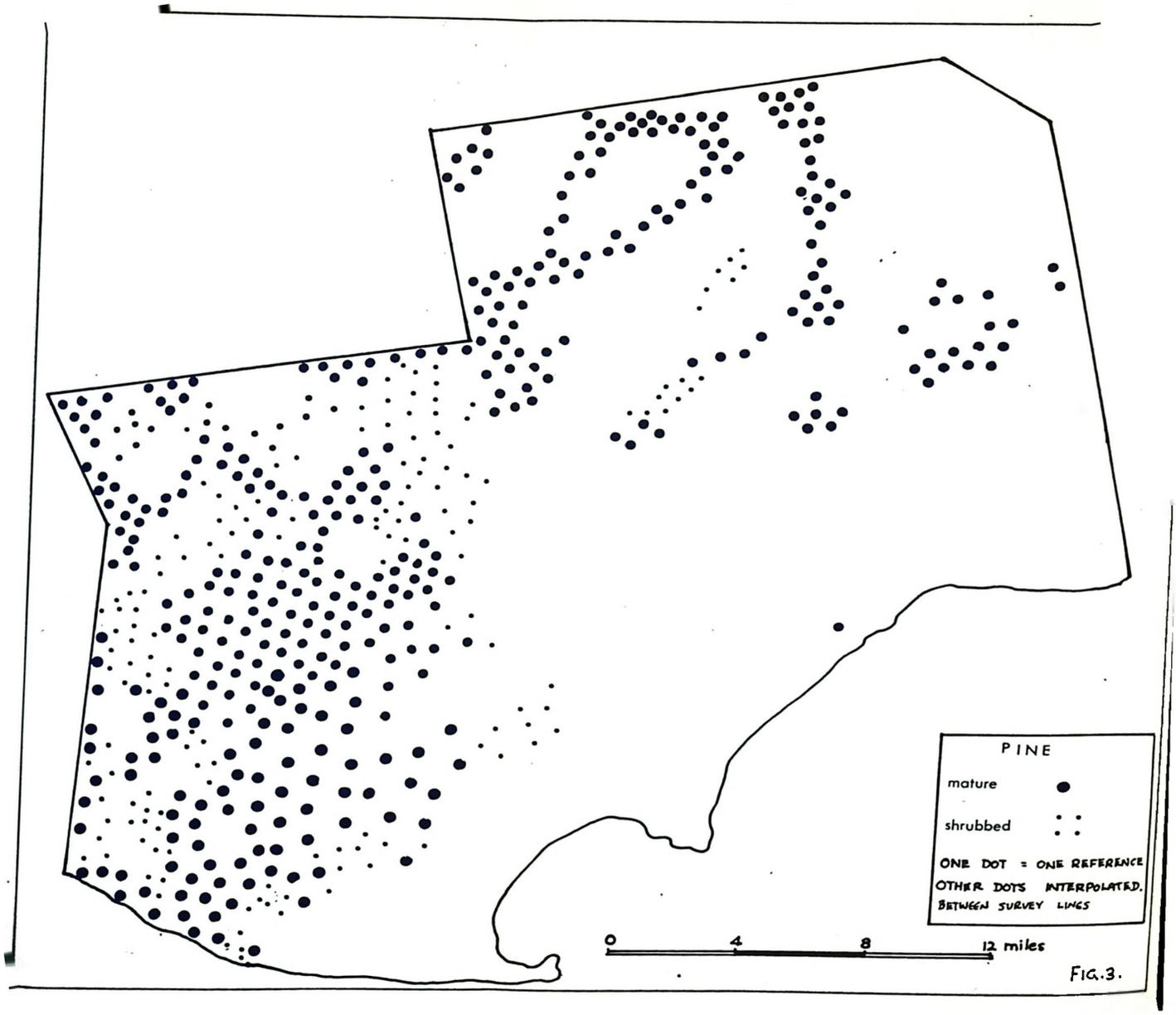
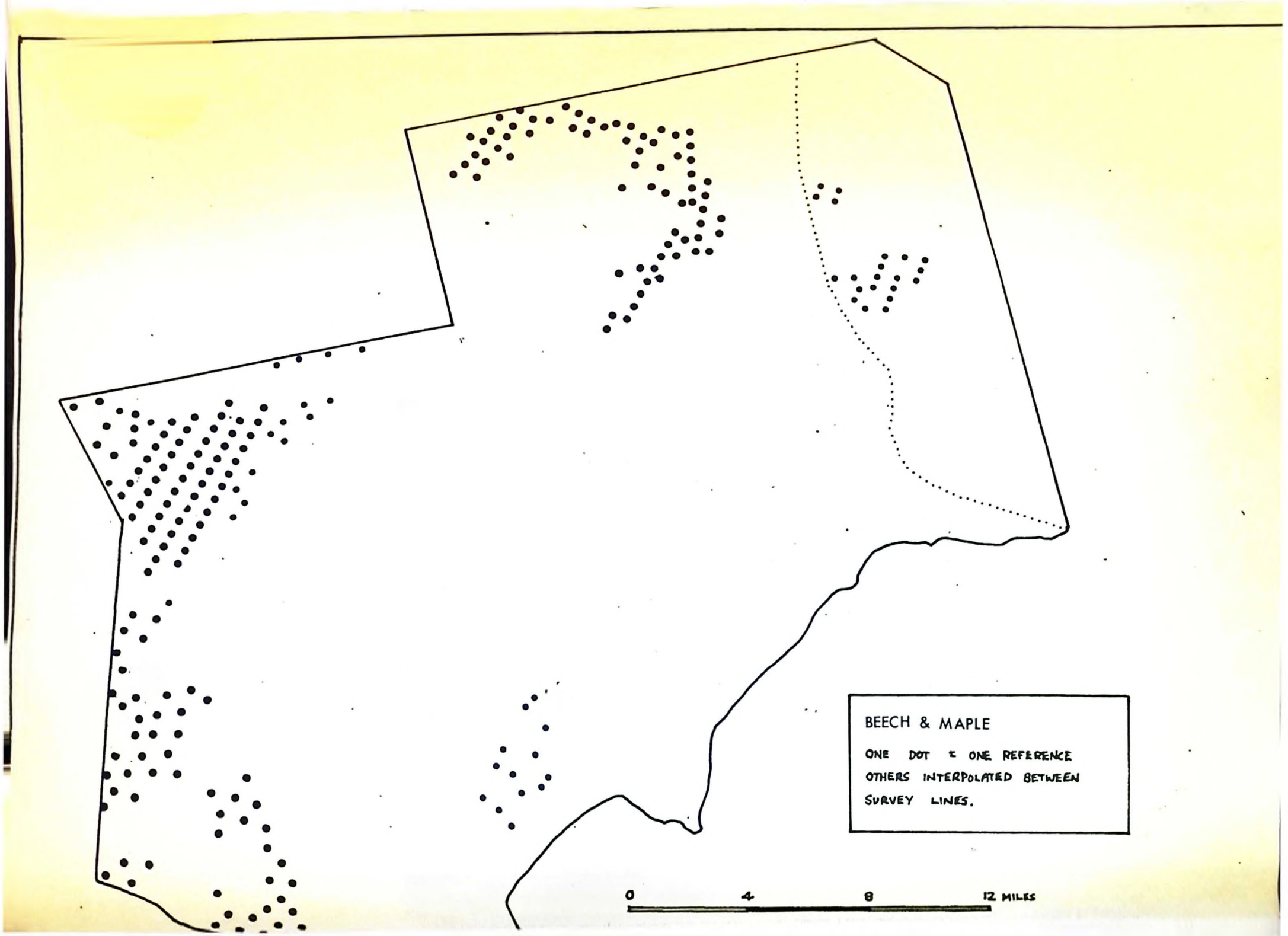

PINE
mature
shrubbed
ONE DOT = ONE REFERENCE
OTHER DOTS INTERPOLATED.
BETWEEN SURVEY LINES
0
4
8
12 miles

FIG. 3.


BEECH & MAPLE
ONE DOT = ONE REFERENCE
OTHERS INTERPOLATED BETWEEN
SURVEY LINES.
0
4
8
12 MILES

notes; in this case, additional information was derived from the Clergy Inspection Report of 1829.[40]

The pattern of vegetation by particular genera[41]

The data from the original land survey records was plotted on maps of 2 miles to the inch. Distributions were then constructed by interpolating the survey transect lines.

Pine. (fig.3)

The distribution of pine shows a concentration in the townships of Walsingham and Houghton, and also in Middleton. White pine constitutes the greater part of this distribution, although some Red Pine occurs along the lake front in Houghton. Pine occurs in association with oak and some chestnut; some stands of pine do occur in Walsingham where individual trees grew to heights of 120-140 feet.[42]

However, there appear to have been quite frequent occurrences of shrubbed pine. A comparison of the occurrence of pine with the main soil categories indicates a preference for the light sandy soils and the morainic ridges. Occasional large white pine are part of the beech-maple association.

Beech Maple. (fig.4)

The beech-maple association has a restricted occurrence in the study area, mainly to the western and northern part of the County. The predominance of light well-drained soils interspersed with waterlogged sands and gravels could account for the low representation of

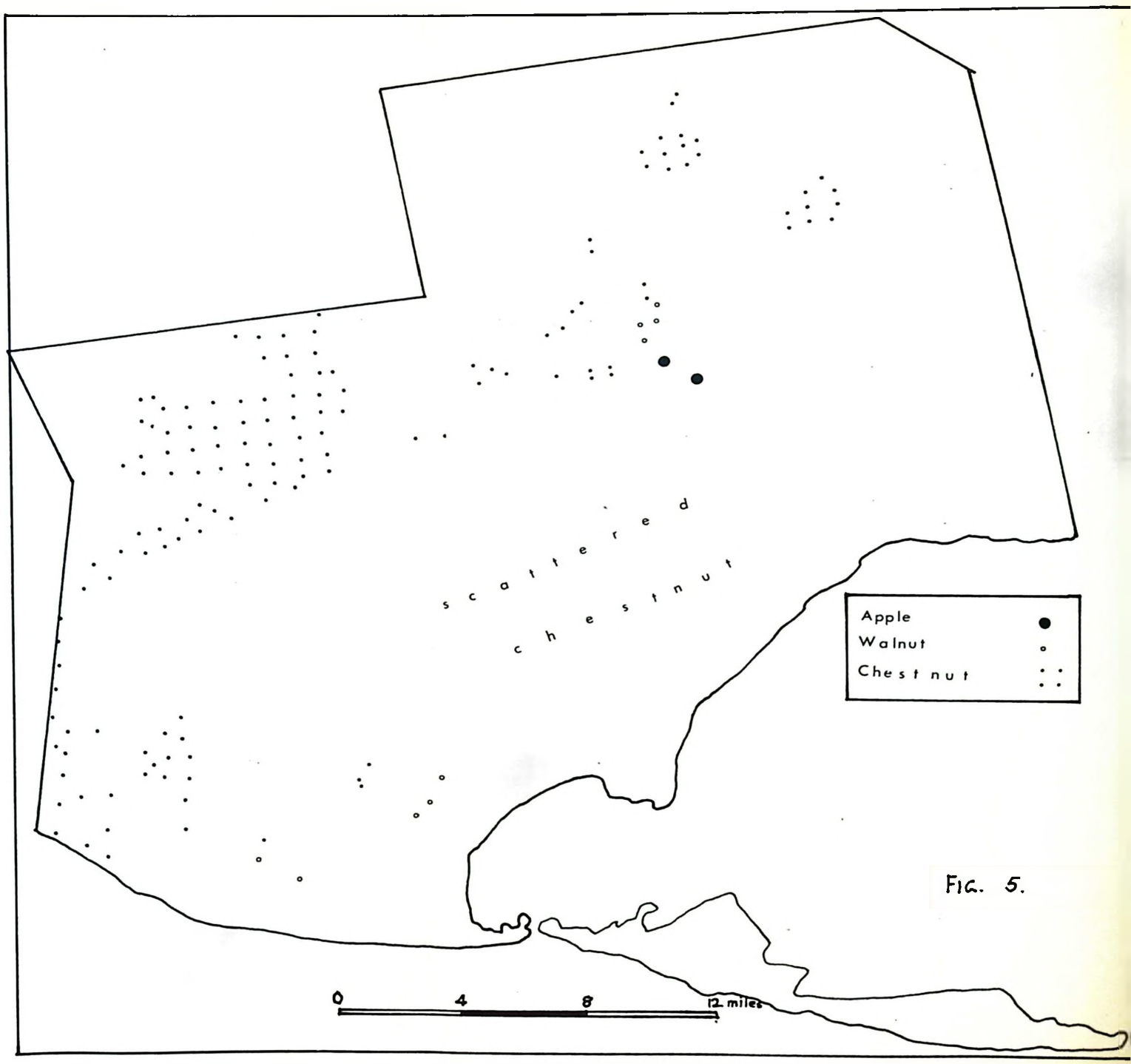
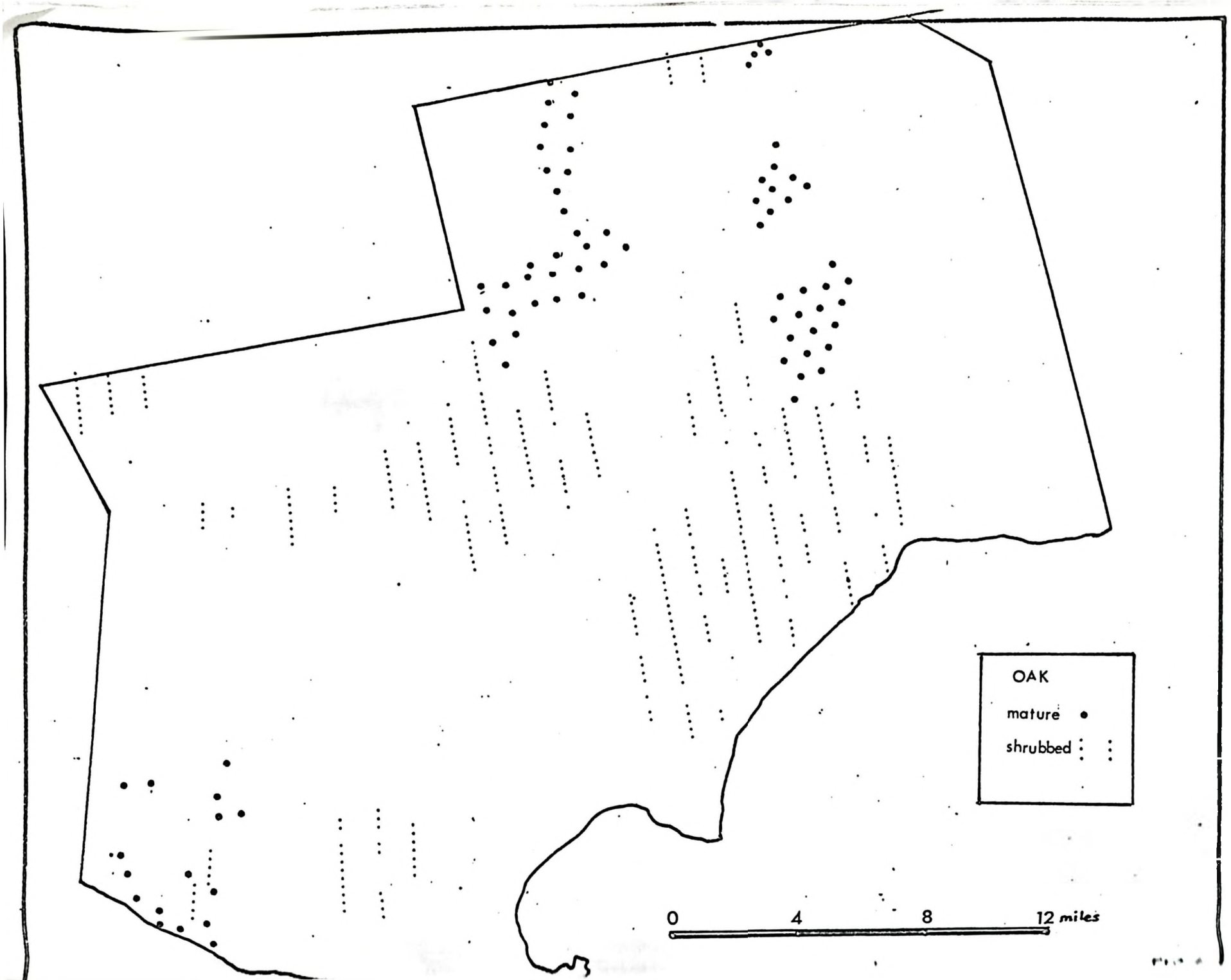



FIG. 5.


OAK
mature
shrubbed
0
4
8
12 miles

this association. (fig. 7 ) On the light well-drained soils, the beech-maple association would have difficulty competing for the area with the oak association which is more suited to these particular edaphic conditions.[43]

Other Types. (fig.5)

Chestnut often occurs on sand and gravel ridges in the areas of impeded drainage; elsewhere, scattered groves are part of the oak-pine hickory type. Other fruit bearing trees have a scattered occurrence, such as apple, plum, walnut, butternut and cherry.

On clay soils (fig. 7 ) in the eastern part of the county, elm, ash, hemlock, ironwood, basswood are associated with the imperfect drainage conditions. In the survey notes these are designated as 'mixed' forest.

Waterlogged soils have vegetation cover of open hay marsh or cedar and tararack swamp with some birch and willow. The immediate riverine and stream zones have similar types. In order to maintain the continuity of the main associations, the riverine types have been omitted.

Oak Hickory and Pine. (fig.6)

This association has a widespread distribution throughout the area, that can be related to the sand and silt-loam soils of the morainic ridges. This association would be the expected climax for this combination of edaphic conditions. Within the area of this association are the oak openings, grassy areas with groves of oak chestnut and some pine. This particular association has an open nature

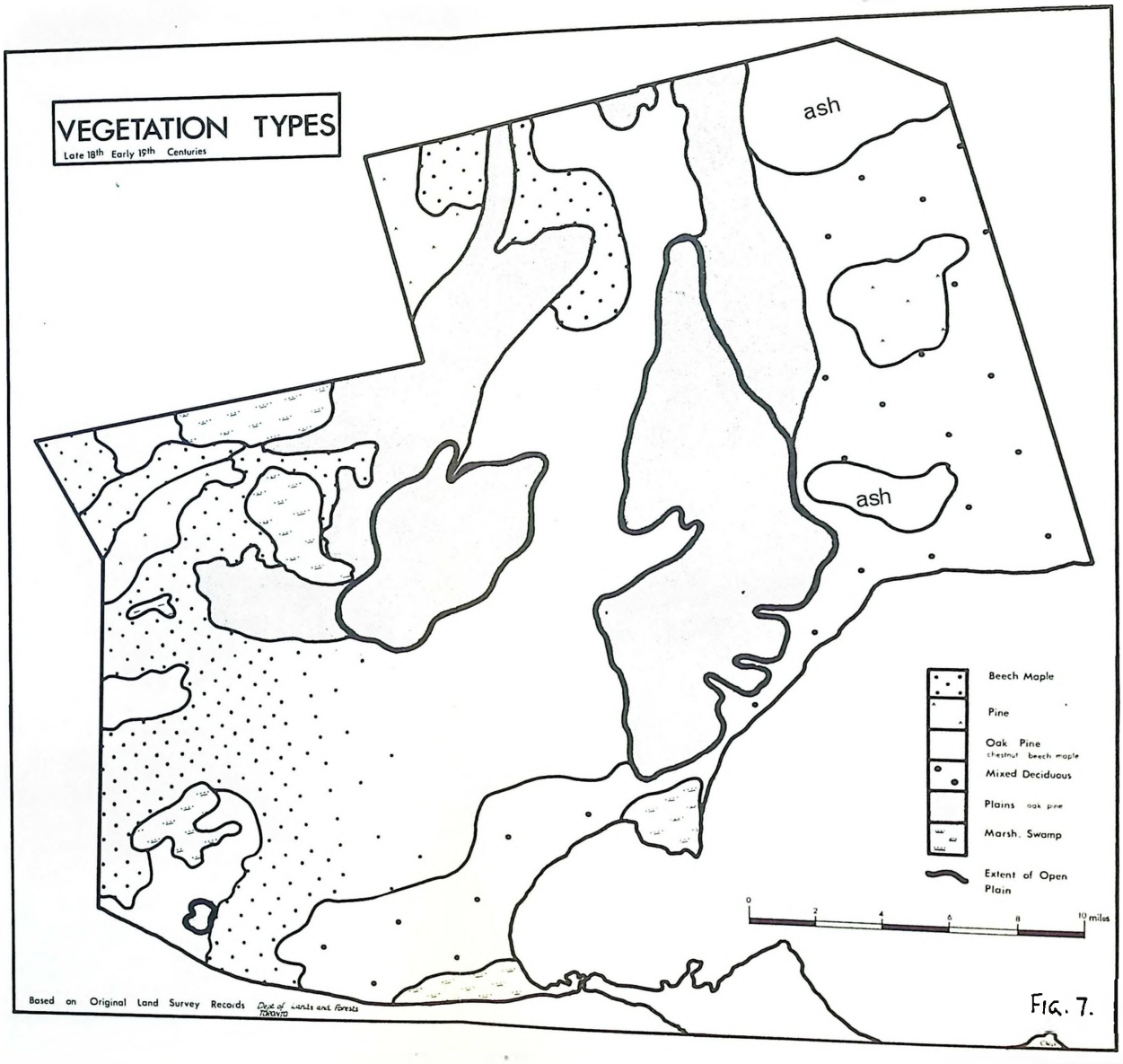

VEGETATION TYPES
Late 18th Early 19th Centuries
ash
ash
Beech Maple
Pine
Oak Pine
chestnut beech maple
Mixed Deciduous
Plains oak pine
Marsh, Swamp
Extent of Open Plain
0
2
4
6
8
10 miles
Based on Original Land Survey Records
Dept of Lands and Forests
TORONTO

Fig. 7.

Distribution of the main Associations.

The vegetation map reconstructed from the land survey records is shown in figure 7. The pattern of vegetation agrees with the classifications and findings of Fox and Soper concerning the vegetation of Southern Ontario.[44] Land survey records have several advantages and disadvantages when employed in reconstruction of the physical landscape of the past.

Detailed data of this nature allows a limited quantitative analysis of the pre-European vegetation pattern. At a much larger scale of analysis Sears found the information useful for tracing the migration patterns of the main associations.[45] At the present scale the data is useful for comparing distributions with the edaphic properties of the area concerned. This quality is particularly germane to the present study in connection with the oak opening problem. Most studies of the problem in Ontario so far, have been concerned with defining it as a phenomena of sandy soils, yet in fact there are a significant range of soils within this group. Thus, in figure 8, which is based on survey data and modern soil maps, it can be seen that the oak openings are a feature of certain soil types, particularly coarse sands and well-drained fine sands. However, it is apparent that openings also occur on clay soils too, although not to the same extent.

In addition, the survey records by isolating the original vegetation on a lot by lot basis define one of the

variables important in early settlement, the significance of such data will be seen later. Insofar as soils are concerned the notes are not an adequate basis for reconstruction of soils of the area. The surveyors' references are irregular and usually generalised such as 'dark', 'loamy', and so on.

However, the survey notes do provide information concerning drainage and would be useful in an analysis of changes in the water table: thus, streams, rills and swamps that existed at the time of the survey are often no longer apparent today, or in the case of swamps, much smaller, indicative of man's alteration of the physical landscape.

There are certain disadvantages to land survey records since the surveyors may have been selective in their references,[46] referring only to those trees on particular lots that were of economic value. There is also the problem of the scale at which the notes are to be used; thus, references are usually to genera rather than to species and invariably referring to trees only (other than the openings).[47] Therefore, they are useful only in terms of a generalised picture of the vegetation: from the botanical viewpoint requiring exact species indentification, they are insufficiently detailed, yet in defining the main association of particular lots, they provide sufficient data to isolate one of the variables important in settlement.

## I.4. The Oak-opening*Problem (park landscapes)[48]

One particular use of the reconstructed vegetation data is in the discussion of the oak opening problem. The occurrence of oak openings in the deciduous forest zone of eastern North America, the Long Point plains being an example, has been the subject of considerable discussion. Since the plains are a fundamental feature of the area and constitute one of the variables important in European settlement, it will be pertinent to discuss them in the light of data available.

There are two main theories concerning the origin of this phenomena; there are those who consider them to be the result of local edaphic conditions and climatic fluctuations, secondly there are those who consider them to be the result of primitive human activity. Thus, Finley classifies them as survivals from the Boreal phase of post-glacial vegetation evolution, in areas of sandy soils and good drainage conditions.[49] During this phase when the climate of North America was drier and warmer than at present, prairie conditions were more extensive eastwards and northwards, while the deciduous forest reached its greatest extent northwards.[50] With the change in the climatic conditions and the subsequent shift in climatic belts, the beech maple community invaded these areas; however, in certain areas of good drainage and sandy soil, relics from the drier phase persisted. This view is supported by

Borchert, who places more emphasis upon the importance of droughts in maintaining these Boreal phase relics.[51]

In contrast to these views are those that attribute the openings to the agency of primitive man. Carl Sauer drew attention to the effects of primitive man in the formation of the 'Kentucky Barrens'. Drawing from numerous early accounts Sauer reasoned that the name 'Barren' was really a misnoma and that in fact, the Barrens were important in the early settlement of Kentucky. Furthermore, the advent of European settlement prevented further fires so that trees gradually invaded the area, (concluding that trees were the climax type).[52] According to Bromley further evidence could be found to show that the oak hickory forest of southern New England could be related to Indian activity as well.[53] Day cites numerous references of early European travellers who have given accounts of Indian forest burnings, which resulted in a secondary growth of oak pine vegetation and open plains areas, although he has no references to early burnings in southern Ontario.[54] Ward has shown that a disturbance of the Beech Maple Association tends to result in a rise of pine and bur oak.[55] Due to the botanical properties of the species, beech and maple are less able to resprout after fire, especially beech, so that a secondary growth of oak pine vegetation quickly inhabits the site. Additional evidence to support the view has come from pollen studies; Sears found that at the top of the pollen record a shift to xerophytism has taken place, so that the beech

maple association has been yielding to the oak hickory, which in turn could be related to primitive burnings.[56]

In retrospect, it can be seen that there is ample evidence to take either point of view, a physical or human origin. The studies have been academic rather than scientific mainly because the techniques of detailed soil and pollen analysis have only developed comparatively recently. As far as the oak openings of Southern Ontario are concerned only two studies of significance have been published.[57] A study of the oak openings near the Rice Lake led Traill to the conclusion that since no fires had been reported for fifty years, and since oaks examined bore no traces of fire, if fire had been the original agent, it must have happened several centuries before.[58] Carl Schott provides the most extensive examination of the literature available and concludes that,

> 'In respect of the Park Landscapes, it is probably a question of naturally conditioned forms of vegetation. In the Southern regions of Ontario the amount of precipitation was not sufficient on the dry sandy soils to enable a closed woodland to arise. Human influences have no bearing upon this evolution since these regions were completely free from human beings until the arrival of the English.[59]

Insofar as the Long Point plains are concerned the following evidence is available:-

The soils of the area are generally light and well

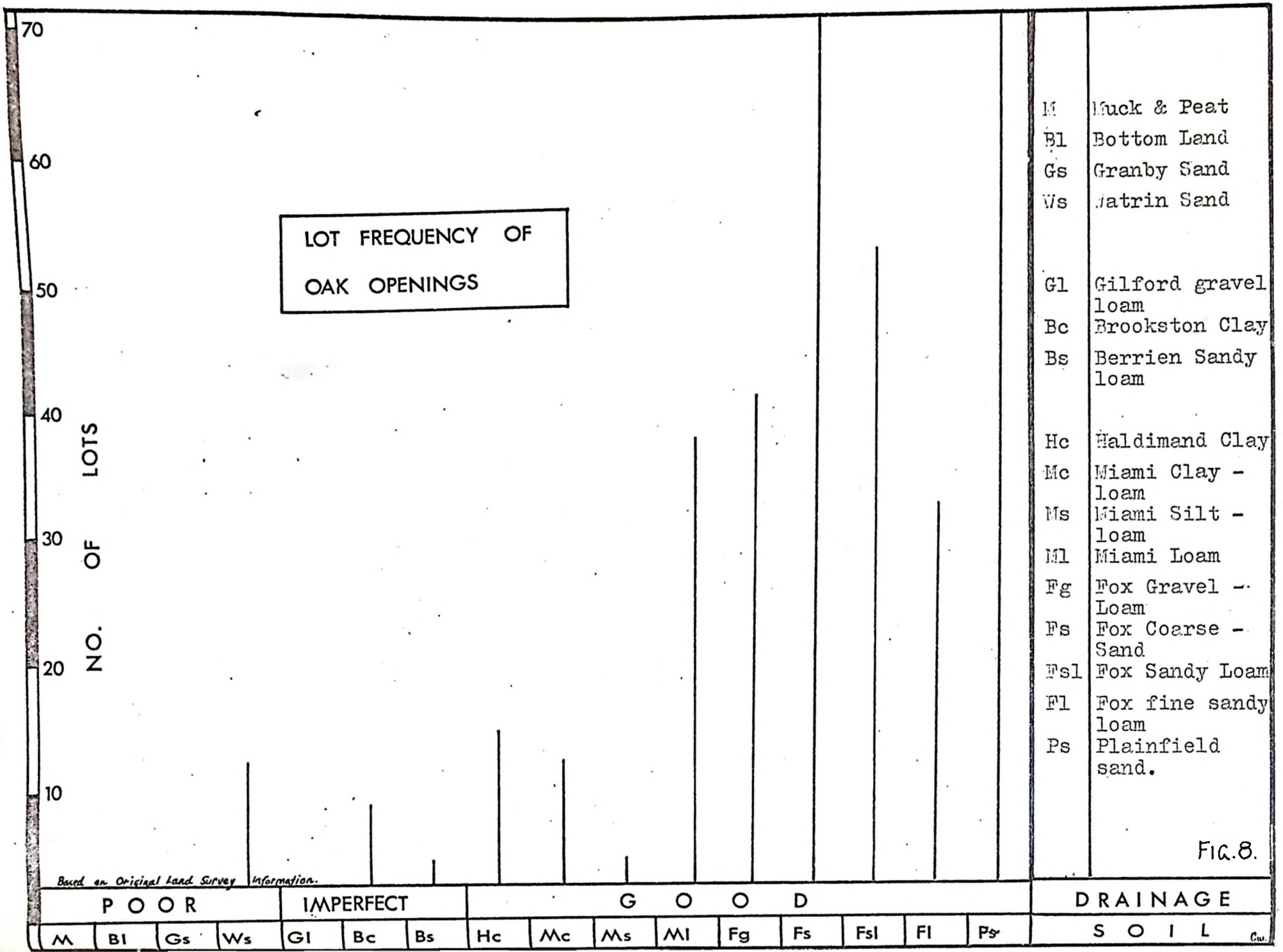

LOT FREQUENCY OF
OAK OPENINGS
NO. OF LOTS
70
60
50
40
30
20
10
Based on Original Land Survey Information.
POOR
IMPERFECT
GOOD
DRAINAGE
SOIL
M
Bl
Gs
Ws
Gl
Bc
Bs
Hc
Mc
Ms
Ml
Fg
Fs
Fsl
Fl
Ps
M Muck & Peat
Bl Bottom Land
Gs Granby Sand
Ws Watrin Sand
Gl Gilford gravel loam
Bc Brookston Clay
Bs Berrien Sandy loam
Hc Haldimand Clay
Mc Miami Clay - loam
Ms Miami Silt - loam
Ml Miami Loam
Fg Fox Gravel - Loam
Fs Fox Coarse - Sand
Fsl Fox Sandy Loam
Fl Fox fine sandy loam
Ps Plainfield sand.

Fig. 8.

drained ranging from fine silts to coarse sand.[60] A correlation of original survey references and soil types (fig. 8 ) shows that the plains occur on the well drained types. However, the fact that the same soil types support vegetation of the oak-hickory-chestnut type indicate that the soils alone do not account for the phenomena. Soil profiles made in the field on those lots where the original surveyor indicated open plains, showed that the soil could support forest vegetation.[61]

If a physical origin is at the root of the problem it must be due to climatic variations such as a cycle of drought years, or relics from the Boreal (oak-dominant phase). However, this is not a satisfactory explanation in view of the drought resistant qualities of the oaks.[62]

Turning to anthropological studies there is substantial evidence that the Indians occupied the area, although there are no historical records of burnings, nor have the limited pollen analyses in the area provided pertinent information either.

Although there is no early European account of Indian burning in Southern Ontario, the archaeological record shows that Indian settlement has been concentrated in the sand plains for hundreds of years.[63] Thus, there is evidence that activity was concentrated in the area over a time span so large that the European contact period can hardly be called representative of human/botanical relationships throughout the whole period.

In the Long Point region, Indian sites found so far are not in the plains areas, which is to be expected considering the fuel requirements and general wood requirements of the villages. However, neither are the sites on the edge of the plains as they were in the late 18th century.[64] Indian sites are usually on the edge of sand/clay areas (section II). The area north of Lake Erie and west of the Grand River saw the growth and expansion of the Neutral tribe and apart from a gradual shift towards the Grand River Valley during the immediate pre-historical period, the area was continuously occupied by an agricultural and hunting tribal group although the whole area was not used for agriculture. Therefore, although there are no historical references to burning the Neutrals would require to clear land for agriculture and normal fuel requirements. The whole problem might be resolved if a site were found and excavated near Simcoe since this is on the edge of the plains. (section II) More light would also be shed on the problem if the Historical Neutral sites were mapped in relation to plains that are said to have existed along the Grand River and which may be considered a continuum of the Long Point plains.

One other factor is that it is not necessarily implied that the Indians were the formative agents of the oak association or even of the oak openings, but that they were maintaining Boreal Phase conditions in select edaphically suitable areas. With the gradual return to

Atlantic conditions and the beech-maple dominance, the open areas were maintained or even extended on the well-drained soils. As agriculture became a more significant part of the economy it would concentrate activity on well-drained soils.

> 'Light burning in forests would keep down seedlings and thus eventually act to thin the forest somewhat. Heavy burning would open up the forest and create habitats for heliophiles... heavy burning was practical to clear land for agriculture and to aid in hunting.' [65]

Another feature of the location of the plains areas is that they occur near water courses such as the Lynn Valley and Big Creek. If one were seeking an edaphic solution to the problem one would expect to find the plains occurring where soil and drainage conditions are very similar, as for example in much of Walsingham and Middleton. But here the plains are absent. The fact that the plains occur relatively close to water courses (meaning the larger streams and the small rivers) would add weight to the Indian theory, since Indian activity was concentrated in these areas. (section II)

There is no doubt that Indian agriculture was practised in the Lynn valley area since several large corn caches have been found in south west Townsend (fig. 1) However, until some excavation has been conducted the question must remain open.

It can be seen that as far as the Long Point plains are concerned the open areas can be related to the edaphic conditions. On the other hand there is sufficient evidence to suggest that the Indian agency cannot be ignored. Given time the question might be resolved by several concomitant avenues of investigation.

i. A systematic three dimensional soil analysis, the main problem here being the destruction of the original conditions by European farming since the late C 18th.

ii. A detailed archaeological survey of the area between the Grand River and Big Creek. Some of this appears to have been done, but remains unpublished in the files of the National Museum Ottawa.

iii. A detailed pollen analysis of local bogs to establish the evolution of the vegetation pattern in terms of local conditions.

It has been illustrated that from the early years of European penetration there were several favourable references to the Long Point region: this had repercussions in that official attention was drawn to the area, giving accounts of its physical character in the late 18th century. Although this information is interesting, a more detailed source of information lies in original land survey records. The value of the information depends largely upon the scale of inquiry being undertaken, proving to be useful in a discussion of the oak openings in that their areal extent could be delineated and forming a basis for analyzing one

of the main variables important in human settlement.

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9. Ibid.; xxviii - xxxvi.

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11. Mcniff, P. op. cit.:

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# Part II.

## The Indian Settlement, a selected Reconstruction

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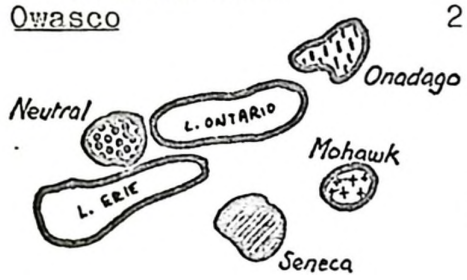
DIAGRAMATIC REPRESENTATION OF THE MAIN THEORIES ASSOCIATED WITH THE IROQUOIS CONTROVERSY.

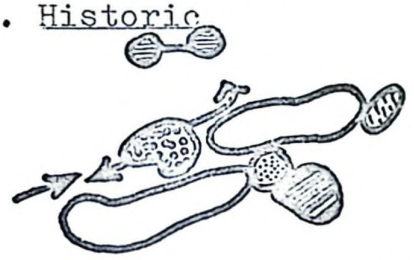
R.S. McNEISH (1950)

1. Owasco — c. 1000 A.D.



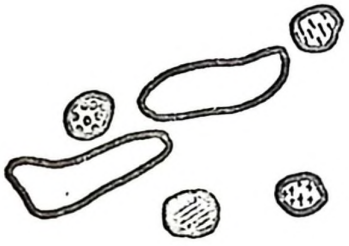

2. Transitional — c.1000-1500

3. Historic — c. 1500-1650's



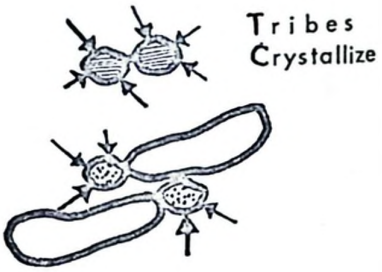
F.RIDLEY (1952)

1.



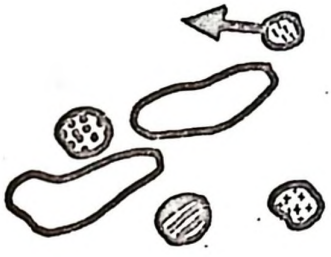
2. Lalonde


3.

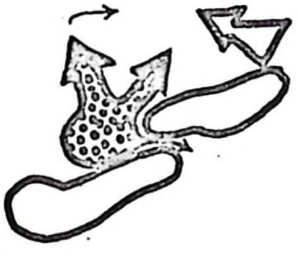



J. V. WRIGHT (1964)

1.



2.



3.

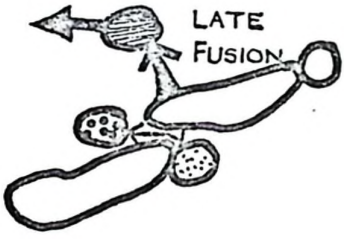



FIG 9

CW'65

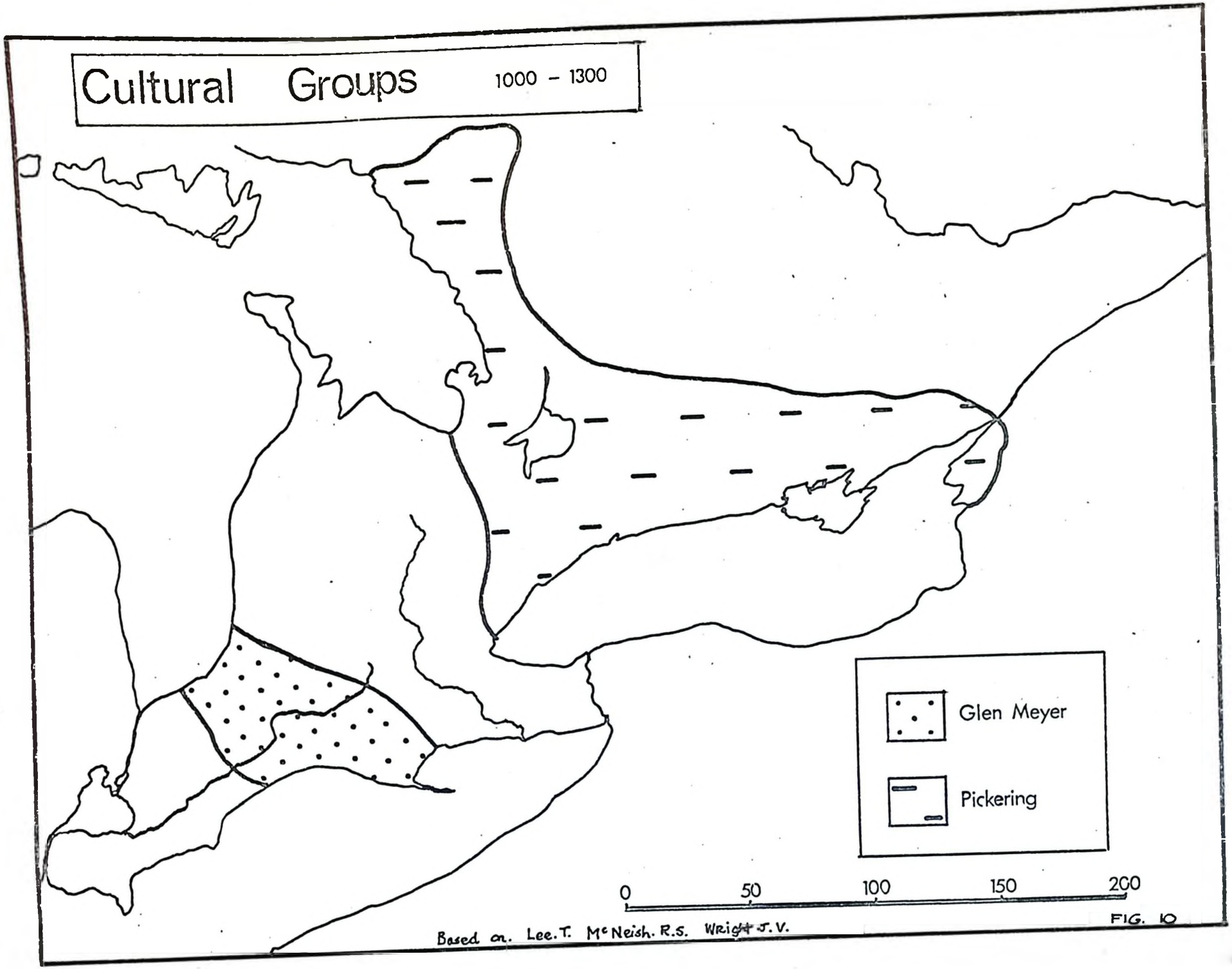
## II.1. The Period of Indian Settlement.

It would be unrealistic to assume that the Europeans were acquiring the territory of Upper Canada as an area that had been frequented only occasionally by itinerant savages. The small groups of Mississauga Indians in the late 18th century gave no indication of the extensive Neutral nation that had once dominated the region. Archaeologists have traced the evolution of the four historic tribes (Neutrals, Eries, Hurons, Petuns) from early times to their destruction by the Iroquois in the mid 17th century. Conflicting interpretations of the excavations, the 'Iroquois controversy', have been concerned with the reconstruction of the evolution and migrations of the tribes to their historic locations. (fig. 9 ) In addition to the archaeological information, the early French Missionaries left several detailed accounts of the Indians in the area.

From these sources of information, a selected reconstruction of the Indian period has been possible. Emphasis has been placed upon showing the antiquity of settlement on the sand plains since this has a bearing upon the oak opening problem. Secondly, the innovations of cultural goods and certain plants through time have been the subject of several verbal models of early diffusions.[1] This theme is continued in the discussion

of relic vegetation around former sites, and the potential contribution that original land survey information could make to this problem.

Finally, the Indian period is reconstructed so that one of the variables that may have been important in the European settlement that survived in the form of relics, can be understood. Since Turner's 'Frontier Thesis' was originally expounded[2] the contribution of the Indian to the pioneer and then the pioneer to the American culture has been a major theme of American historiography.[3] This theme of continuity and palimpsets reappeared in occupance studies such as Meyer's reconstruction of human occupance in the Kankakee Marsh area.[4] In isolating the variables of early pioneer settlement it is therefore useful to investigate the contribution of the primitive period.


Cultural Groups 1000 - 1300
Glen Meyer
Pickering
0
50
100
150
200
Based on. Lee. T. McNeish. R.S. Wright J.V.
FIG. 10

## II.2. The Early Ontario Phase circa 1000-1300 A.D.

The early Ontario period developed from the earlier Point Peninsula groups that had occupied south west Ontario. There have been three type sites found in the study area that are part of fifteen such sites that stretch from Lake Huron to Lake Erie. (fig.10 )[5] According to Lee, the sites tend to occur on sandy soils, often between small ravines, but may be found on hilltops where water supplies are not readily apparent.[6]

The Goessens, Too and Reid sites are early components of this c 1150-1200. (fig.10 ) The Goessens site covers about 7 acres, on high sandy soil approximately 10 miles from Lake Erie. The Too and Reid sites are located near a small stream only two miles from the shore of Lake Erie.[7] The Goessens site was readily apparent on the surface, revealed by irregular growths of vegetation, concentrations of sherds and bones. Test trenches showed that undisturbed ash beds occurred within two inches of the surface.[8] From the remains excavated at the site, it appeared that the village had been fortified. The basic economy was agricultural, indicated by the presence of corn and adzes, with hunting and fishing forming important secondary roles.[9]

The Early Ontario phase was terminated abruptly by conquest. The Pickering group, who had been developing in Eastern Ontario expanded westwards and conquered the Glen Meyer group, the resulting fusion giving a homogenous culture over the whole of southern Ontario. (fig.11 )

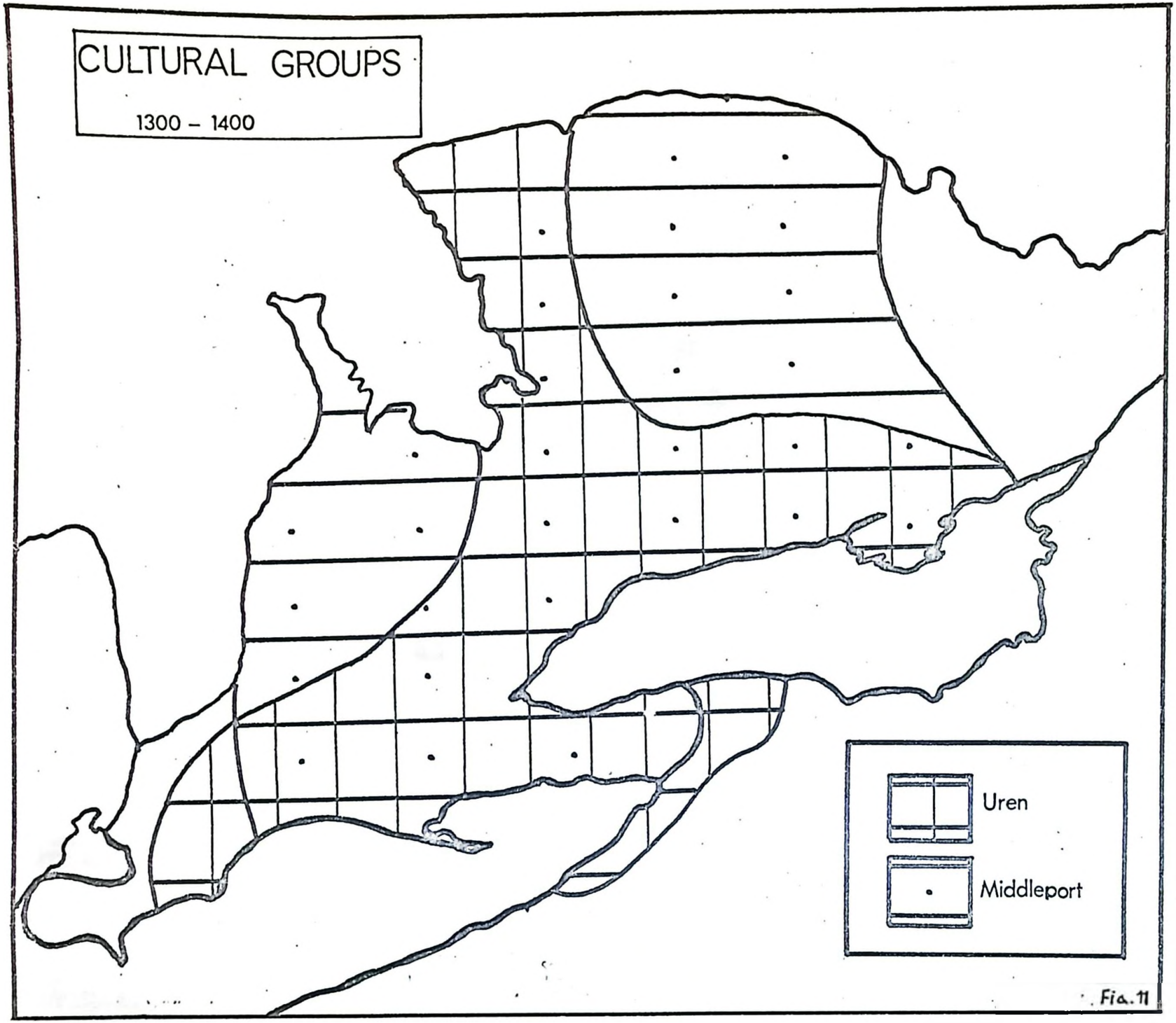



Fig. 11

Middle Phase 1300-1400.

The fusion of the two groups giving a culture that extended over a large area, is typified in the early phase by the Uren sites and in the later phases by the Middleport excavation. (fig.11 ) The Uren sites are distributed in a broad arcuate curve mainly west of the Grand River, the largest concentration occurring to the north of the Long Point region.[10]

The location of sites show a continued preference for the sandy soils, however, it is also apparent that the sites are located close to clay areas, and along tributary streams of Lake Erie. From material excavated at the Uren site in Norwich township, it was evident that basic economy had continued with the addition of sunflower seeds to the plants used.[11] Village sites were not only more numerous, but were no longer fortified.[12]

The distribution of sites indicate a movement away from Lake Erie.[13] The increase in the number of village sites can be related to the practice of shifting the site every few years as the local resources became depleted and the population increased.[14] Compared with the early phase the pattern is one of small scattered camp sites with occasional large villages.[15]

The latter part of the Middle phase (Middleport) is typified by a movement towards the larger streams with a continuation of the basic economy of agriculture, hunting and fishing. Defensive considerations were still unimportant

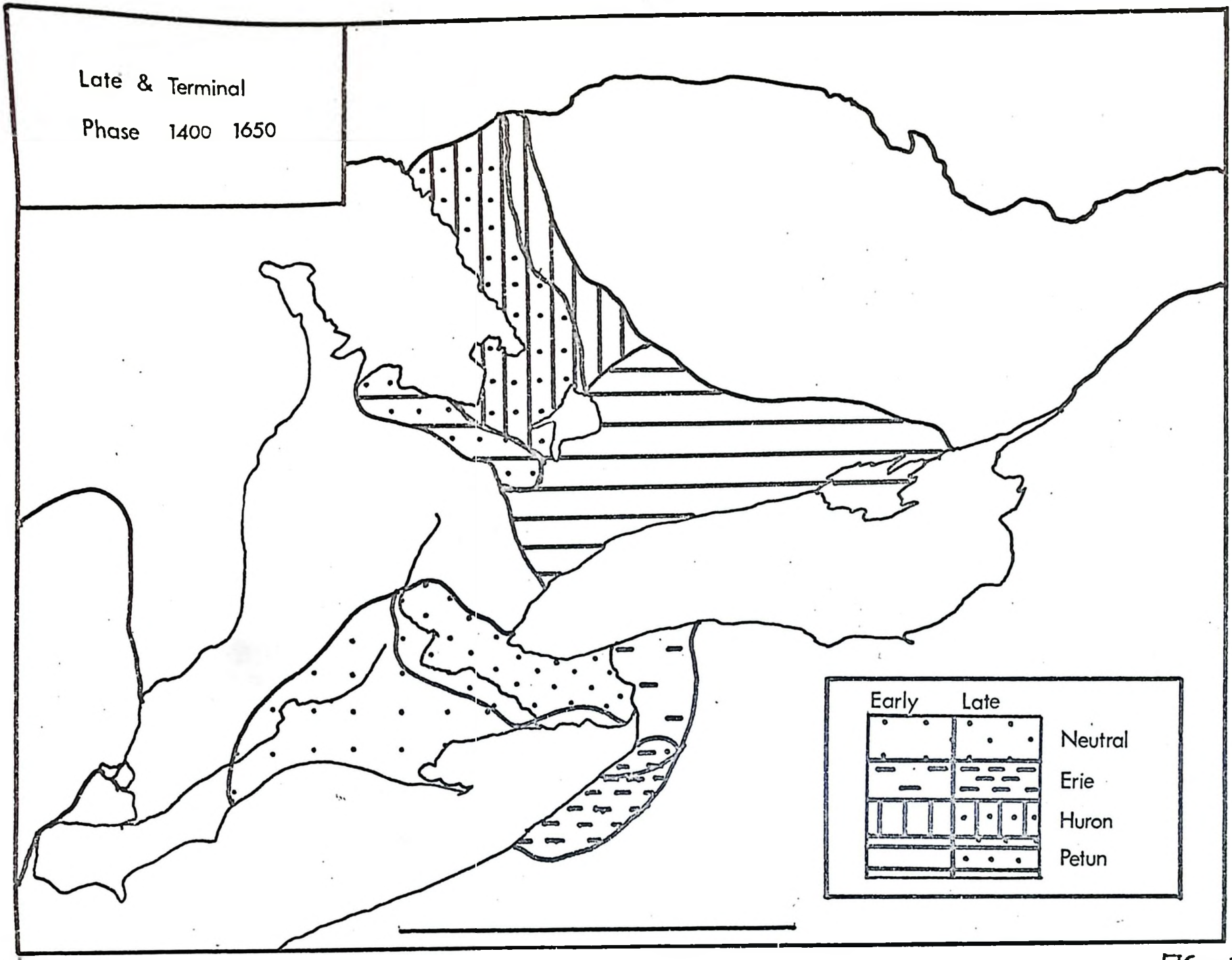

Late & Terminal
Phase 1400 1650
Early
Late
Neutral
Erie
Huron
Petun

FIG. 12.

but there was a continuation in external contact, indicated by the innovation of plum pits at the Middleport site.[16] Increasing population gradually led to the migrations and the historic location of the four main groups in Southern Ontario.

Changing Geography of the final period 15th-17th century

The final period can be divided into a prehistoric and a historic phase. Despite the migrations that were taking place, the Neutral occupation of the Northern area of Lake Erie continued. In the prehistoric phase the emphasis is upon defended sites with earthwork systems, while the historic period is characterised by a withdrawl to the Grand River region and contact with the Europeans. The Neutral occupation was terminated with their defeat at the hands of the Senecas, in the mid 17th century.

Prehistoric phase

Documented archaeological information gives no indication of Neutral occupation of the Long Point region during this period, although surface finds have indicated a late Neutral site existed in the Simcoe area.[17] The distribution of the prehistoric or earthwork-site phase is shown in figure 12 , indicating a southwesterly concentration. During historic times, the Neutrals were in conflict with the Fire Nation to the west,[18] which could account for the earthworks in this area.

The location of earthworks are distant from navigable water while the actual size of the villages are much

larger, compared with the earlier periods. The economy of the earlier period was maintained, cultivation of corn, beans and squash (appearing for the first time) with hunting and fishing forming secondary roles. Thus the prehistoric phase is typified by large defended villages based on the traditional economy of agriculture, hunting and fishing. However, through a process of migration and crystalization the cultural unity that was once characteristic of the whole of Southern Ontario, has given way to regional differentiation. The major difference being between the Huron-Petun branch to the north and the Neutral-Erie branch, to the south.

The Historic Period.

The archaeology of this period has been dealt with by Wright, Ridley and White. White is concerned with the extension of the Neutral and Erie sites east of the Niagara River.[19] Ridley is concerned with the sites east of the Grand River and is convinced that the historic Neutral tribe did not extend west of the Grand River;[20] Wright states that the Neutral occupation did extend west of the Grand River but not as far west as the Long Point region.[21] However, the Long Point Region can be recognised as being part of the Neutral territory, playing the role of a border area.

From the archaeological information we can now turn to historical accounts of the Neutrals. The early European accounts can be chronologically arranged in the following order:-

| | |
|---|---|
| 1616 | Champlain mentions them |
| 1616 | Brule visits them, no accounts |
| 1627 | Dela Roche Daillon visits them |
| 1640 | Brebouef and Chaumont visit them |
| 1654 | Neutrals destroyed |
| 1669 | De Casson and DeGalinee cross area and note former village sites on the Grand River. |

Dela Roche Daillon visited the Neutrals in 1627 as a Recollect Missionary and described their hunting practices as follows,

> 'the deer with which this country abounds are easily captured for they have but little sense of fear and the Indians drive them into wedge-shaped enclosures'[22]

Daillon was well treated by the Neutrals and reckoned that the population was comprised of 28 villages besides several small hamlets.[23]

Several years after Daillon's visit the Neutrals were visited by Brebouef and Chaumont (1640) who have left several references to their way of life,

> 'The land as they do not cultivate it, produces for only 10-12 years at the most'[24]

> 'They have Indian corn, squash and melon in great abundance (and) fish... There are also great numbers of turkeys that go in flocks in the woods and fields'[25]

The Missionaries also noted that there were about 40 villages with 4,000 warriors.[26]

During the historic period the territorial extent of

# Section of Sanson Map 1656

showing missions to the Neutrals

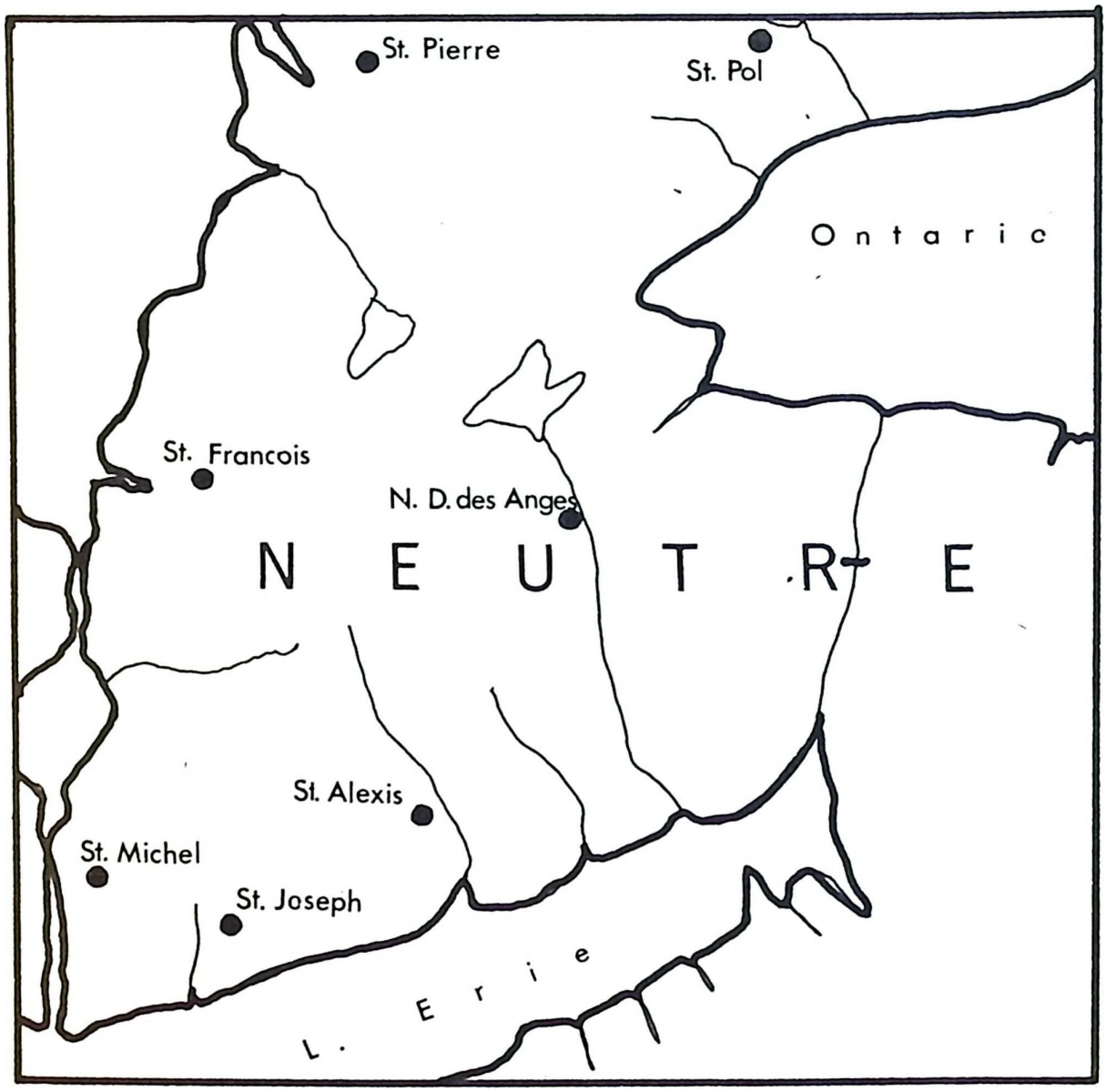



fig 13

the Neutral Nation has decreased with the core area generally east of the Grand River. It would appear that the Long Point region was still part of the Neutral territory, although significant for hunting purposes only.

In the year 1654 the Neutrals were destroyed by the Senecas, who had already destroyed the Hurons to the north. Ten years after the destruction of the Neutrals, Dollier and Galinee set out to explore the Lake Erie region.[27] In the course of this exploration they crossed the former Neutral territory, descending the Grand River and wintering in Norfolk County. In the Long Point Region they made several references to the great variety of vegetation and game.[28]

After the destruction of the Neutral, the Iroquois used the area as a hunting ground - in the 18th century small bands of Mississauga wandered into the area - until the coming of the Europeans.

Cartographic Reference

To complete the archaeological record and the historical accounts, reference will now be made to the cartographic material available. There are three maps that have relevant information concerning the Long Point Region:-

(a) Sanson's Map - 1656
(b) Galinee's Map- 1672
(c) Bernou's Map - 168?

Sanson's map (fig. 13 ) shows the distribution of the main Neutral villages; St. Michel, St. Joseph and St. Alexis are

# A Section of the Bernou Map c1680

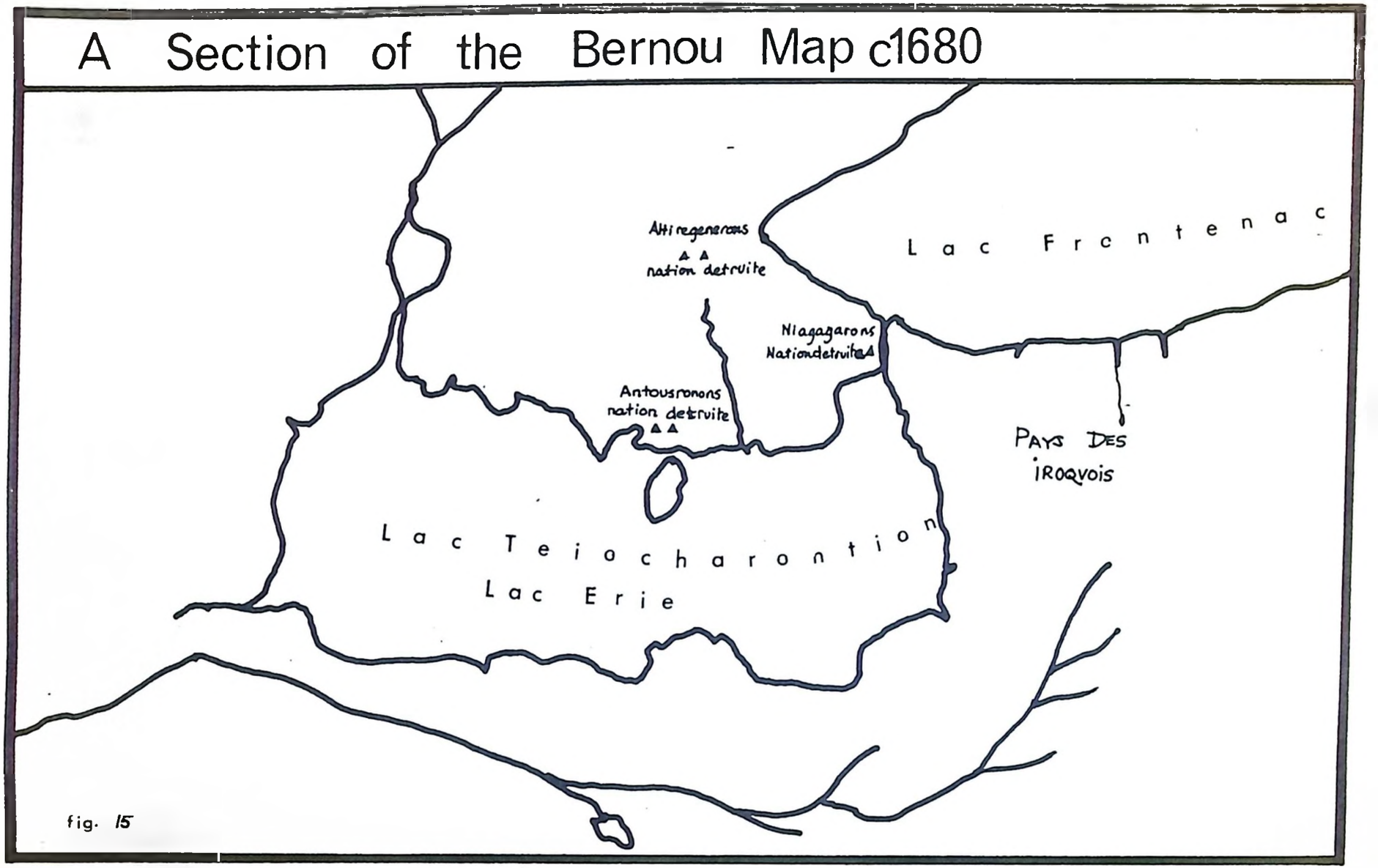



fig. 15

# Galinée's Map 1670 (Lake Erie section)

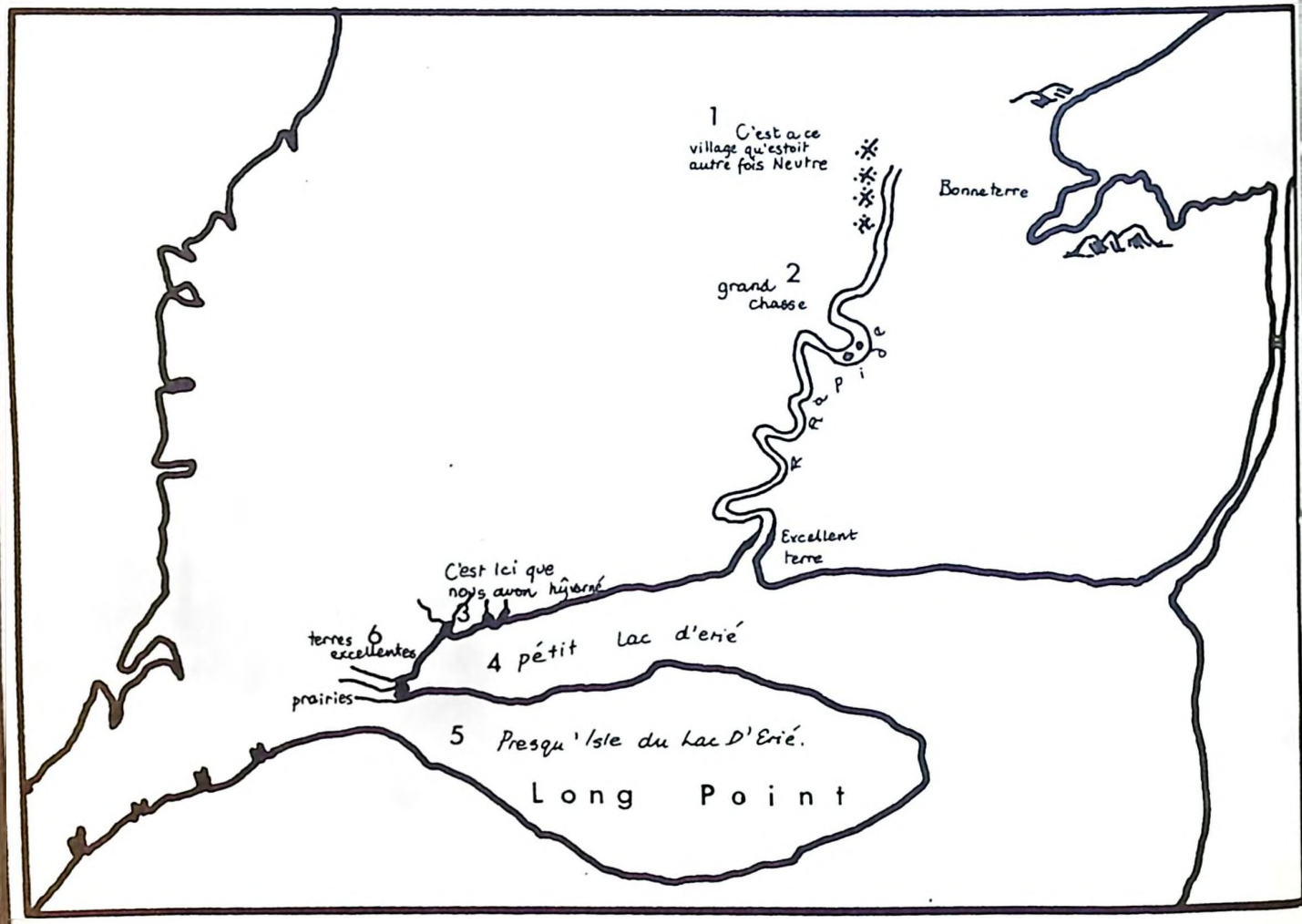



fig 14

in the western section of the Neutral territory; so far, these have not been identified by archaeological information. The map shows the Grand River and possibly Big Creek. Thus, St. Alexis could fall within the Long Point region.

The Galinee Map (fig. 14) indicates the destroyed villages along the west bank of the Grand River, and locates the wintering place of the Sulpitians. The Galinee map makes no mention of the former mission sites apart from the abandoned village along the Grand River, that could be related to Notre Dame Des Anges on Sanson's map. The Galinee expedition travelled by canoe and would therefore miss the inland sites of the former missions, if their location according to Sanson is correct.

The Bernou map on the other hand, shows a greater knowledge of the Lake Erie Region in terms of position and direction. (fig. 15) Bernou indicates a destroyed village west of the Grand River and north of Long Point. This could be equated with St. Alexis of the Sanson Map. White suggests that the Bernou map could be quite accurate since Bernou derived information concerning the Lake Erie Region from Lasalle.[29]

II.3. Relics of the Indian Period.

One of the major relics of the Indian period that persisted until the European settlement was the Indian trail. The distribution of trails as they existed in the late 18th and early 19th century are shown in figure 16. The main trail that concerned the Europeans was the portage between Brantford and the Upper Thames.[30] Connecting the Long Point area to this trail was a path that ran along the morainic ridge through Townsend, Oakland and then to the middle Grand River Valley. It is marked on the original survey map as,

'the trail from the Mohawk village to Long Point'.[31]

In the area of the Burford plains, this trail branched so that another path followed the morainic ridge through Windham.[32] At Waterford, (Sayle's Mills) the trail branched yet again, with another section proceeding westwards. This branch of the trail is not mentioned in the early survey records, although Hambly mentions the gravel (of the former beach level) along which the trail ran, as he ran the concession lines.[33]

In 1805, £ 250 were petitioned for a proposed road along this trail.[34] Coyne suggests that this was the trail that connected the western outposts of the Neutral nation to the core area of the Middle Grand.[35] The section that passed through the rear concessions of Walsingham later became known as the Bostwick Road in the early 19th century. This trail appears to be the only one that crosses the area

as a through trail, in a general east-west direction.

Another group of trails crossed the area connecting the Long Point region with the Lower Grand River area. While surveying the Indian Line for the Grand River Tract Augustus Jones noted a path crossing the 8th concession,

> 'to the Long Point' [36]

In the same year, while surveying Walpole Township Thomas Welch noted at Lot 10 of the 14th Concession,

> 'an Indian path to Cooley's in Townsend, and Smith's in Charlotteville' [37]

Other minor trails crossed Windham, and connected the Lower Grand to the shore of Lake Erie.[38]

The lakeshore may have been used as a trail, but this is not apparent from early survey information. A trail existed by the time Aitken surveyed the front lots of Charlotteville and Woodhouse,[39] but several squatters had already moved into the area and could have cut out the trail, since they arrived by canoe.

In summary, the Indian trails were the most readily apparent relic of the Indian period visible to the pioneers. The trails bear a relationship to the physical geography in that they tend to follow morainic ridges.

Other Relics of the Indian Period.

The possibility that the oak plains were the result of Indian activity has already been discussed; until a more systematic study of soil and pollen profiles has been undertaken the question must remain in doubt. More accurate

information can be furnished concerning the actual sites of former villages. Heizer states that habitation sites have had a considerable local effect upon soils and plant cover.[40] Insofar as the Indian sites in the Great Lakes Region are concerned, Yarnell states that this has not been the case and considers that excessive leaching and small refuse have resulted in a rapid return to the 'natural vegetation'.[41] A more important consideration is the effect of European colonisation and the destruction of the exotic plants around occupance sites. Yarnell does not appear to have made use of the information available from survey records concerning the vegetation of sites, or aerial photographs concerning vegetation and soils. The survey information was usually compiled before European occupation and disturbance of the sites occurred.

In figure  are plotted survey references to certain fruit and nut trees, along with the distribution of known Indian sites. While these trees are components of the Carolinian biotic province, their location on or near Indian sites and their absence elsewhere could indicate that these species are relics of the Indian period. Even if at this stage of our knowledge of the ethnopalaeobotany of Southern Ontario, it cannot be said definitely whether the fruit bearing species were imported by primitive man, it can be said that the likelihood of observing these species increases, as one approaches an Indian habitation site. In criticism of this, it can be argued that species such as the plum, prefer


DISTURBED SOILS.
IRREGULAR VEGETATION GROWTHS.
WINTEMBERG'S EXCAVATIONS (1928)
ASH BEDS.
INDIAN RELICS:
(S. NORWICH TOWNSHIP, OXFORD COUNTY)
HABITAT SITES
showing relics
from Uren times

moist bottom lands, while most Indian habitation sites are located close to streams. Thus, the occurrence of the two is merely coincidental, the Indians were using the resources of the riverine zone.

Clearly, the material furnished in this chapter suggests a possible relationship, between habitation sites and the local biogeography. Until all the sites in Southern Ontario have been investigated in this respect, the relationship is possible rather than probable. However, as a final note, both Lee and Wintemberg have remarked on the irregularities in the local soil and vegetation pattern about Indian sites.[42]

Much of the discussion in this section has been tentative in the light of archaeological controversy and incomplete data. However, certain regularities in the Indian settlement were observed, while a pattern of trails were left as a legacy to the European settlers. How significant the Indian trails were in influencing the course of European settlement will be seen in the next section.

## II.4. Significance of the Indian Period.

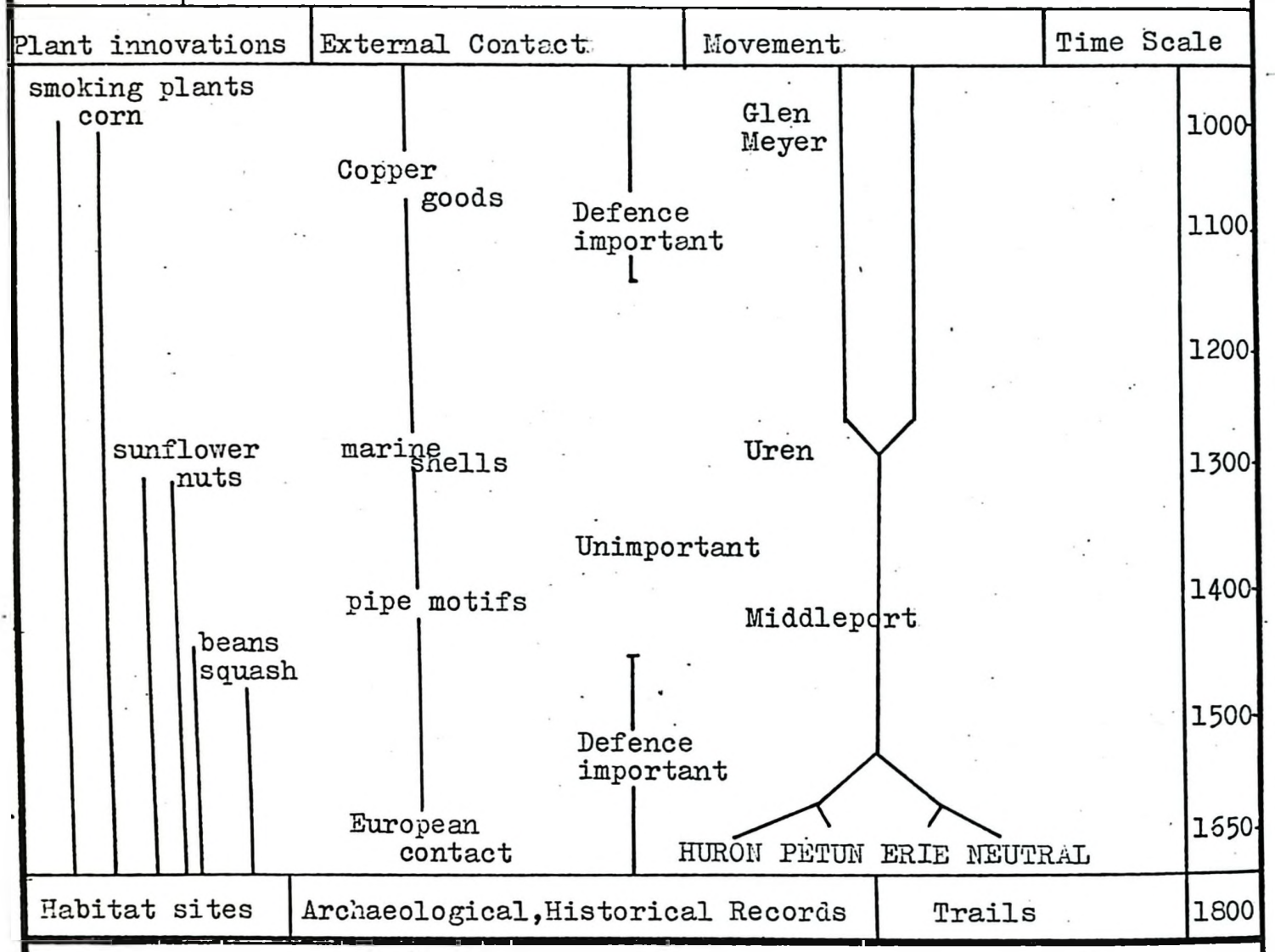
In figure can be seen the main elements of the Indian period of settlement - arranged in a descriptive - diagramatic model. Thus, from the archaelogical and historical record it is certain that the Long Point area was occupied by primitive groups practising agriculture, in addition to hunting and collecting for several hundred years. Two main features are significant, human movements and man/plant relationships. (fig.17 )

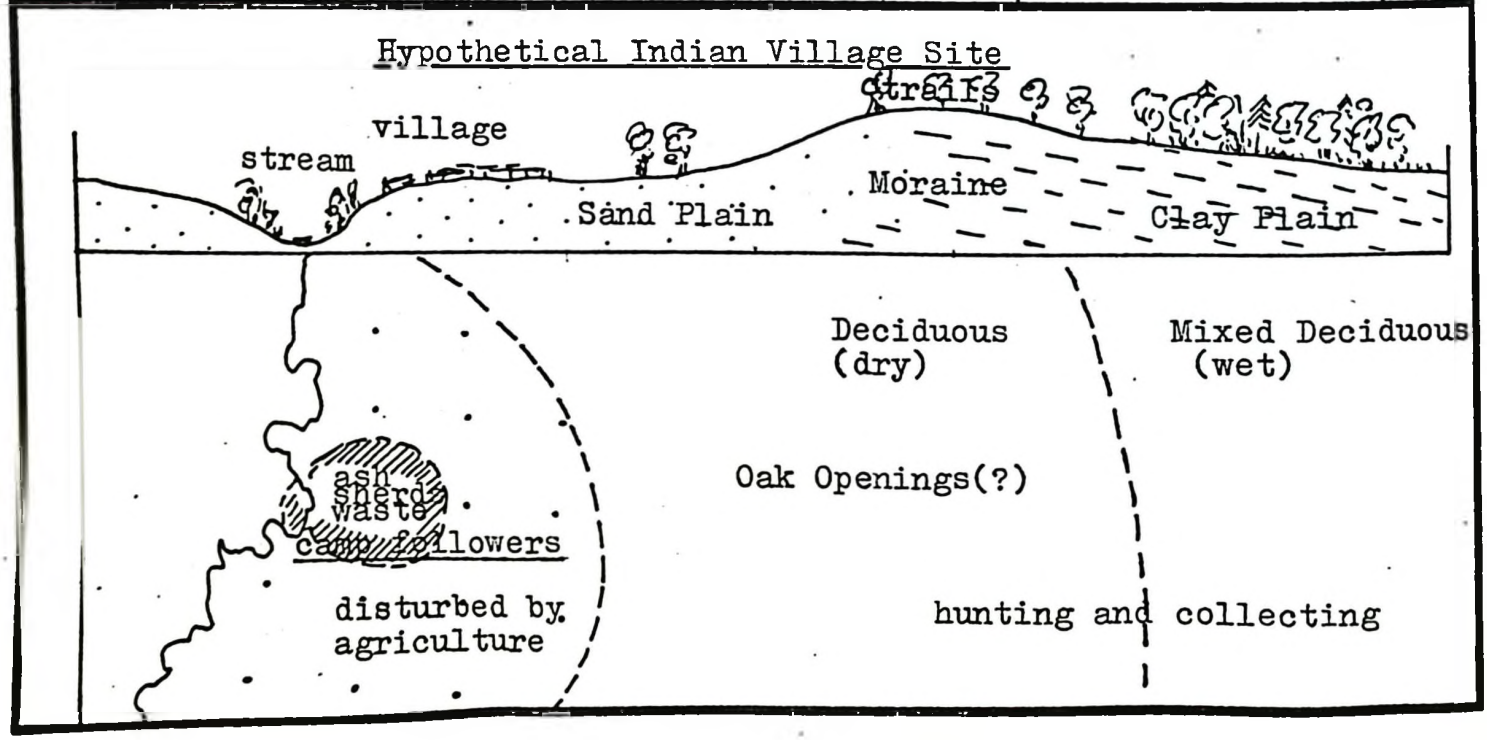
During the time period under consideration it appears that settlement gradually diffused inland, northwards across the sand-plain. This can loosely be classed as an internal movement the result of factors as yet undetermined. However, certain regularities are apparent in the selection of village sites during this movement through time and space. Although the number of sites is relatively small they invariably locate on the edge of the sand/clay areas, possibly to derive the benefits of a greater plant variety.

Evidence of external movements is seen in the migrations, conquests and contact with other groups. The main relic of the Indian period, the trail, is a vestige of human movement significant in its contribution to the evolution of succeeding periods of occupance.

From archaelogical evidence it appears that the usual length of occupation of the village sites was about

Fig.17. Significant Features of the Indian Period, indicating the broadening of the plant base, the external contacts, internal and external movements, and hypothetical village settlement.



ten years: thus, in that time there would exist around the villages certain zones of exploitation (possibly c.f. von Thunen's rings). (fig. 17) In the immediate zone of the village, soils would be disturbed by agriculture, ash and other waste (see aerial photograph). Camp followers and other exotic plants would also characterise the habitat site, possibly indicated in the distribution of certain fruit trees. (fig. 16) Further away from the village the natural habitat would be disturbed for fuel, hunting and collecting. In addition, certain exotic plants would be introduced into the area. Although Sauer has placed great emphasis upon fire in man-environment relationships, until more pollen surveys have been conducted, this factor, especially in relation to the formation of the oak openings, must remain uncertain.

Although the human settlement patterns during the Indian occupance period are a dim outline bereft of detail, it is nevertheless certain that the Long Point area experienced one, possibly several human movements, long before European settlement.

While it has been possible to describe the Indian period of settlement and focus on relative data, any analysis other than verbal is still very difficult. However, it was possible to describe a hypothetical Indian settlement based on the material examined.

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# Part III

## The Early European Settlement, 1790-1825.

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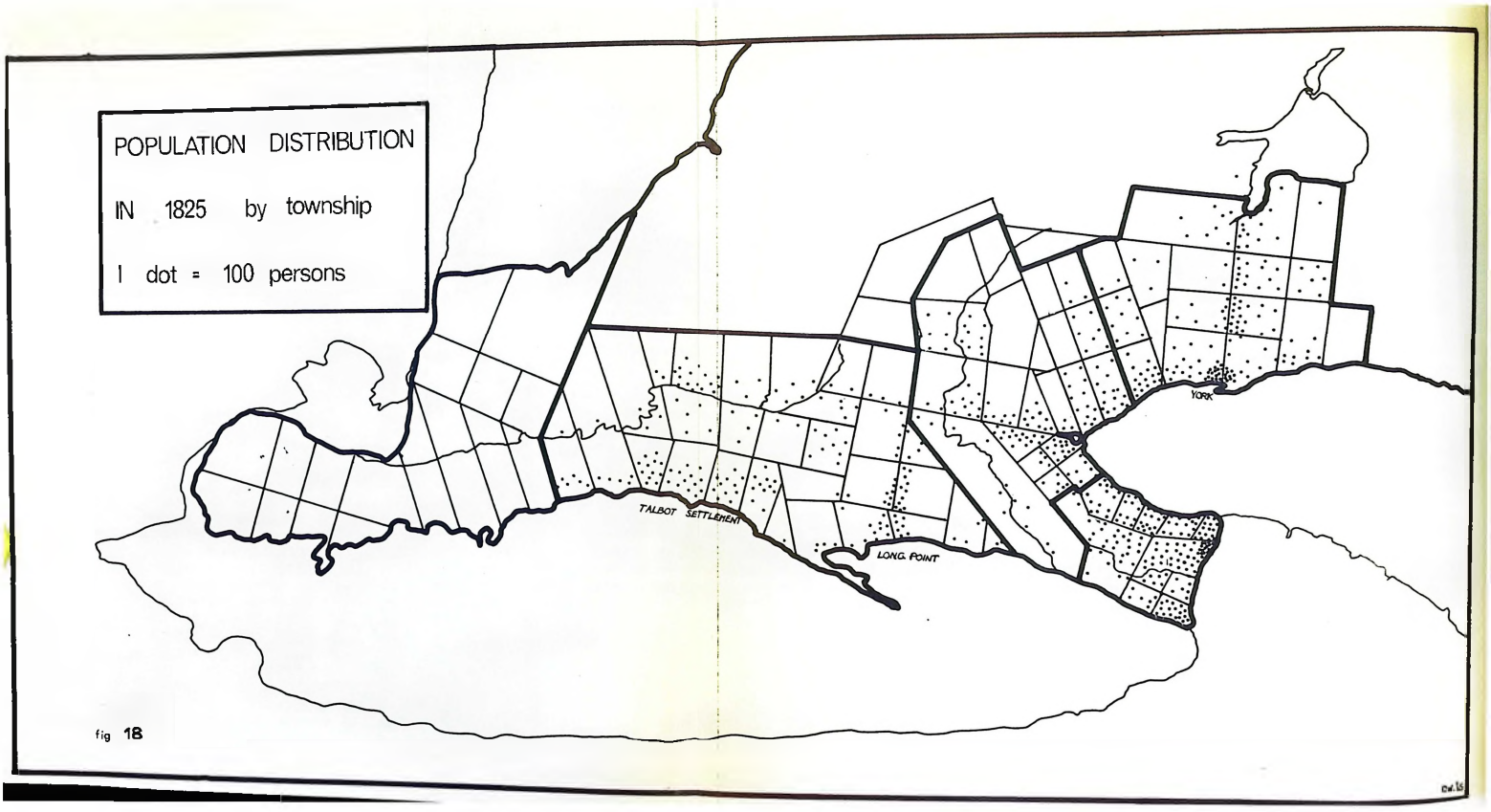

POPULATION DISTRIBUTION
IN 1825 by township
1 dot = 100 persons
YORK
TALBOT SETTLEMENT
LONG POINT

fig 18

## III.1. The European Settlement and the Distribution of Population in Upper Canada, 1825.

The Indian sequence of occupation was terminated with the gradual movement westwards and northwards of European settlers. The Loyalists initiated the movement but were soon out-numbered by increasing numbers of Americans. By virtue of its position at the edge of Lake Erie and close proximity to the Niagara land bridge, the Long Point area was particulary accessible during the early period. By 1825, the first population statistics for the Province become available making it possible to see the relative advantages of its position. (fig.18 )

In addition to the concentration at the Long Point, population was concentrated along the shore of Lake Ontario from Niagara to York; along the military highways of Dundas and York Streets and gradually decreasing into the interior. Population along the shore of Lake Erie was concentrated however, in a series of clusters. The concentration of settlement at the Long Point area was separated from the Niagara region by the sparsely settled Grand River Tract, separated from the Talbot settlement to the west by unsettled land, but joined to the Dundas Street settlement in a linear fashion.

Other indices can be employed to show the distri-

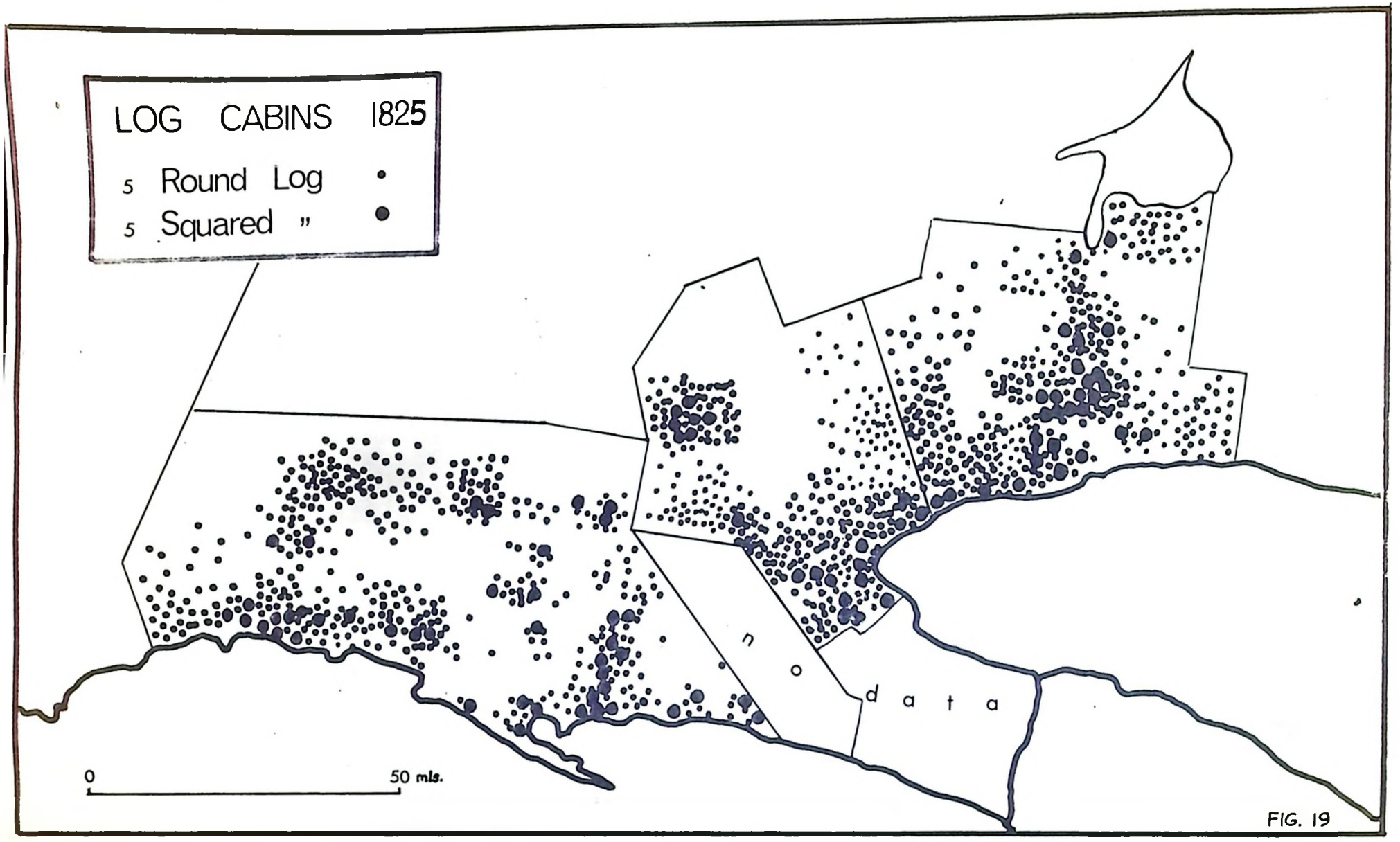



FIG. 19

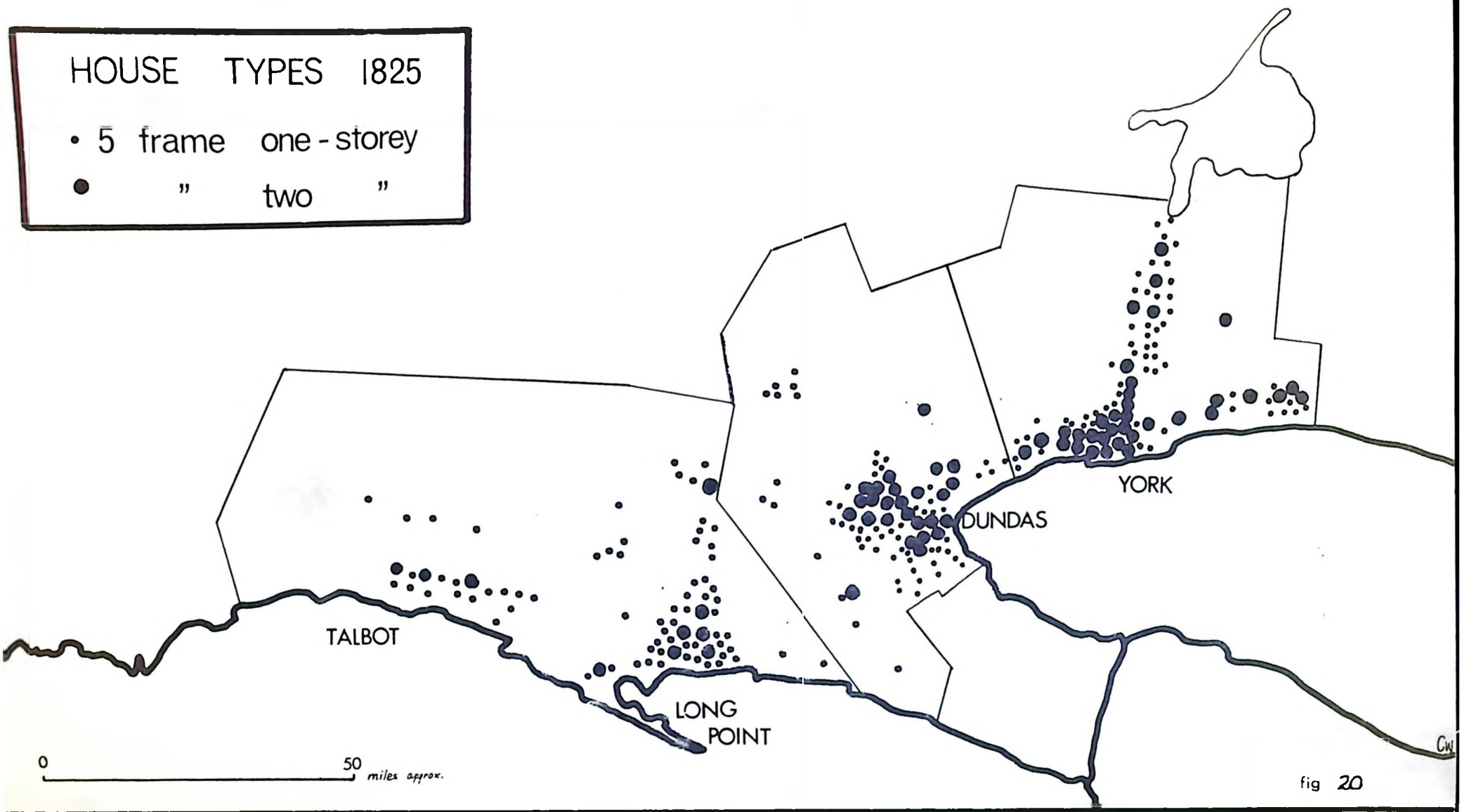

HOUSE TYPES 1825
• 5 frame one-storey
● " two "
YORK
DUNDAS
TALBOT
LONG
POINT
0
50
miles approx.

fig 20

naturally reflects the pattern of population distribution discussed. (fig.19 ) However, the distribution of houses brings out a different pattern with distinct clusters at York, the Dundas Valley and at the Long Point area. (fig.20) One can assume that clusters of houses reflect areas of relatively early settlement, based on the premise that the initial settlers in any area would build log cabins first and then after a few years, with the development of saw mills and an increase in prosperity, the cabins would be replaced by frame houses. Thus, the Talbot and Long Point settlements are similar in population totals, but are at different stages of development.

The three clusters apparent in figure 20 , are also areas of high percentages of cleared land. (fig.21 ) The high ratios of cleared land could also suggest that these areas were settled relatively early. However, in the case of the Long Point settlement, the high ratios of cleared land could be related to the oak openings, assuming that settlement on the plains formed a significant proportion of early locations. If this is the case, it would be a reaffirmation of Sauer's conclusions concerning the settlement of the Kentucky Barrens.[1] On the other hand, it would run contrary to the views expressed by Guillet, that the plains were unimportant in the early settlement of the province.[2]

The early European settlement at the Long Point 1790-1825 is exceptional in time and place and has already

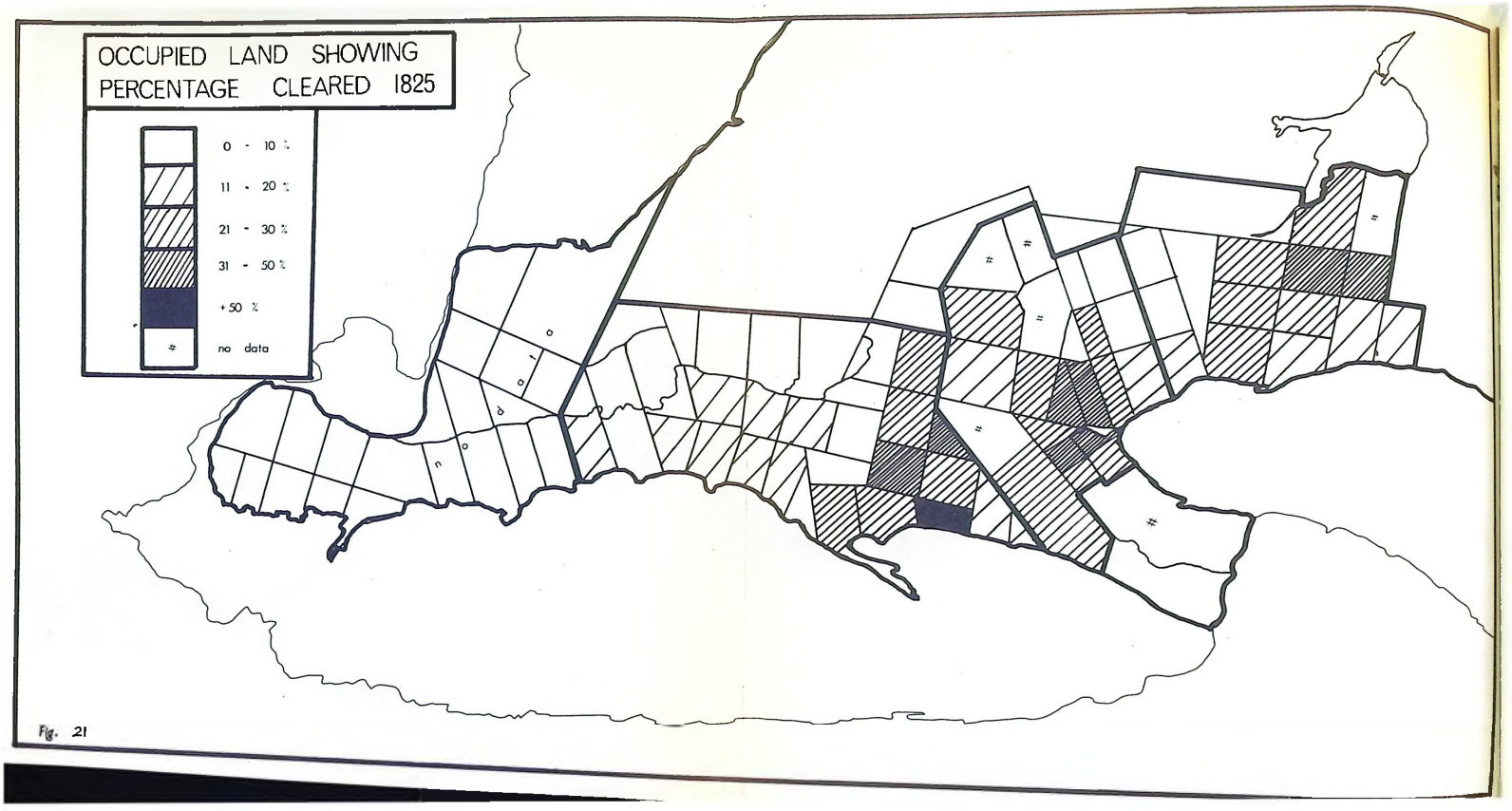

OCCUPIED LAND SHOWING
PERCENTAGE CLEARED 1825
0 - 10 %
11 - 20 %
21 - 30 %
31 - 50 %
+50 %
no data

Fig. 21

been treated in this manner.[3] However, this is considering the problem from one particular scale, the regional level, the level at which previous studies of settlement in Upper Canada have generally been conducted.[4] To really grasp the problem we must examine the settlement in detail, at the level of the individual location.

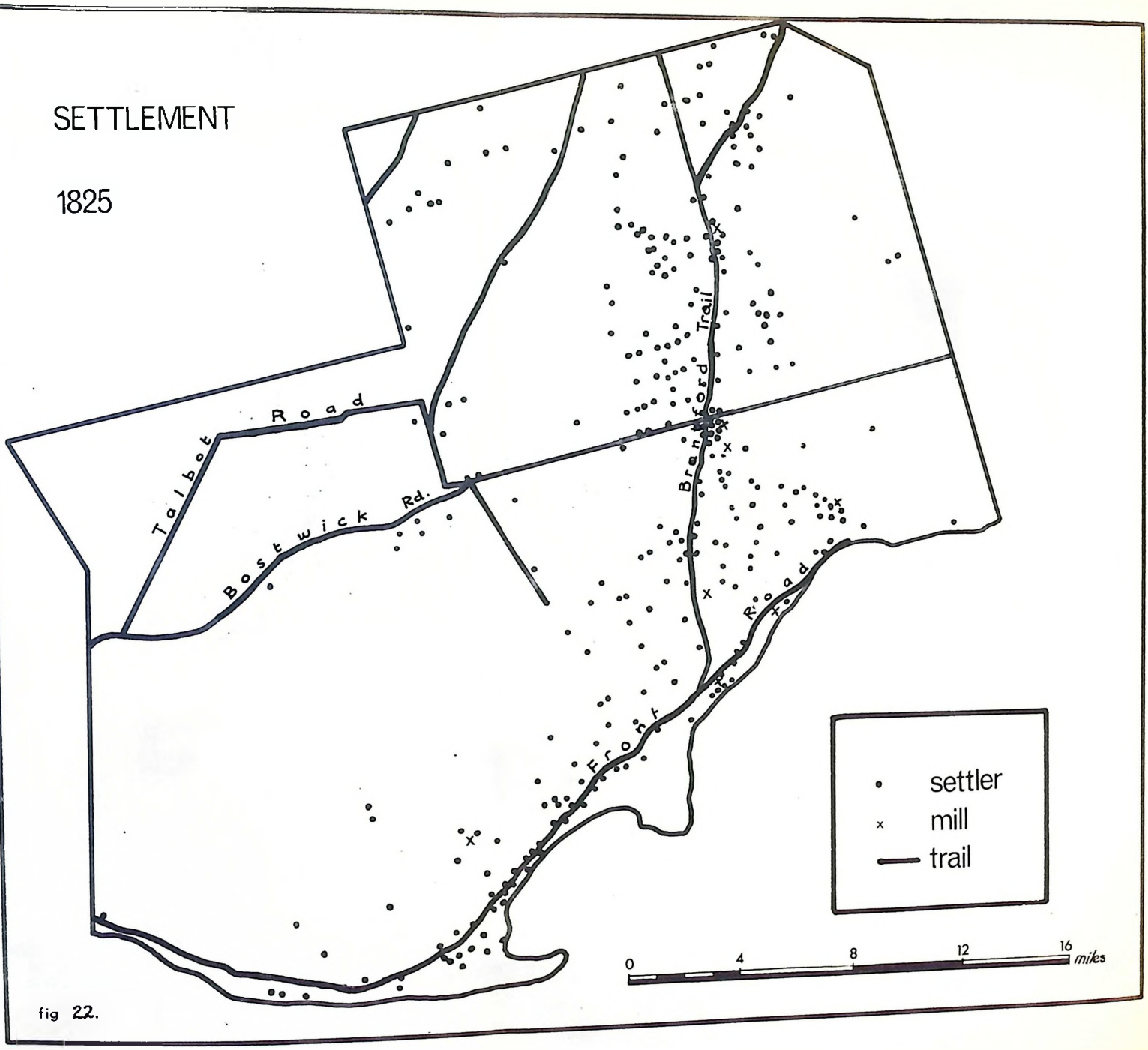

SETTLEMENT
1825
Talbot Road
Bostwick Rd.
Brantford Trail
Front Road
settler
mill
trail
0
4
8
12
16
miles

fig 22.

## III.2. The Pattern of Settlement at Long Point in 1825, together with some basic considerations of settlement evolution.

An examination of the concentration of settlement[5] at the Long Point in 1825 (fig.22) reveals that locations are distributed in a broad arcuate zone that parallels the lake front and then swings inland along the townline between Townsend and Windham. Within the main zone of population concentration are several village centres, Simcoe, Waterford, Vittoria, Dover and Port Rowan. Distinctly separate from the main zone are several outliers at Big Creek, north east Windham and Rockford: in contrast to the main area of population the remainder of the county remains unsettled.

With the pattern of settlement outlined, the problem now is to describe, analyze and perhaps explain in geographical terms. Already we have disassociated ourselves from a historical analysis by identifying the problem at a different scale of inquiry in terms of distributions of a number of individual locations rather than by its unique attributes, at the regional scale or of particular individuals or groups. Compared with the section on the Indian occupance where data was incomplete and controversial (although the potential for a more quantitative interpretation exists) a more precise analysis can be undertaken. This presupposes two conditions, that we are concerned with more than verbal precision, and that we are also undertaking the analysis in the light of models developed elsewhere,

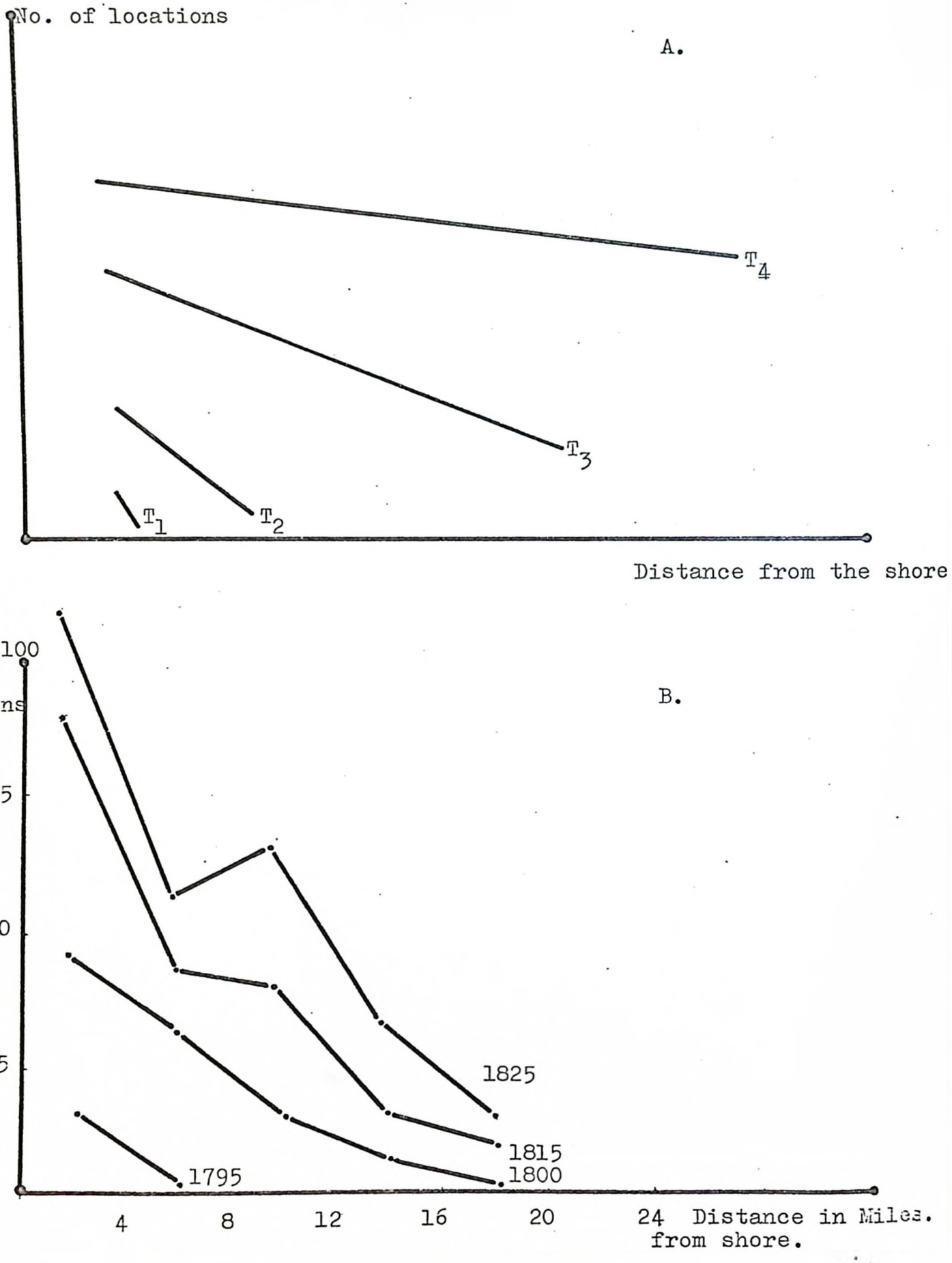



Fig 23 . A. The model of settlement after Bylund.

B. Early settlement in the Long Point area, 1795-1825

rather than by its unique attributes.[6]

Thus, assuming that our apparatus is quantitative as well as verbal, greater precision can be achieved,[7] then, description and analysis can proceed along two paths. Firstly the 'unique approach could be adopted, whereby the area and its geographic content would be treated as being so complex, that it can only be observed as a 'unique case', without means of control.[8] However, since we have the data to conduct an experiment we can take the approach that since a general theory of evolving settlement patterns has been advanced (Bylund) we can test our data within the framework of this general formulation. Since we have data concerning a mass of individuals there is also a logical basis for explanation of the observed patterns.

From his study of settlement in Inner northern Sweden, Bylund developed simple models of settlement evolution.[9] One represents the progression of settlement away from a coastline given that every part of the hinterland is of equal opportunity. This results in settlement developing in a parallel fashion away from the shoreline. (figs.23.& 24) From this basis, the various constraints that interact to modify this generalisation are measured both individually and relatively. Can this generalisation be applied to the area under consideration?

Assuming that a steady stream of immigrants are entering the area* from the direction of the lakeshore and that there are no variations in the supply or quality of

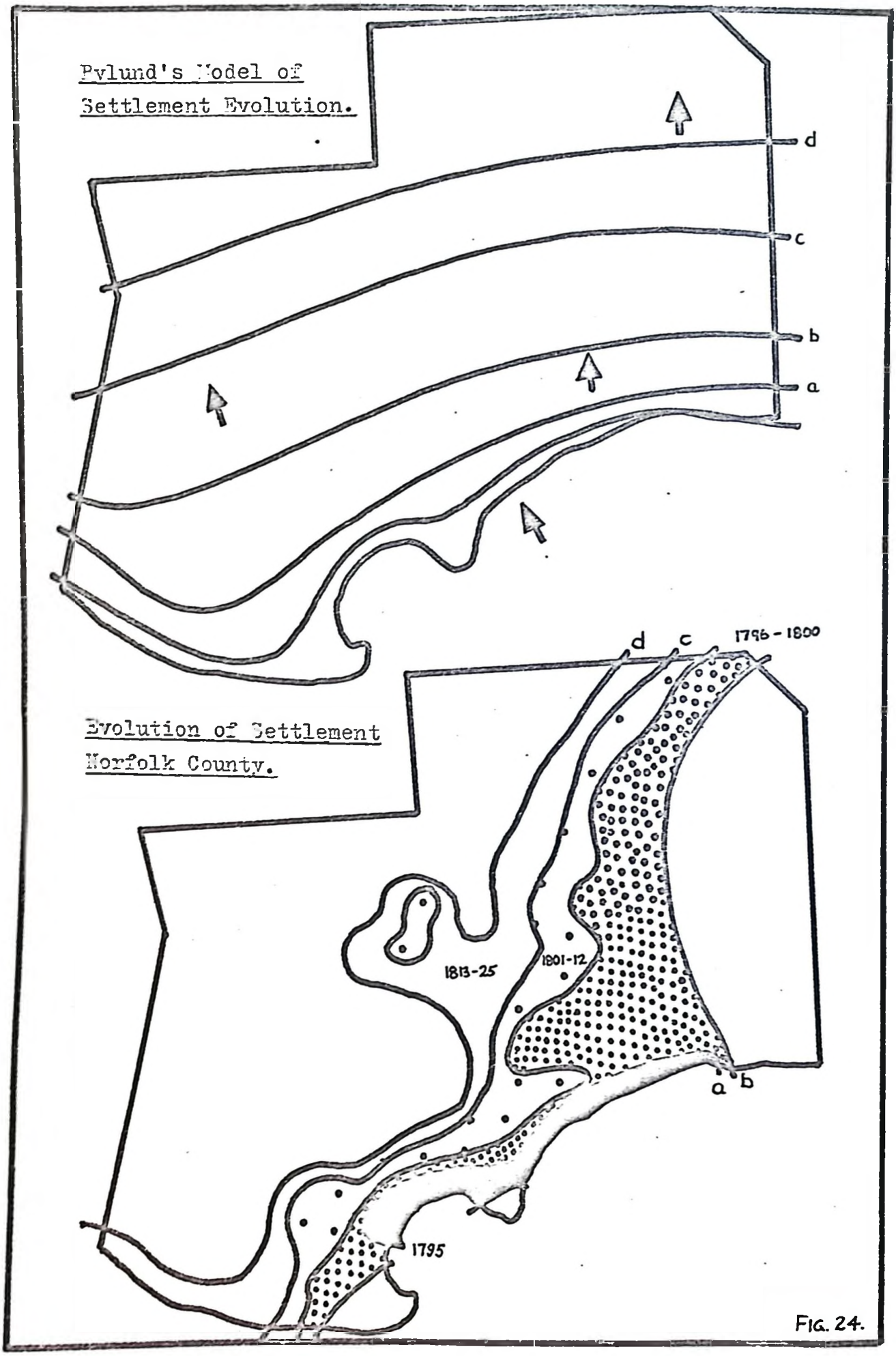

Pylund's Model of
Settlement Evolution.
d
c
b
a
Evolution of Settlement
Norfolk County.
d
c
1796 - 1800
1813-25
1801-12
a
b
1795

FIG. 24.

land it would not be unreasonable to expect a similar pattern to develop in the study area. However, a simple visual and graphical comparison in figure 23 , shows that there are several factors modifying our generalised model: this is not unexpected. A priori knowledge accumulated in the first and second sections, has shown that there was considerable variation in the physical geography, further complicated by relics of former cultures.

The approach adopted in the following analysis of the evolution of European settlement is as follows - A description of the growth of settlement has been made: this description is in verbal terms, of the locations of individual settlers, represented in a series of dot maps for years considered representative of the period. At the same time, the growth in communications is also described. Certain factors that are considered unique to the area are included, such as, the encouragement of settlement in some townships and restriction in others.

Next, an attempt is made to compare the spatial arrangement of locations in terms of distance from the lakeshore, one of the main characteristics of the Bylund model. The comparison is achieved by graphical representation of location frequencies as measured (in straight line distance) on the distribution maps.

Following this, those elements that are considered significant in modifying the hypothesised pattern are

analysed by measurement and statistical testing. Thus, having ascertained the importance of certain factors through time.

Since the analysis was based upon data that represented more than 75% of settlers who located in the area during this time period, it was considered that a logical basis was established for an explanation in terms of a general theory of human behaviour, and the unique considerations of the area under observation.

The time period terminates at 1825 not because it was considered the end of the pioneer phase, but because the growth of small central places introduces another element that is at present beyond the scope of this analysis to include.

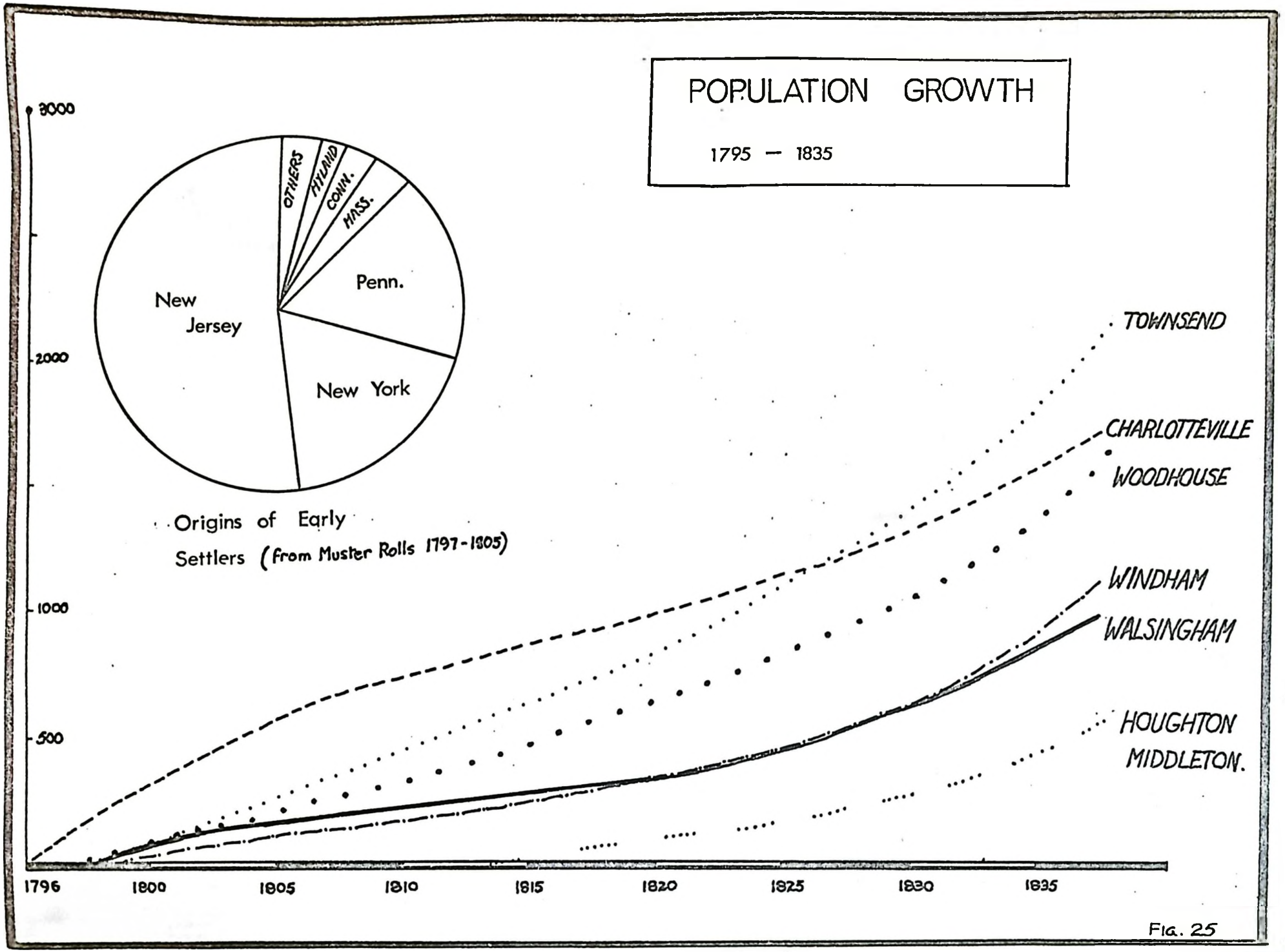

POPULATION GROWTH
1795 — 1835
3000
2000
1000
500
1796
1800
1805
1810
1815
1820
1825
1830
1835
OTHERS
HYLAND
CONN.
MASS.
Penn.
New Jersey
New York
Origins of Early Settlers (from Muster Rolls 1797-1805)
TOWNSEND
CHARLOTTEVILLE
WOODHOUSE
WINDHAM
WALSINGHAM
HOUGHTON
MIDDLETON.

Fig. 25

## III.3. The Growth of Population 1790-1825, an index of the evolving pattern.

The Long Point region was similar to other parts of Upper Canada in that it experienced the great migration westwards from the Atlantic to the interior. During this period direct immigration from Europe was restricted to a few individuals;[10] immigrants from Britain only began to arrive on the Niagara frontier in 1823.[11]

The reasons behind the great movement to the interior and the great contribution that it gave to the North American embryo, have been the subject of numerous contemporary and modern studies.[12] Reasons for the movement ranged from a desire for personal freedom, speculation and profit motives, population pressure in the east, or simply the desire to see over the next ridge, the whole process symbolizing the restlessness of the American spirit.

While the first settlers began to penetrate the area in the early 1790's, the Colonial military machine also began to indicate an interest in the area. Under the direction of Lt. Gov. Simcoe, Upper Canada was to be 'opened up' by a framework of garrisons linked by military highways. One garrison was to be established at Turkey Point to protect the trail between the Upper Thames and Burlington Bay. Civilian settlement would support the naval base and garrison at Turkey Point.[13]

However, even before the official plan began to

materialise the first families and scouts for other families, were pushing into the area. Writing to a relative 'near 15 mile creek on Niagary' in 1790, one of the Culver family wrote,

> 'Jabez, Aaron and Shoef (who all settled in Norfolk) are going to the Lakes this Spring as there is prospects of land.'[14]

In a militia return for 1799, the relative importance of the sources of immigrants is indicated by a listing of the origins of the volunteers. Most of the men had moved up from New Jersey, New York and Pennsylvania, via Niagara. (3 had come via Detroit). In view of the article by Tasker[15] and to a lesser extent the work of E.A. Owen,[16] an undue emphasis has been placed upon the United Empire Loyalist settlers who moved into the area in the first decade of settlement. Even at the time of maximum Loyalist immigration they represented less than half the total population. In the analysis of settlement it will be seen whether the 'uniqueness' of their social differentiation, the fact that they had a common socio-political background and received preferential treatment by the Government, is exhibited spatially in geographic terms.

The pioneers arrived at the frontier in batteaux, by waggon and pack horse. In a letter to Robert Nichol, (who lived for a time at the Long Point settlement) Robert Hamilton wrote of the flood of immigrants into Upper Canada at this time:-

> 'The number of immigrants to this part of the Province (Niagara) this summer surpasses anything that we have formerly known or could have suspected. On the way to this place, I yesterday passed eleven covered waggons drawn by four stout horses.... who had crossed the ferry at this place the day before (Ft. Erie).'[17]

Later in 1812, Michael Smith gave an indication of the origins of the Long Point settlers,

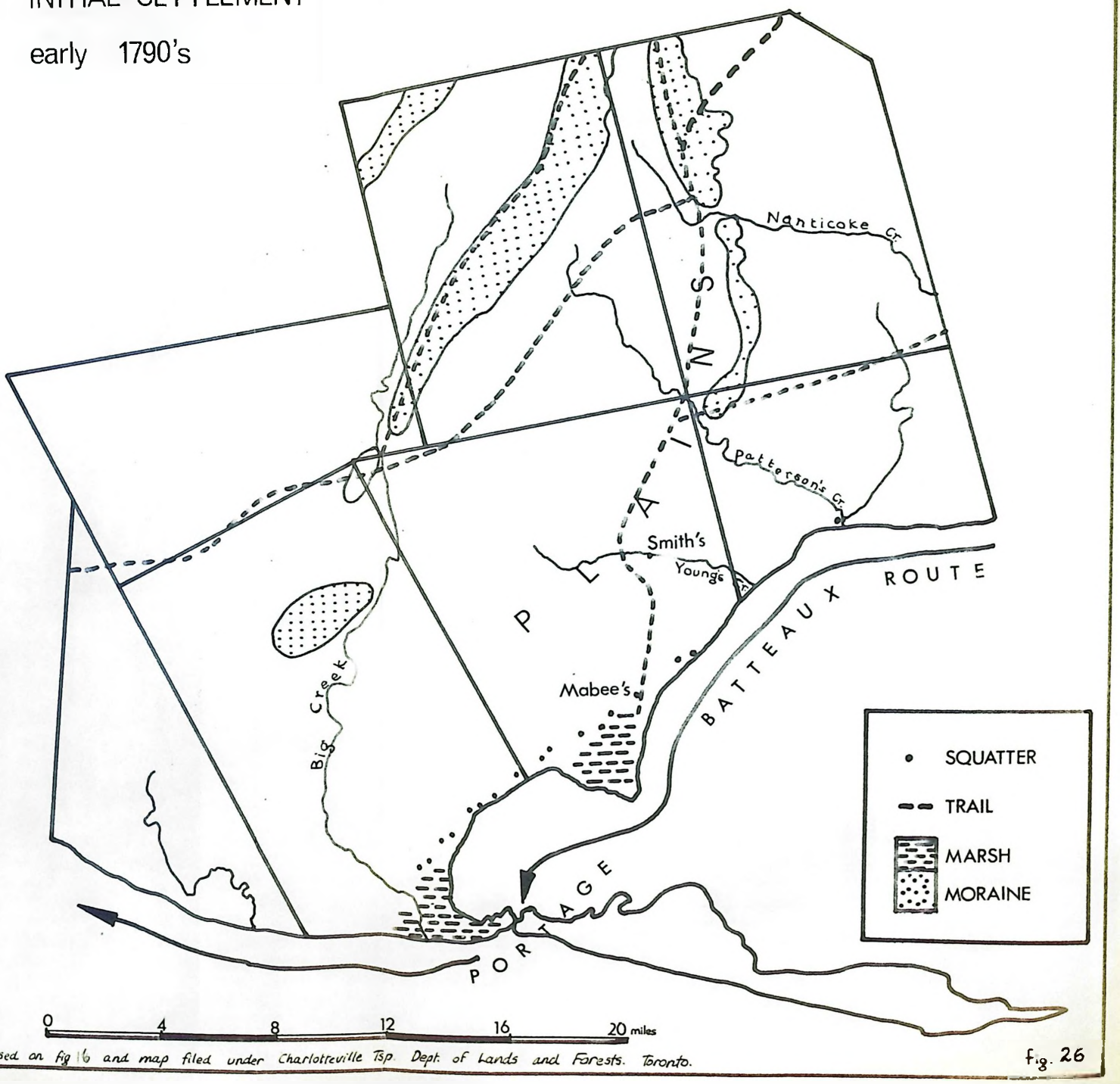
> 'Woodhouse settled twenty years with people from New York, New Jersey and Pennsylvania.
>
> Charlotteville the same:
>
> Walsingham the greater part of the inhabitants are Dutch (Pennsylvanian)'.[18]

Thus, during the period under consideration immigrants were continually moving into the area. The effects of natural increase were not felt until the early 1820's when the second generation began to pioneer in the back concessions.

The growth in numbers can be estimated from the militia musters, assessments and contemporary estimates. (fig.25) At the time of Simcoe's visit there were about 25 cabins in the area, situated mainly along the lake front. Some of these were occupied by single men others by families, giving a possible population of about one hundred. The rate of immigration must have been considerable for in 1797, 160 men mustered for the militia requirements at Turkey Point.[19] By 1800, the muster role had risen to 267

men for the Norfolk Militia.[20] Incomplete assessment records exist for Charlotteville and Woodhouse; it is not until Gourlay's estimates of 1817 that a comprehensive record is available.[21] From Gourlay's figures it is evident that besides the continued increase in Woodhouse and Charlotteville, there has been a tremendous increase in the population of Townsend which contrasts with the slow growth of Walsingham and Windham. Blake suggests that a multiple of 4 should be used to gauge the probable total population.[22] A count of the genealogies in Owen's study suggests that this is a somewhat conservative estimate and that a multiple of 6 would be closer the mark.[23]

The next comprehensive assessment comes in 1824, bearing out the estimates of Gourlay.[24] Although the figures for total population are important they give no indication of the spatial arrangement of settlement other than by the individual townships. However, sources do exist whereby the location of individual settlers can be located at a certain date, so that the evolving settlement pattern can be analysed.




Based on fig 16 and map filed under Charlotteville Tsp Dept. of Lands and Forests. Toronto.

fig. 26

## III.4. The Growth of Settlement 1790-1825.

### The Initial phase, 1790-1795.

The official plans for the settlement of the Long Point region were part of a larger plan for the settlement of the Province as a whole, formulated by Lt. Gov. Simcoe at the beginning of the 1790's.[25] However, at the same time, squatters were already moving into the area since governmental control was still relatively ineffective. The existence of squatters clashed with the official plans for the settlement of the region.[26]

Early evidence of the existence of squatters came with a hydrographic survey of the northern shore of Lake Erie between the Grand River and Long Point (late 1793) made by Wm. Chewett, who noted the presence of several squatters,

> 'Mr. Savage says that he has no certificate or ticket for his lot and that 14 or 15 families are in the same predicament with with him, from Pt. Abino to the westward.'[27]

The squatters had moved into the area in anticipation of receiving land grants based on the promises of the Land Boards, or simply in the hope of squatters rights. In order to make a clean sweep in preparation for the Loyalist settlement an order in council was issued, ordering the squatters to move off the land.[28] Among those listed who eventually stayed in the area were J. Troyer, T. Murphy, F. Mabee and D. Secord. Thus, after the Order-in Council

was made, these men must have proceeded to the Land Board at Niagara, to qualify their position. The Surveyor General was soon able to present a report listing those who had been able to justify their settlement.[29]

In preparation for the field inspection that Lt. Gov. Simcoe was to make in 1795, Aitken was instructed to begin surveying the area and lay out the front concessions of the townships of Charlotteville and Woodhouse. The field notes for the survey are no longer available, but a map made of the lines run, shows the location of the squatters and the name of the appropriate lot owner. (fig.26)[30]

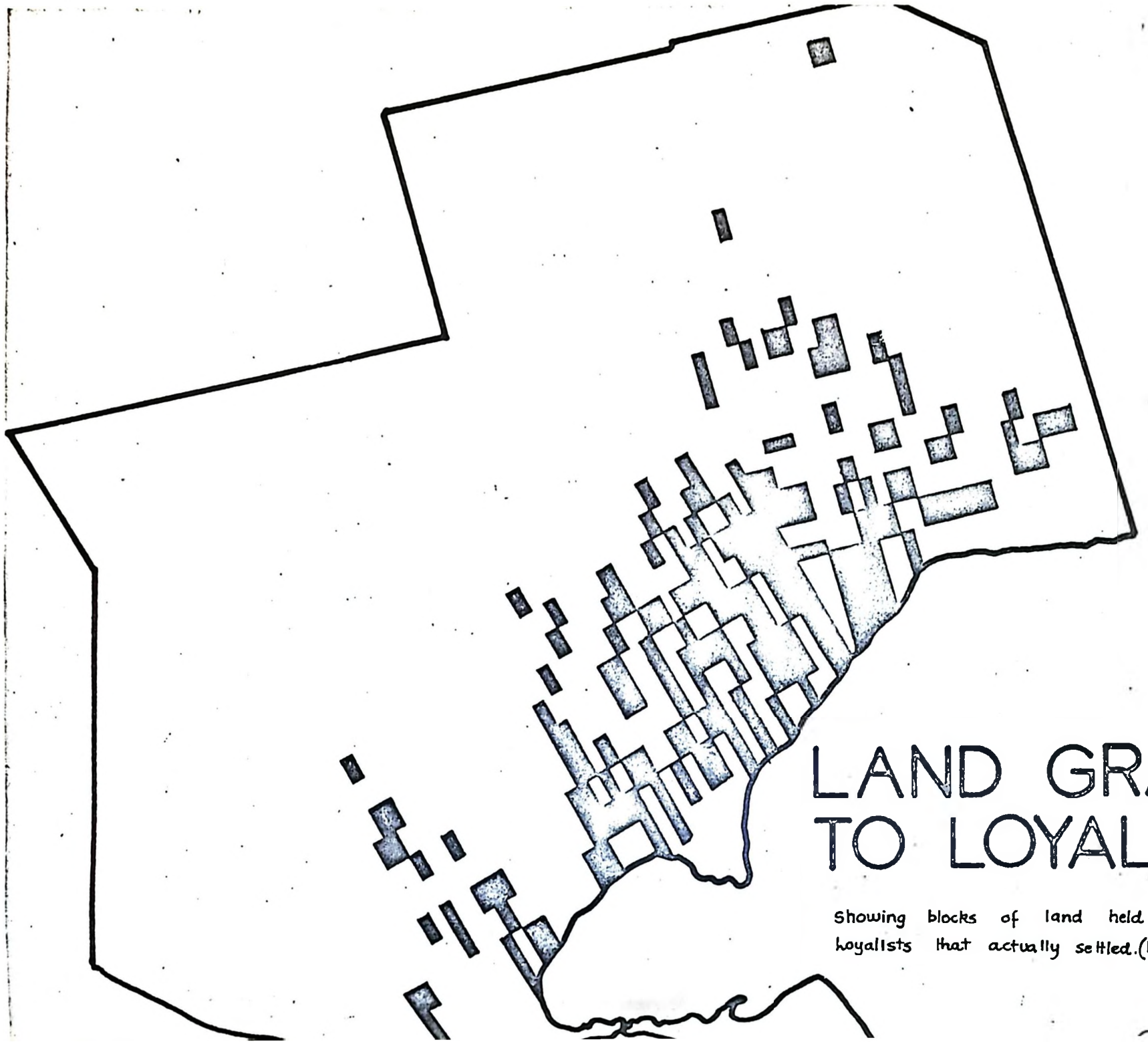
The distribution of locations show a close approximation to the lake shore with the single exception of the Smith location in the interior on the oak plains. The cabins are generally located at the foot of the high bank, or in the valleys of small streams.

## The Planned Settlement Phase, 1795-1800

### Settlement Encouraged

The initial phase with squatters locating along the lake front was terminated by the extension of effective government over the area. The net result of effective control was that the area figured within the framework of the settlement of the province as a whole, as one of the defensive strongpoints of the Simcoe settlement plan.

Charlotteville and the Turkey Point area were to



# LAND GRANTS TO LOYALISTS

Showing blocks of land held by loyalists that actually settled. (by 1825)

FIG. 27.

be the location for a garrison and naval base that would protect the Thames/Burlington portage and activity on Lake Erie. The base was to be one of several strategically located towns linked by military highways that would open up the province yet form a defensive framework for settlement. In addition, the Niagara frontier and the Upper St. Lawrence were to be protected by a buffer zone of Indian reserves. Protected by the buffer zones and the military installations, a military highway (Dundas St.) would link the main centres of settlement.[31] Such a plan would open up the province simultaneously at several points, but would have defensive strength in depth from the precocious Republic to the south. The centres of settlement were to be established as soon as possible, in order to provide economic support for the military garrisons. The government decided to settle loyal settlers near the installations, consequently, in the years 1795-1800, many United Empire Loyalists settled in the area. It is evident that the Land Board was exercising a policy of selection, since many of the non-loyalist petitions were signed,

'anywhere but Long Point.'[32]

The lands granted to the Loyalists tend to concentrate in Charlotteville township (fig.27). While the Loyalists were a distinct social group, their importance has been perhaps overemphasised in historical studies.[33]

## Effects of Land Policy

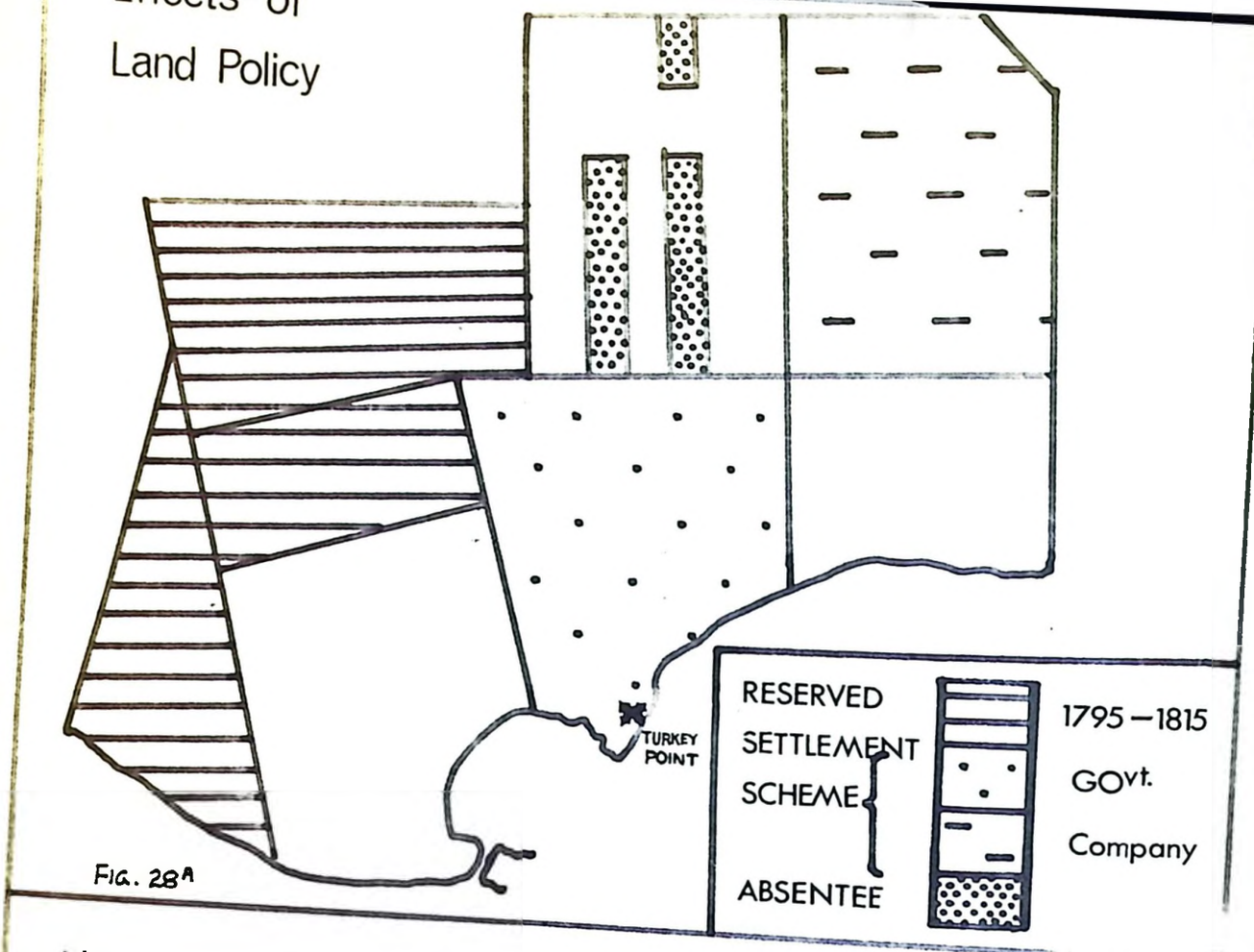



Fig. 28A

## Location of United Empire Loyalists

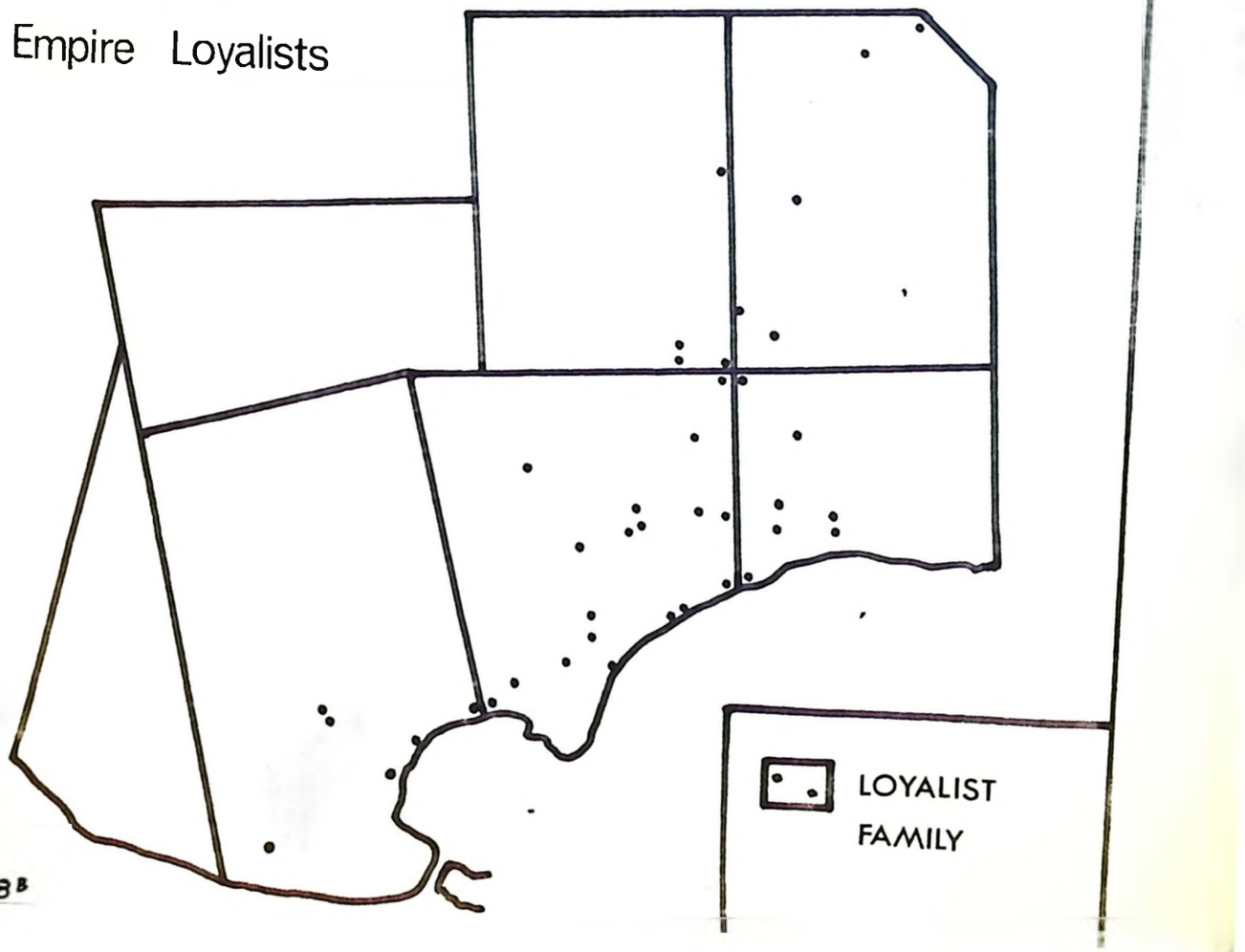



fig. 28B

Fewer than 50 Loyalist families ever settled in the area, while apart from a slight concentration in Charlotteville, they are generally distributed throughout the main zone of population concentration. (fig.28b) The weakness of the scheme was that the supply of Loyalist was essentially limited, so that by the beginning of the 19th century a very large number of non-Loyalists were entering the area.

The Company Settlement of Townsend.

While the Government were inducing a certain group to Charlotteville, a land company was inducing settlers to Townsend. In an attempt to increase the rate of settlement grants of whole townships were made to individuals or groups of associates who would act as middlemen disposing land to settlers in return for large grants of land for themselves.[34]

In the Long Point area Pierce and Averill were granted Townsend township with the proviso that they would settle 50 families within three years. Before this policy was discontinued in 1799, almost a hundred recommendations for settlers had been made, although it is doubtful whether this number ever actually settled in the township.[35] The change in official policy led to the township being thrown open for ordinary settlement by the beginning of the 19th century.

Thus, two different schemes were inducing settlers to the townships mentioned above. (fig.28a) It was partly

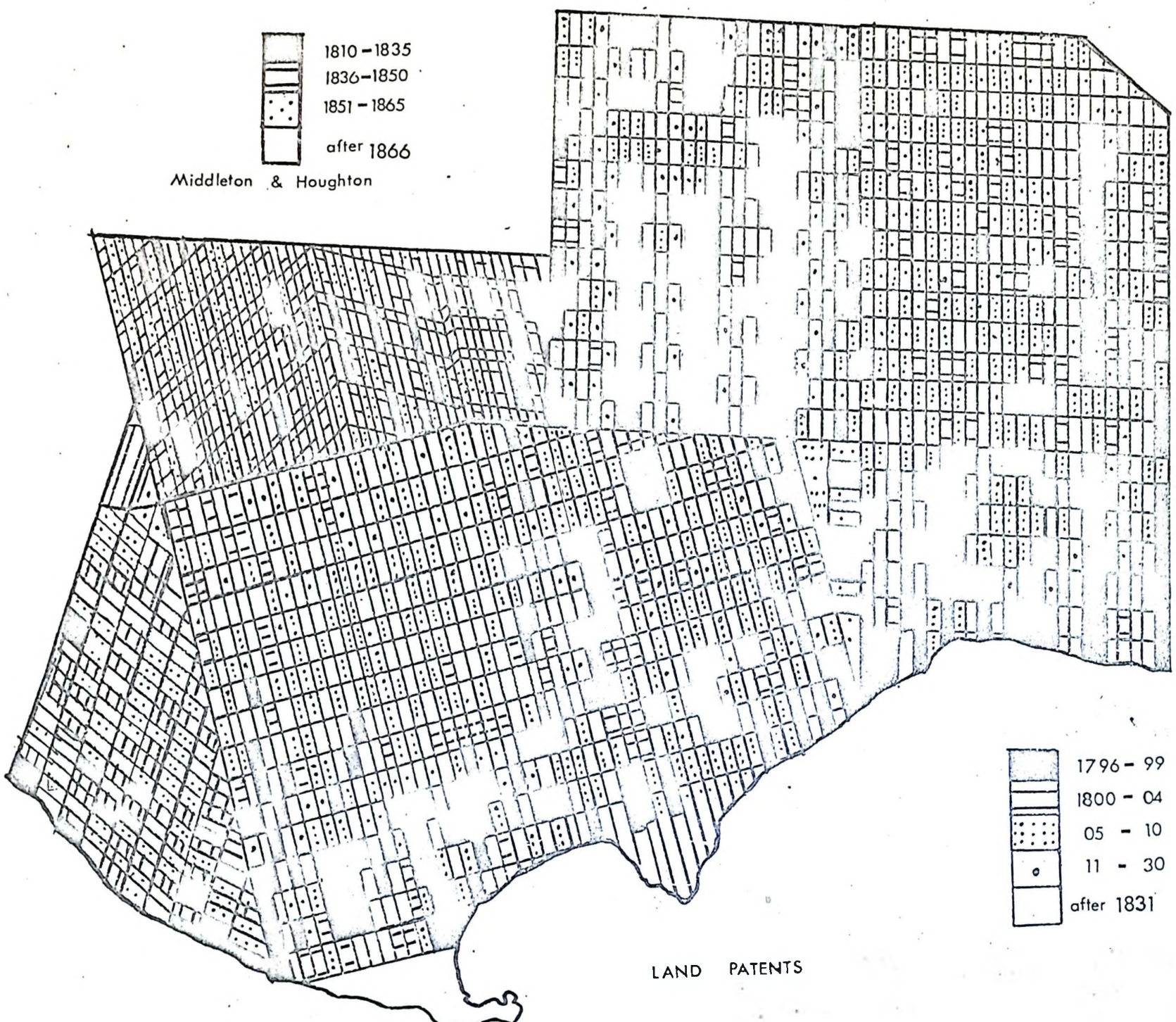
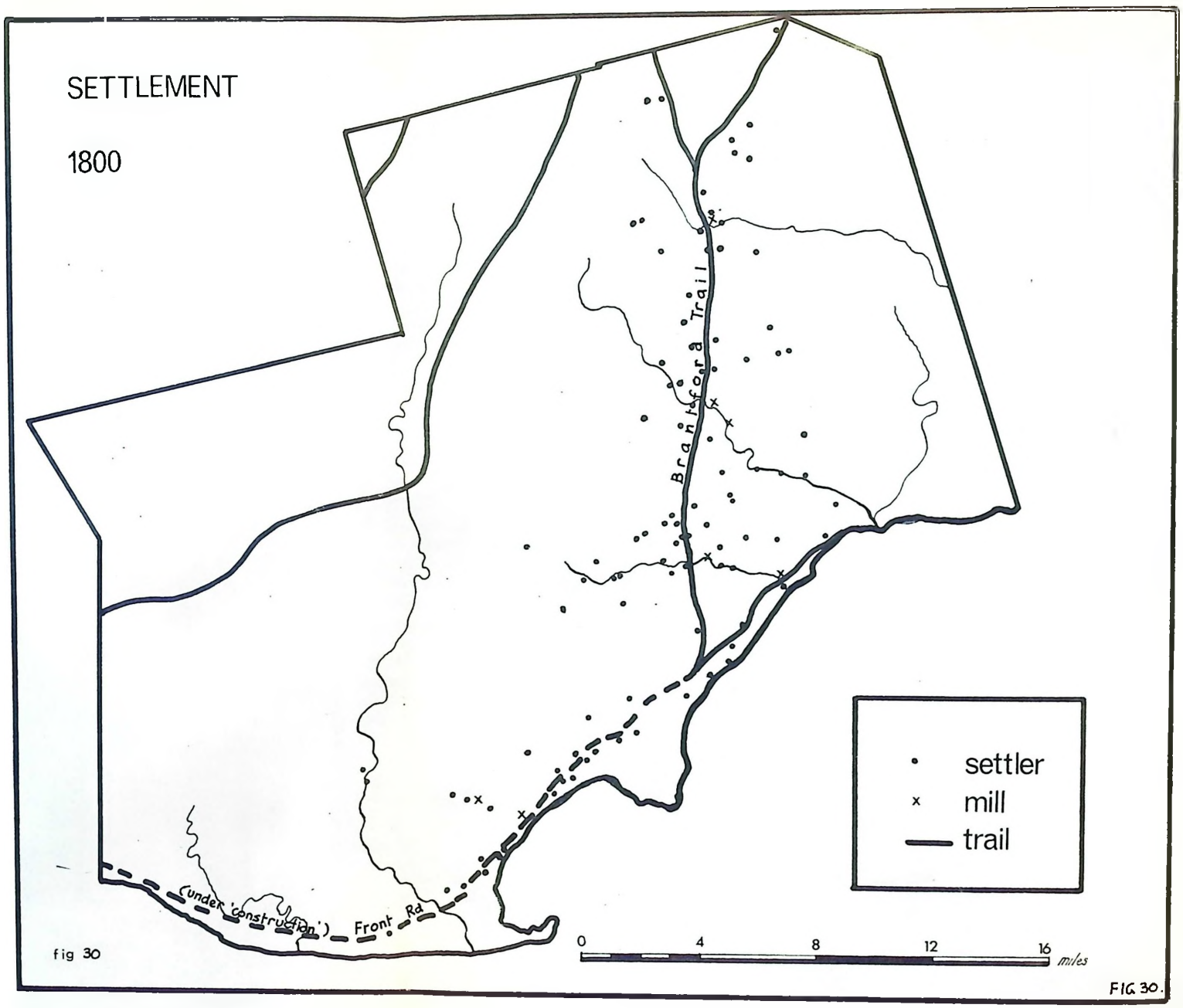

1810 – 1835
1836 – 1850
1851 – 1865
after 1866
Middleton & Houghton
1796 – 99
1800 – 04
05 – 10
11 – 30
after 1831
LAND PATENTS

FIG. 29.


SETTLEMENT
1800
Brantford a Trail
(under 'construction') Front Rd
settler
mill
trail
0
4
8
12
16
miles
fig 30
FIG 30.

for these reasons that population grew more quickly in these townships.

Settlement Restricted.

While settlement was being encouraged in Charlotteville and Townsend, the Townships of Middleton and Houghton and the back concessions of Walsingham were held in reserve by the Government: another decade was to pass before these areas were thrown open to settlement. Besides the reservation of whole townships, within each township there was a regular pattern of lots reserved for the crown and the clergy.

In Windham township, a further restriction upon the effective settlement of the area was the result of absentee ownership. In Windham, large grants of land were made to priviledged claimants such as Lt. Littlehales, Simcoe's military secretary.[36] Many of these landowners never settled in the area so that large blocks of uncleared land hindered the growth of rural settlement. These areas of absentee owners stand out quite clearly in the Land Patent Records indicating the discrepancies that exist between the apparent date of settlement indicated in figure 29, and the actual stage of settlement shown in figure 30.[37]

Therefore if we look at the pattern of settlement in 1795-1800 the effects of the interplay of these various factors can be seen.

Examination shows that there is a marked variation in the distribution of the locations. A north/south axis

of population has developed along the Townsend Windham line. In Charlotteville, the locations are concentrated north of Young's Creek on the plains areas. In Walsingham on the other hand, there has been only a slight movement away from the lakeshore. In Woodhouse and Townsend, there has been no movement into the area east of the 12th lot line.

Growth of Communications.

The road system planned as the framework to the Simcoe settlement scheme did not begin to materialise effectively until the early 19th century. Consequently, an emphasis was placed upon the utilization of the existing network of trails. The importance of the trails to settlers can be realised from both the early accounts and the empirical evidence available. Boulton noted that,

> 'From Charlotteville there is an excellent road to the Mohawk village at Brantford.'[38]

While on the plains,

> 'It is well calculated for roads and is sufficiently open for European carriages to pass.'[39]

Lake Erie as a means of communication was also playing an increasing role in the growth of the area, although the real expansion does not come until the 1820's with the onset of the canal era.[40] Although little data exists concerning the early period of commercial activity on the lakes, there are numerous references to activity in personal letters and the contemporary newspapers.

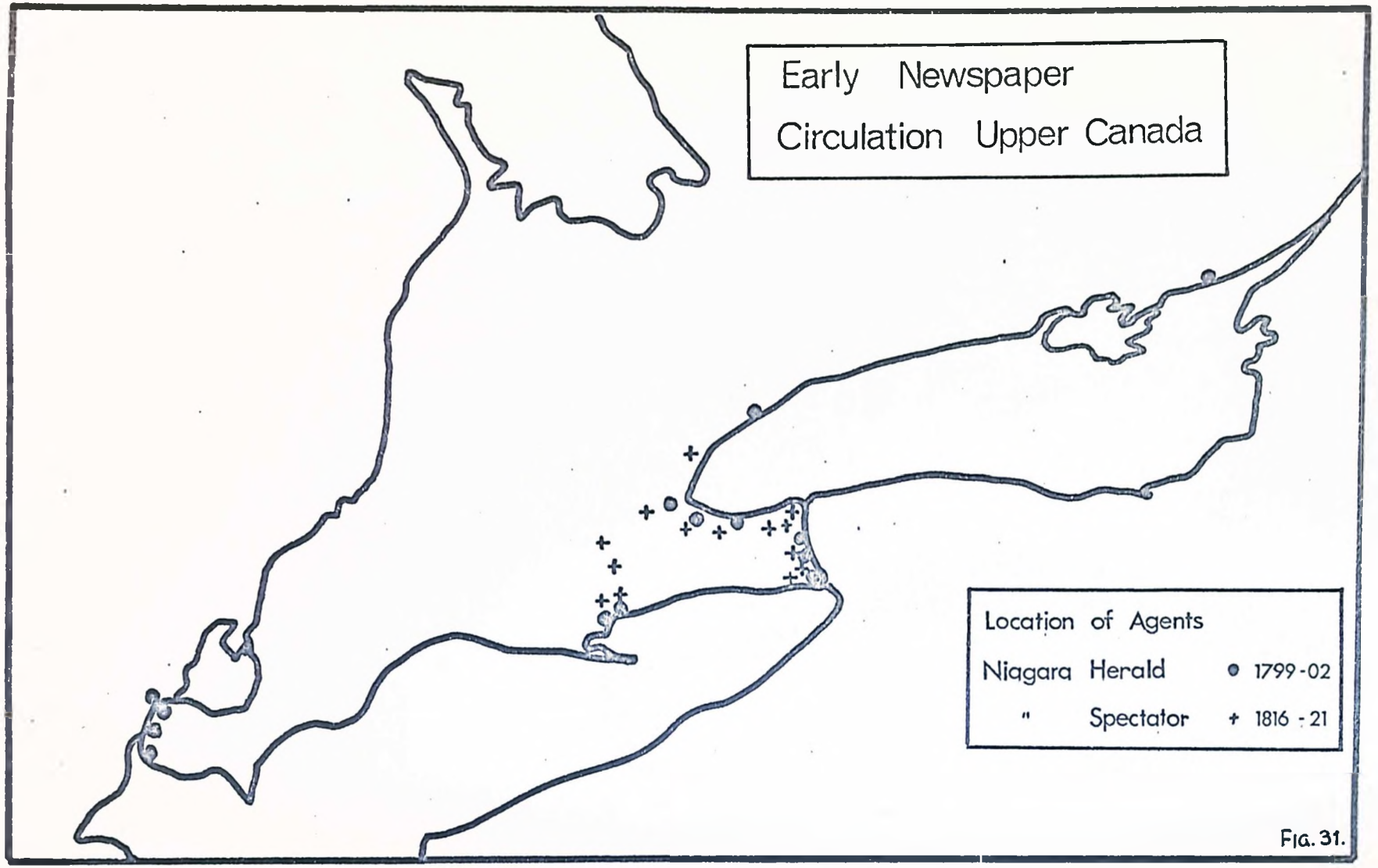

Early Newspaper
Circulation Upper Canada
Location of Agents
Niagara Herald • 1799-02
" Spectator + 1816-21

FIG. 31.

In the correspondence of Robt. Nichol who owned mills at Dover, there are numerous references to commercial activity on Lake Erie, from the late 1790's onwards.[41] In the Niagara Herald (Oct. 7th 1801) are listed those places that had agents for the newspaper. (fig. 31)[42] Clearly, these places are close to the Lakes, particularly Lake Ontario; agents west of Niagara occur only at Long Point and the Detroit area, indicating not only the importance of water communication but also the lack of development along the shores of Lake Erie.

Settlement 1800 - 1815

Three features are apparent in the pattern of settlement by 1815 (fig. 32). Firstly, an infilling of existing areas has taken place notably the gap in Charlotteville between the plains and the lakeshore. Secondly there has also been an expansion of the main zone of population concentration at the edges, but not onto the clay soils, finally, outliers of settlement have developed at Big Creek and also at Rockford. (fig. 32)

Once the official constraint on reserving land has been relaxed, an outlier of settlement has developed in the Big Creek area. However, the outlier develops in an accessible area and also in an area that is characterised by those physical conditions preferred in the earlier settlement. The expansion of the main zone of settlement at the edges is related to the development of new roads.

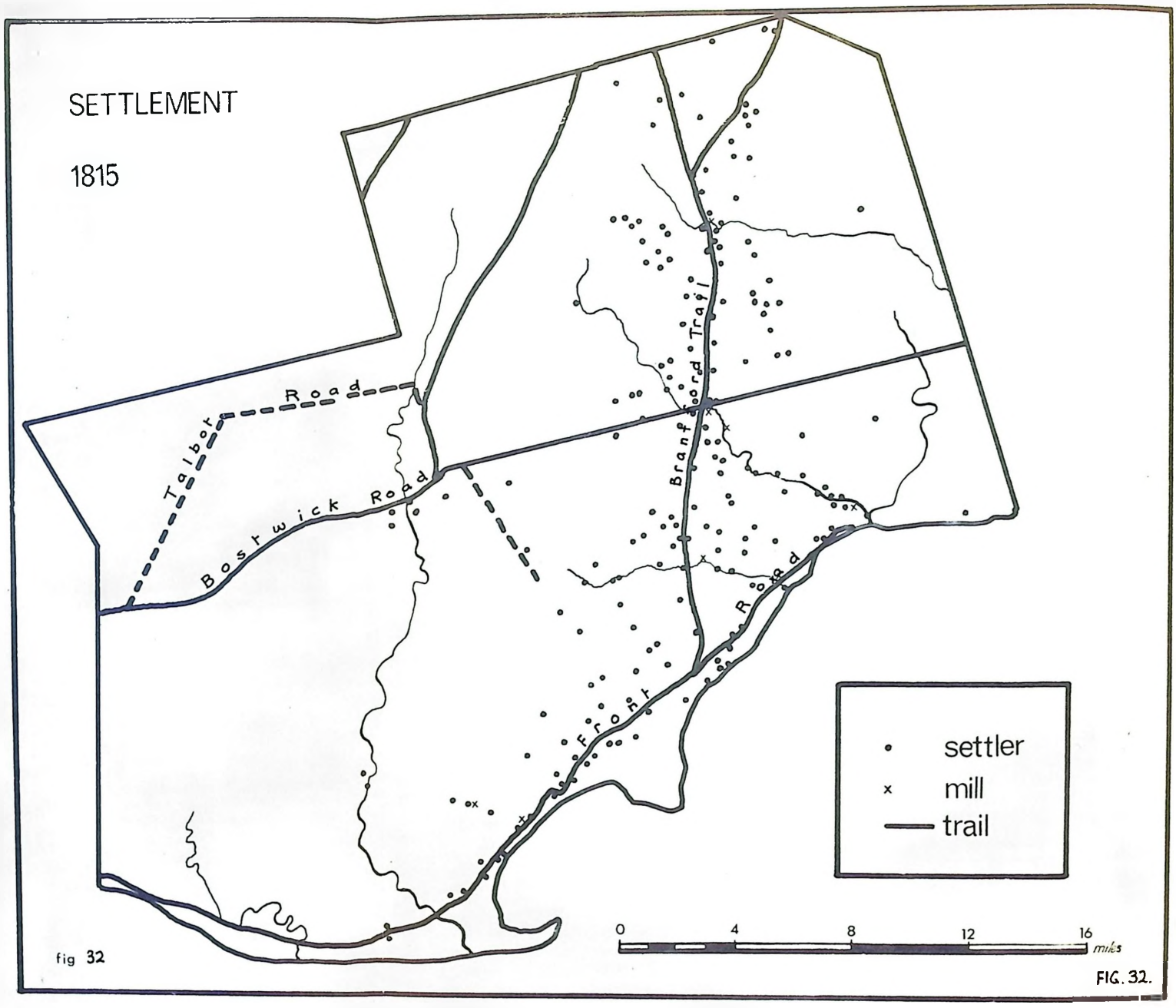

SETTLEMENT
1815
Talbot Road
Bostwick Road
Brantford Trail
Front Road
settler
mill
trail
0
4
8
12
16
miles
fig 32

FIG. 32.

However, the importance of the physical conditions is indicated by the lack of settlement eastwards onto the clay areas.

The variation in the settlement on the plains in that the initial settlements were north of Young's Creek, is perhaps a result of local variations in the composition of the plains, especially the variations in the soil.

The Growth of Communications.

The growth of settlement was a reflection of the expansion of the communication system at both the local and the provincial levels. The Talbot settlement on Lake Erie needed an east-west highway closer to the lake than the existing route (Dundas Street).[43]

In compliance with Talbot's request, John Bostwick surveyed a road between Kettle Creek west of the Long Point settlement, to Nanticoke Creek in Townsend, following the path of a former trail.[44] However, until the back townships such as Middleton were thrown open to ordinary settlement, the road was only useful for through traffic. (fig.32) In 1809, it was decided to finish the road with a new section through Middleton, so that the road no longer ran through Walsingham. In 1809, Burwell ran the new road through Middleton, making angular turns to keep on dry land. Middleton and Houghton were open to settlement after the war of 1812; the interesting result is that an outlier of settlement immediately jumps to the Big Creek area, on the oak plains. By 1817, Chewett was able to describe the

road as one of the

> 'three principle roads of Upper Canada... from Niagara to the township of Woodhouse, thence north passing through Windham, Middleton, to Port Talbot.'[45]

With the improved accessibility, the first settlers were able to penetrate the rear townships. One area that remained isolated from the lake front was the rear of Walsingham, where a road was not cut to the back concessions until 1829.[46]

At the same time that settlement was pushing into the interior, the front concessions were becoming more accessible with the opening of the 'Front Road' in 1804.[47]

That accessibility was a key factor in the settlement of an area, is indicated in the questionnaires returned to Robert Gourlay in 1817.[48] The residents of Walsingham Township complained that remoteness, the cost of transport and poor public roads hindered development.[49]

While the development of trails was continuing, activity was increasing on Lake Erie. By 1816, the first regular Canadian service was in operation with the two schooners 'General Brock' and 'Elisabeth',

> 'for all those who have property and want transport from Ft. Erie to Amherstburg or anywhere on Lakes Erie and Michigan.'[50]

Obviously, it is difficult to ascertain the importance of the different means of communication to the settlers. One indication that 'road transport was developing can be seen from the distribution of agents for the Niagara

Spectator in 1817. Unlike the earlier distribution which could be related to the lakes, the later distribution shows a closer approximation to the network of trails that was developing as settlement pushed into the interior. (fig. 31) Later in this analysis some attempt will be made to determine the relationship between settlement location and the communication system.

The growth of Centres.

Concomitant with the spread of individual units, were the gradual emergence of small village centres, during the years 1795-1815. Village centres had been planned as part of the township system of settlement. Lots were set aside, usually in the geometrical centre of the township to be developed as village centres when the settlement of the area had sufficiently progressed.[51] The interplay of other factors often resulted in the development of sites elsewhere in the townships. Grist mills appear to have been a common factor that resulted in the further development of a nucleation.

In the case of the Long Point settlement must be added those centres planned as part of the Simcoe military plan. Several of the sites marked in figure 32 gradually developed, while others remain stagnant.

The Pattern of Settlement by 1825.

During the phase 1815-1825, the expansion of the main zone has continued. The outliers already established

have also continued to grow, especially in the Big Creek area. A new outlier of settlement has developed in the north - east area of Windham. The network of roads has expanded steadily, along with the growth of the village centres.

It can be seen that the pattern of settlement is at first sight hardly similar to the hypothetical situation formulated by Bylund. The first task is to measure the distribution of locations in terms of the Bylund model and to isolate and analyse those factors that are modifying the hypothesised situation.

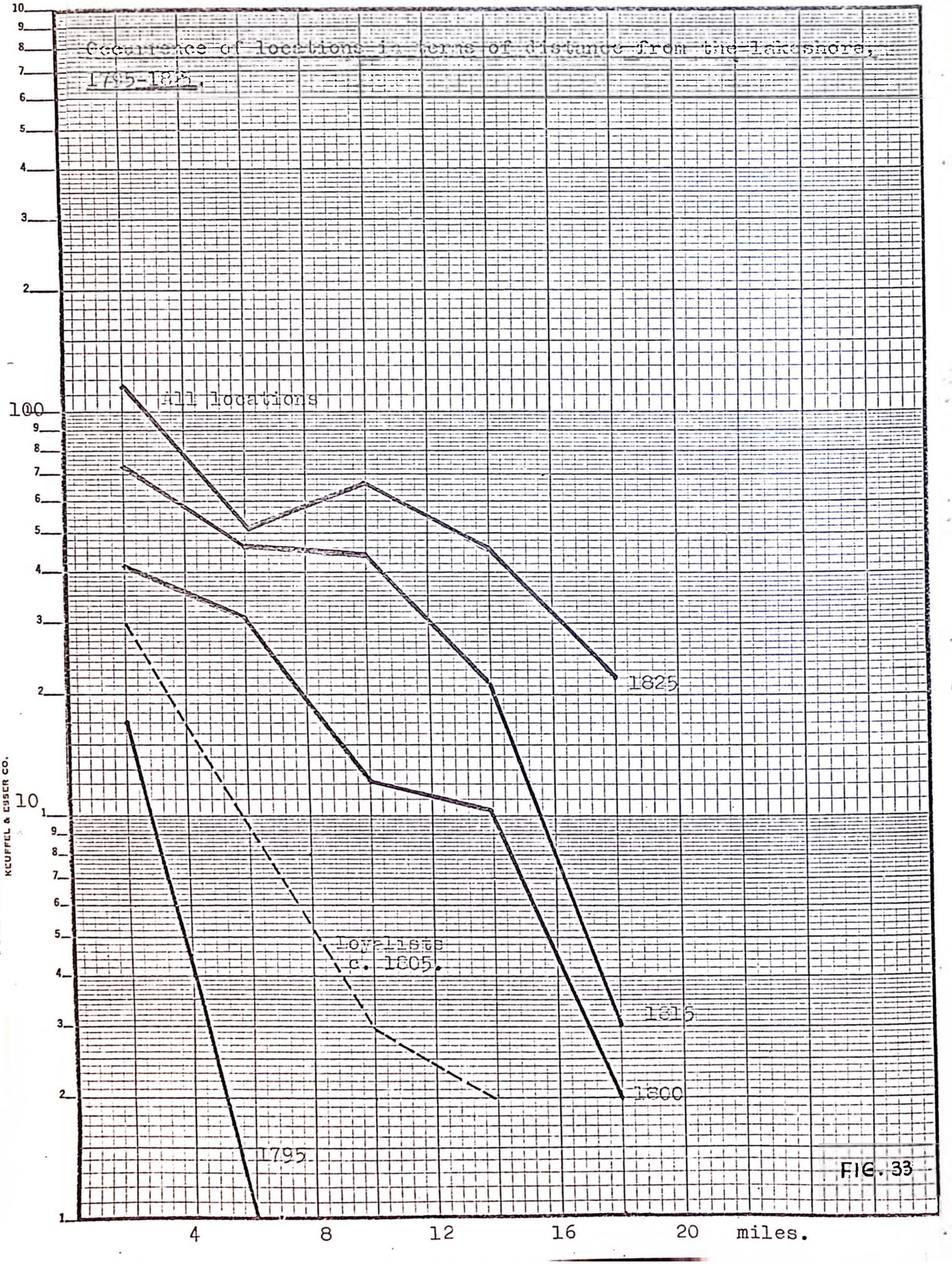

Occurrence of locations in terms of distance from the lakeshore, 1795-1825.
All locations
1825
1815
1800
1795
Loyalists c. 1805.
4
8
12
16
20
miles.

FIG. 33

III.5. (i) Comparison with the Bylund Model.

The regularity of settlement postulated by Bylund was formulated from empirical data concerning a particular place, for a particular time period.[52] An examination of the occurrences of locations in the Long Point area indicates a general similarity in that there is a certain regularity in the decrease of the number of locations away from the lakeshore. (fig.33) When the location occurrences are transformed to logarithm form, the negative slope is more apparent: through time this gradually assumes a horizontal position as the lots in each zone became settled. (fig.33).

Although the general property of the Bylund model is reaffirmed, the function appears to be complicated. (fig.33) This is not unexpected, since we have already seen in the historical account of settlement growth that there were variations in the availability, accessibility and physical character of the lots, factors that must be examined more closely.

(ii) Availability of land.

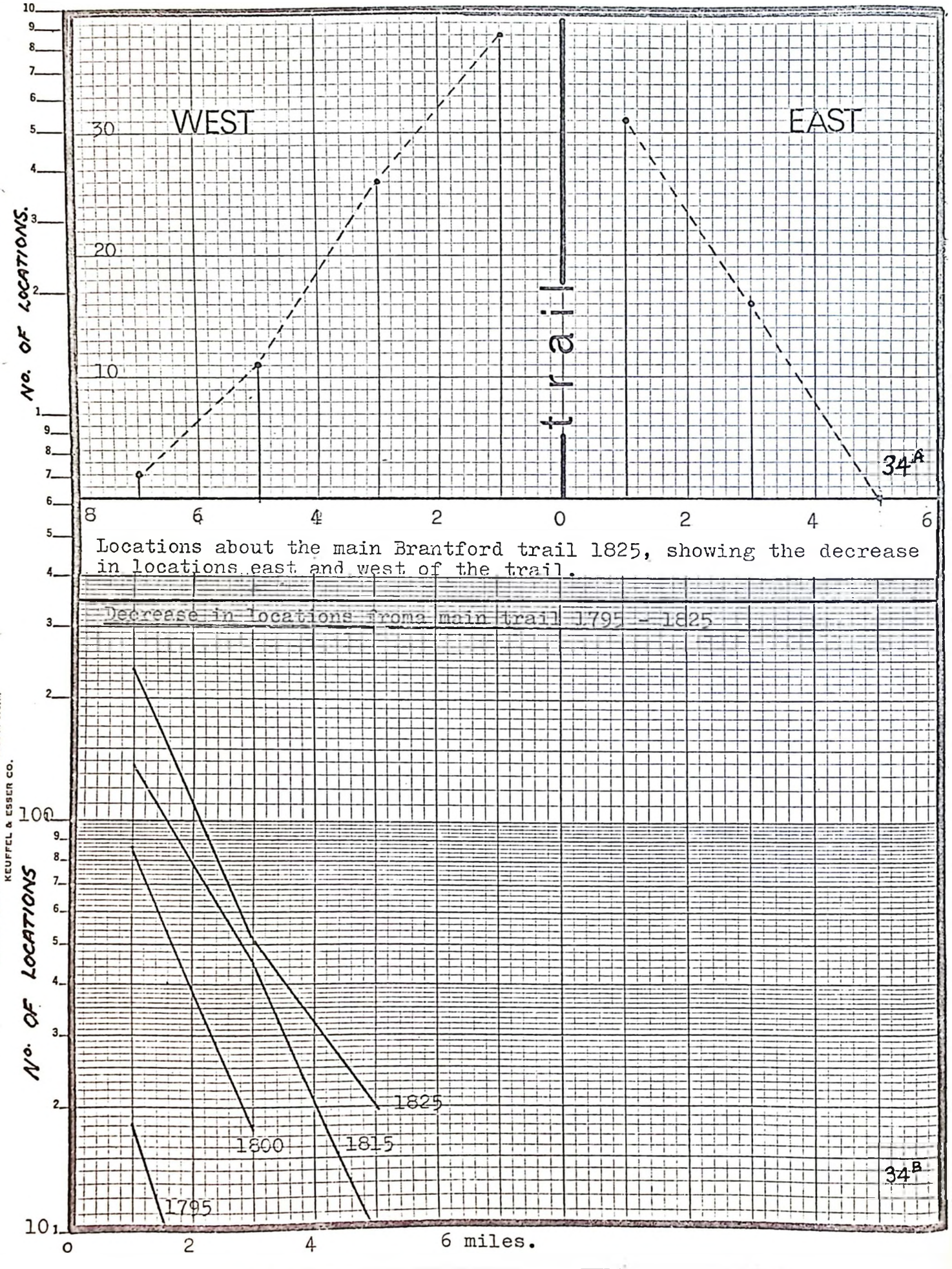
Official control of land set limits to the extent of land available to settlers. Thus, Houghton, Middleton and the rear concessions of Walsingham were reserved until 1815.[53] Within the townships open to settlers, the chequer pattern of reserved lots interrupted the continuity of the settled zones. However, while this factor became an

ingredient in the political ferment of the times,[54] the regularity of its occurrence nullifies its spatial significance.

In contrast to the reservations were those areas where active encouragement of settlement had taken place. Charlotteville had been settled with some Loyalists 1795-1805 while Townsend had the encouragement of the Averill land company. Apart from the relatively higher populations of these townships (fig.25) after the initial decision to settle the area, individual decisions can be ignored and the settlement regarded as a mass regularity.[55] Thus, availability of land, although the most important factor in settlement location at one scale (the Simcoe plan) at the individual location scale, other factors, such as accessibility and the physical terrain become more significant.[56]

(iii) Locations and Accessibility.

The basis of Bylund's model is accessibility from the entry line, which has been reaffirmed in an examination of locations at the Long Point settlement. Since the line (fig.33 ) was a generalised statement of a relationship, some account must be given of the variation at the individual location level. In Section II, it was found that a system of trails, relics of the primitive period, were in existence at the onset of European settlement. The trails can be regarded as an extension of the entry line.


No. OF LOCATIONS.
WEST
EAST
30
20
10
trail
8 6 4 2 0 2 4 6
34A
Locations about the main Brantford trail 1825, showing the decrease in locations east and west of the trail.
Decrease in locations from a main trail 1795 - 1825
No. OF LOCATIONS
1825
1800
1815
1795
34B
0 2 4 6 miles.
SEMI-LOGARITHMIC 46 5490
3 CYCLES X 70 DIVISIONS MADE IN U.S.A.
KEUFFEL & ESSER CO.

During the initial phase of settlement, locations are along the lakefront. (fig.33) In the following years, new locations have a close relationship with the main trail (fig.34) which can be expressed in graph form; measuring the occurrence of locations from the trails shows that there is a regularity that is maintained through time. As new trails and concession lines are cut out, the gradient of the line becomes more gentle but the main characteristic remains unaltered. Therefore there is statistical evidence that a relic of the Indian period has influenced the European settlement pattern, that continues through time.

An examination of the locations at an even more detailed scale shows that the actual distribution of locations about the main trail is uneven. In figure $34^{b}$ the gradient of locations to the west of the trail is more gentle than to the east. Evidently there is a variation in the lot by lot location that is modifying the general rule of accessibility. The only major variable left unconsidered is the physical character of the lots; how significant this variable was will now be considered.

(iv) Location and the physical background.

In the observed frequency of locations about the main trail, (fig.$34^{a}$) it was seen that they declined sharply east of the main trial and more moderately to the west. This could suggest a distortion due to resource localization such as soils and associated vegetation types.[57] However, to discover whether this is in fact the case, the relative

areal extent of each land type must be taken into account to show that the frequency of a particular preference is not just a function of the frequency of certain land types.

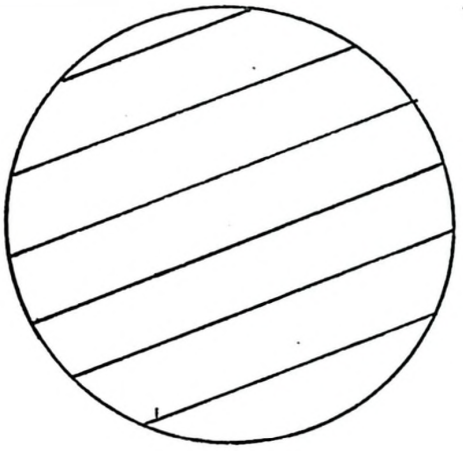
The $x^2$- test lends itself readily to such an analysis.[58] Table II indicated the relative importance of occurrence of locations on the different soil types. Employing this data a null hypothesis was erected postulating that the distribution of locations was not due to chance, but related to soil/vegetation types. A chi-squared test indicted that there was a 99.9% probability that the locations did not occur by chance but could be related to the physical background in the manner indicated above. Thus, the occurrence of locations on the light well-drained soils indicates a preference on the part of the early settlers for this terrain type. Furthermore, these soil types equate with the oak openings and the oak/hickory/pine association. Therefore there is statistical proof that the oak openings and the associated soil types were fundamental in the early locations of pioneer farms. Furthermore, where these conditions were not available locations are either absent or, in the case of Walsingham, severely retarded.

Drainage as a location factor.

The drainage pattern is also significant in a consideration of location not only from the aspect of soils and vegetation, but also in terms of water availability.

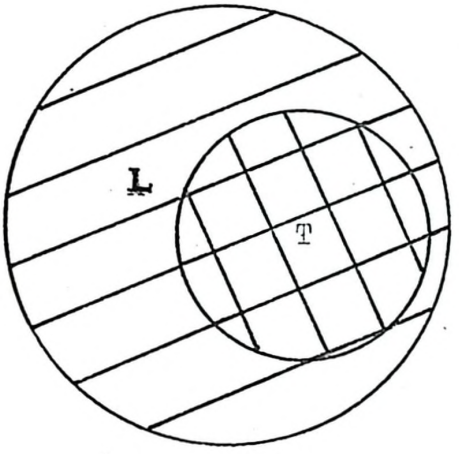
Venn Diagram illustration of Set representation of main elements of settlement.

1.



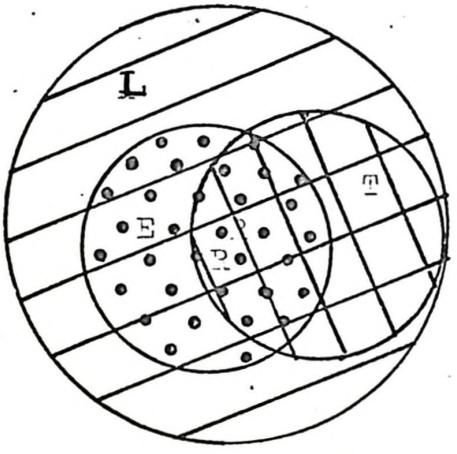
l E L

2.




T C L, T ≠ N

3.




T C L, T ≠ N
E C L, T ≠ N.
R = T ∩ E

FIG. 35A

Water has to be used at frequent intervals, is difficult to transport and often to store; Chisholm considers this the most important physical factor in the development of settlement.[59] An examination of all possible plains and oak association locations show that where water is not available location has not taken place. Since the drainage network is an efficient pattern this does not alter the general model, since only the occasional or chance lot is without water.

Relative Importance of the Various Factors.[60]

With evidence based on the observed locations the relative importance of the various factors through time can be ascertained. Availability of land is the most important factor modifying the general pattern, all other factors are subsets of this. Thus,

(1)

$l \in L$ where $l$ = location of settler

where $L$ = set of all locations. (fig. 35[a]).

The most important factor that modifies the general formulation, that remains constant through time, is accessibility. (fig. 34[b]) Relics of former cultures in the form of trails, and the nature of the terrain in certain areas modified the general formulation. While this was a regularity of most locations, it did not apply to all locations, so that,

Diagram to illustrate the decreasing importance of the oak openings and the oak/pine/hickory association through time.

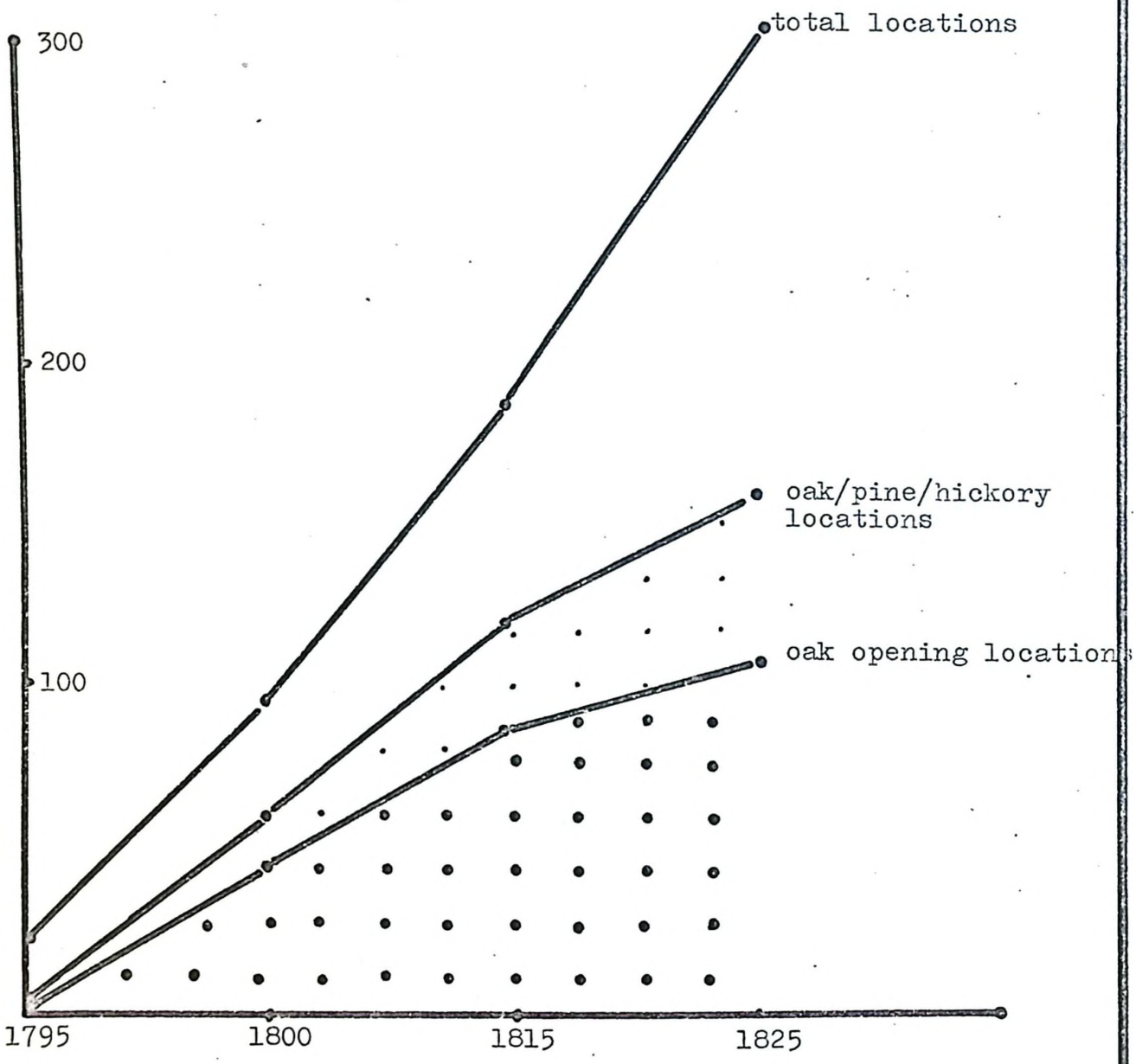



FIG. 35 B.

(2)

$T \subset L, \quad T \neq N$ where T is a proper subset of L
where L stands for all locations and T stands for locations close to a trail

The subset of accessible locations is clearly the most important subset, since accessibility is a function of all the factors discussed.

The Loyalists can also be considered as another subset intersecting with the main subset of accessible locations. Thus,

(3)

$T \subset L, \quad T \neq N$

$E \subset L, \quad T \neq N$ where E stands for Loyalists

$R = T \quad E$

Therefore, although the theory of sets deals with groups it is useful logically for illustrating, in this simple case, the relatedness of certain entities not always easily compared in integer form. Thus, while it is relatively straightforward to estimate the decline in the significance of the oak plains through time (fig. 35[b]), in terms of numbers of locations, elements such as the Loyalists can be better illustrated in set theory form.

## III.6. Least Effort, Agricultural conservatism and economic motives, a partial explanation.

The evolution of European settlement has been described and certain features important in its growth identified and analysed; since the study dealt with the spatial patterns of the majority of locations there is a logical basis for some explanation. The analysis showed that certain factors modified the simple formulation of settlement evolution, some of which were exceptional to that area. However, the pattern possessed regularities through time that could be measured.

The dominant feature of the settlement pattern that continued through time was accessibility (achieved by measurement and graphical analysis). In this respect the trails and the oak plains can be classed together, although the oak plains gradually decline in significance through time (fig. 35 ). This factor of accessibility and its reciprocal effects upon the hypothesised situation, fits in with the diffusions observed and hypothesised by Hagerstrand,[61] detected by Mitchell[62] and discussed by Haggett.[63] Thus, the initial locations were close to the lake front: diffusion of settlement proceeded along the trails, and on the oak plains, while further settlement extended the network (e.g. concession roads) and continued the relationship. (fig.34[b]) Reduced to simple algebraic terms,

$p(l) = f(d)$. Where p (l) is the probability of finding any settler as a function of d. Where d = distance from path of least effort

hence the negative effects of varying soils can be introduced:-

$p(l) = f(d,s)$ Where d is as above. Where s = soil types.

So far, the major formulation of mass human behaviour that has been simplified to these terms is Zipf's principle of least effort.[64] Applying Zipf's formulation to the patterns observed at the Long Point settlement explains the decrease in locations away from the trails and the oak plains: (well illustrated in Walsingham township) greater resistance, hence more effort, means fewer locations. Thus, the incidence of heavier soils and wet deciduous woodland results in a skewed distribution of locations about the main trail (fig.34[a]).

It is significant to note that the Loyalists conform to the regularity of location in terms of distance from the Lakeshore, and from a trail (fig.33). However, there is a slight indication that the Loyalists are affecting the location of other settlers in that by 1825, (fig.33) the zone 4 - 8 miles from the shore is not increasing at the same rate that other zones are. This could be the result of Loyalist land ownership, in that the ratio of locations to land is lower since the Loyalists were given larger grants of land (fig.27).

Hence, incorporated into the equation:-

$p(l) = f(d,s,a)....$ $a_l$ = average size of loyalist land

$a_{os}$ = average size of other settlers' lands.

At this point it must be reiterated that the formulations are concerned with mass regularities, with the 'aggregate of individual descisions'[66]: thus the Hazen family, who struck out and pioneered in defiance of the general regularity, (see fig.30) are incorporated in the probalistic equation.

The equation formulated above is a synthesis of the reasons for the observed patterns, i.e. human efficiency, and would seem to meet the requirements desired by Bunge.[67] However, the simple formulation disregards one important variable - time, why was it <u>efficient</u> to locate on the plains <u>during this period</u> (i.e. 1790-1825).[68] At this juncture it is necessary to gradually invert the analysis (c.f. Chisholm) so as to avoid a detailed 'full' explanation in the 'unique' sense.[69] Thus, the analysis will continue with the majority of individuals at the Long Point settlement and then widen to a consideration of the settlement in respect to the province as a whole.

(ii) <u>Cultural Heritage.</u>

In colonizing a new area man imports the practices of his cultural home. Michell concluded that, in the

evolution of (rural) settlement, the pioneer combines the traditional and functional constructs of his new home.[70] Isiah Bowman also noted in many instances that pioneers often sought areas or characteristics resembling the home, while this can easily be reversed-in that areas too unfamiliar are often avoided (for a while at least).[71] In other words we are considering a regularity of behaviour of the pioneer fringe.

While it is beyond the scope of this thesis to reconstruct the geography of New Jersey in the late 18th century, it is significant to realise that similar conditions, oak openings, were a feature of New Jersey and the other eastern seaboard states,[72] (and the trans-Appalachian zone), the homeland of the majority of the pioneers. (fig.25) Therefore there was no cultural antithesis against the physical background.[73] The Fairchild family for example, originated from the Sacksunny plains (Saxony ? ) bringing with them the type of implements used on the plains.[74]

Technical Considerations.

Another modifying factor that is implied in the general explanation is the technical wealth of the pioneers. Thus, the predilection for the plains and the oak hickory association was an expression of the arduous and costly task of clearing land in a pre-mechanised society. Dunlop noted that the plains,

> 'are easily cleared or rather wants no clearing at all for ifyou cut down any

> little underwood there may be and girdle,
> you can harrow up the surface';[75]

indicating the ease with which land could be cleared and worked. This is borne out in Gourlay's returns where the cost of clearing the land on the plains was £12/10/- whereas in other townships of comparable population, but different physical conditions, the cost was as high as £25 to £30.[76] This is proof therefore of variations in the gravity of the terrain, already seen in figure 34[a] .

Through time this would vary as new techniques such as the improved steel plough become available.[77]

Economic Considerations.

The formulation of efficiency also has to be applied in the light of contemporary economic conditions. The importance of accessibility through time has already shown that the majority of settlers were part of the economic system: thus, clearing land was one way of accumulating capital. That a shortage of capital existed is indicated in the development of metayage. In the Long Point area it was common for a landlord to supply seed and take half of the crop, or the tenant would supply seed and implements and give on third to the landlord.[78] When the pioneer had accumulated sufficient capital he could aquire land, if he had not already done so, since some had land but not the seed or implements. According to Gourlay's Statistics, the average increase in the value of cleared land (indicative of its capital value) was 300% during the period 1798-1817.[79]

The emphasis upon cleared land was an expression of the arable orientated economy and the basic importance of grains, especially wheat. Wheat was not only the basic cereal but also served as a medium of exchange in a currency-starved economy:[80] from this agrarian base stemmed the incentive to clear land. If there was an incentive to clear land and grow grain there must be some evidence to substantiate this. Walsh referred to a large field of wheat while surveying part of the ¼ line roads,

> 'as Mr. Tisdale has a large field of wheat compass around it,'[81]

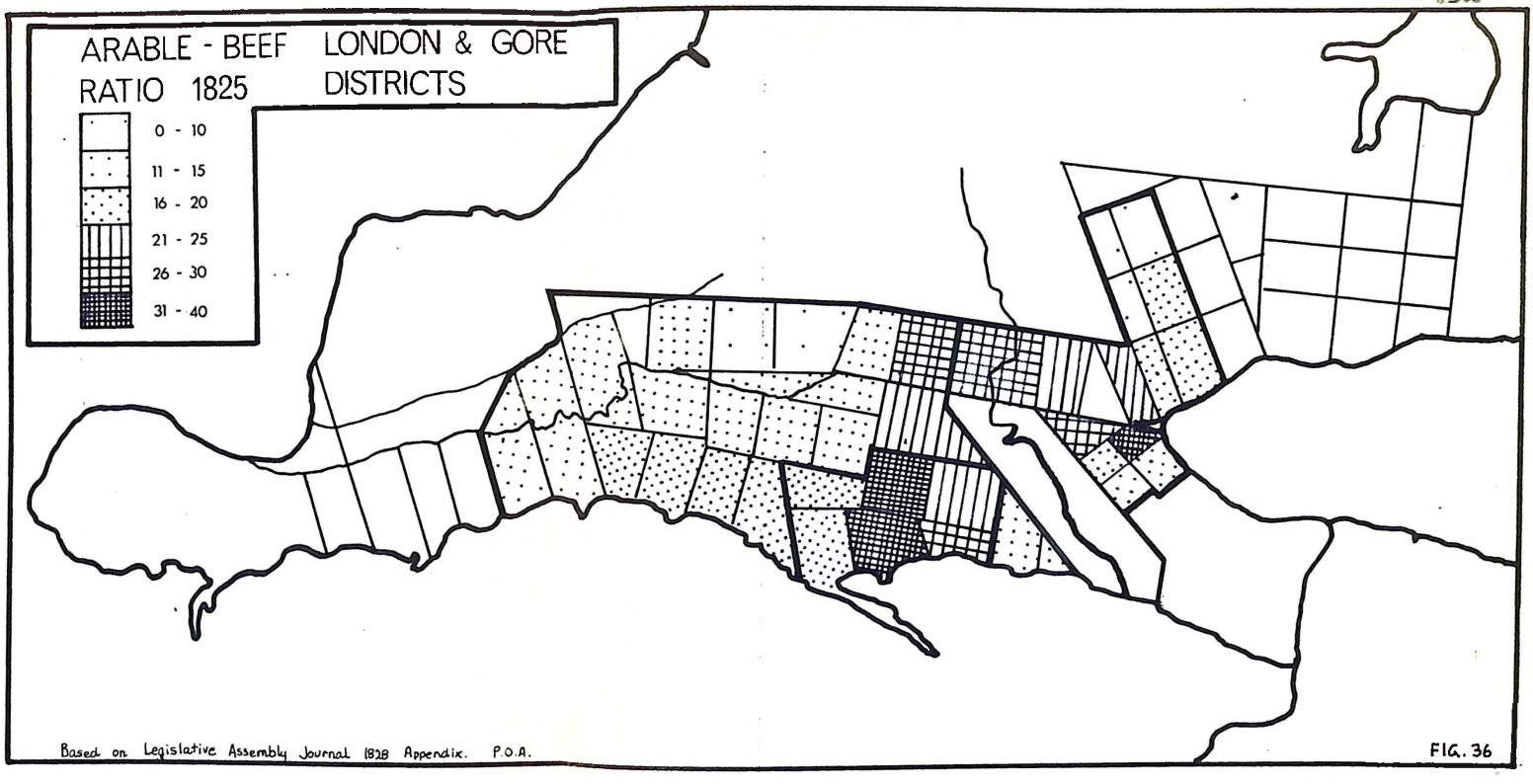
In the same year, James McCall, who was a neighbour of Tisdale's had grain milled at the Gustin mill. Two hundred barrels of flour were produced which, shipped to Quebec, sold for 16$ a barrel.[82] In Michael Smith's account, Woodhouse and Townsend were populated by,

> 'rich farmers who raise great quantities of grain and cattle. '5 (1812)[83]

Later in the same year, 600 barrels of flour were sent from Long Point bay to troops in the south western part of Upper Canada.

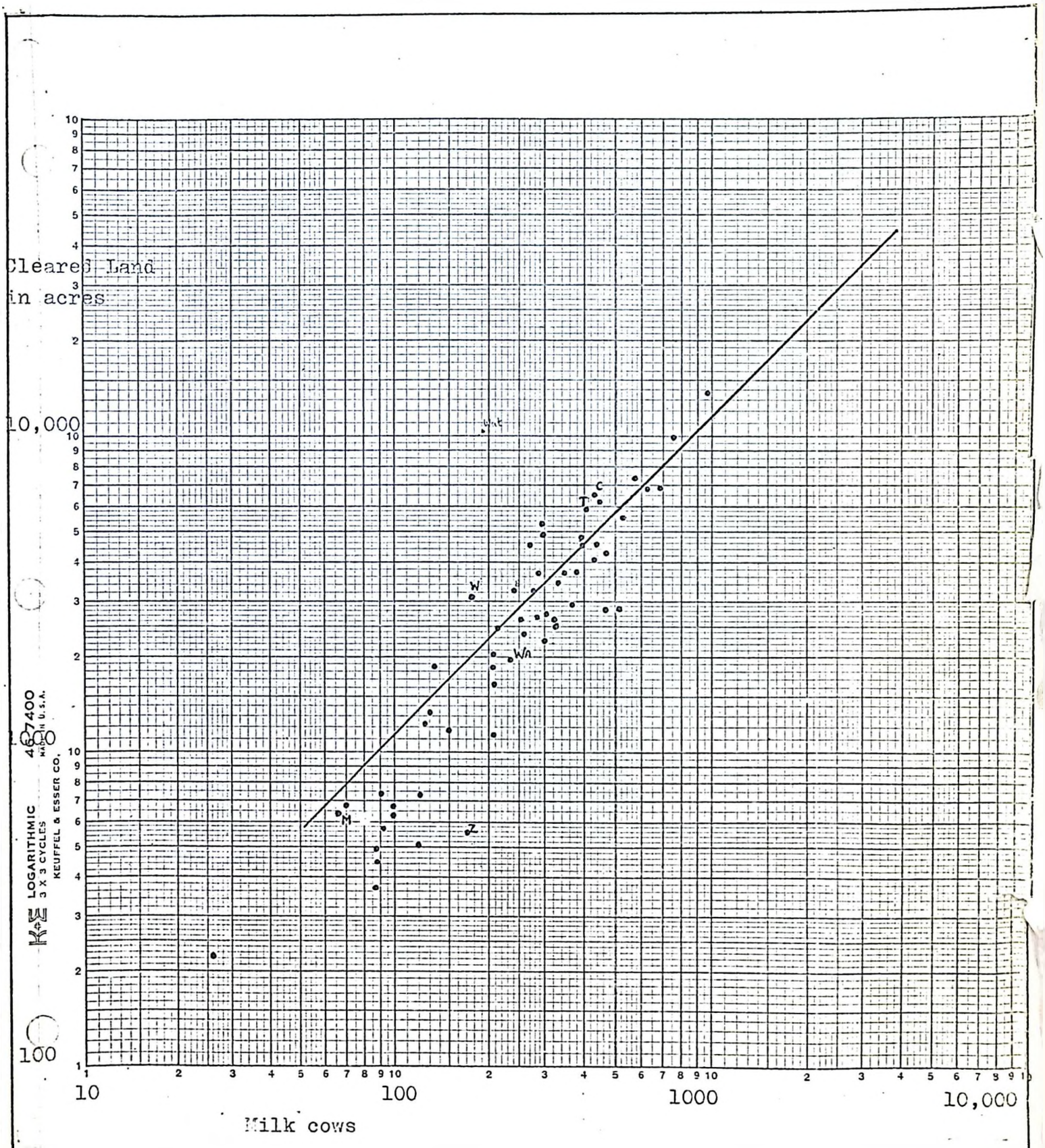
<u>The Long Point Settlement in its Regional Setting.</u>

So far, the explanation has been an expansion of the general formulation of efficiency through location, so as to accommodate the time variable, indicating why it was efficient to locate there during the period 1790-1825.




Based on Legislative Assembly Journal 1828 Appendix. P.O.A.

FIG. 36




Regression analysis, milk cows against cleared land.(1825)
Based upon Assessment Returns.J.Legis.Assem.
1828. P.O.A.

FIG.37.

REGRESSION ANALYSIS, BEEF CATTLE AGAINST CLEARED LAND (1825)

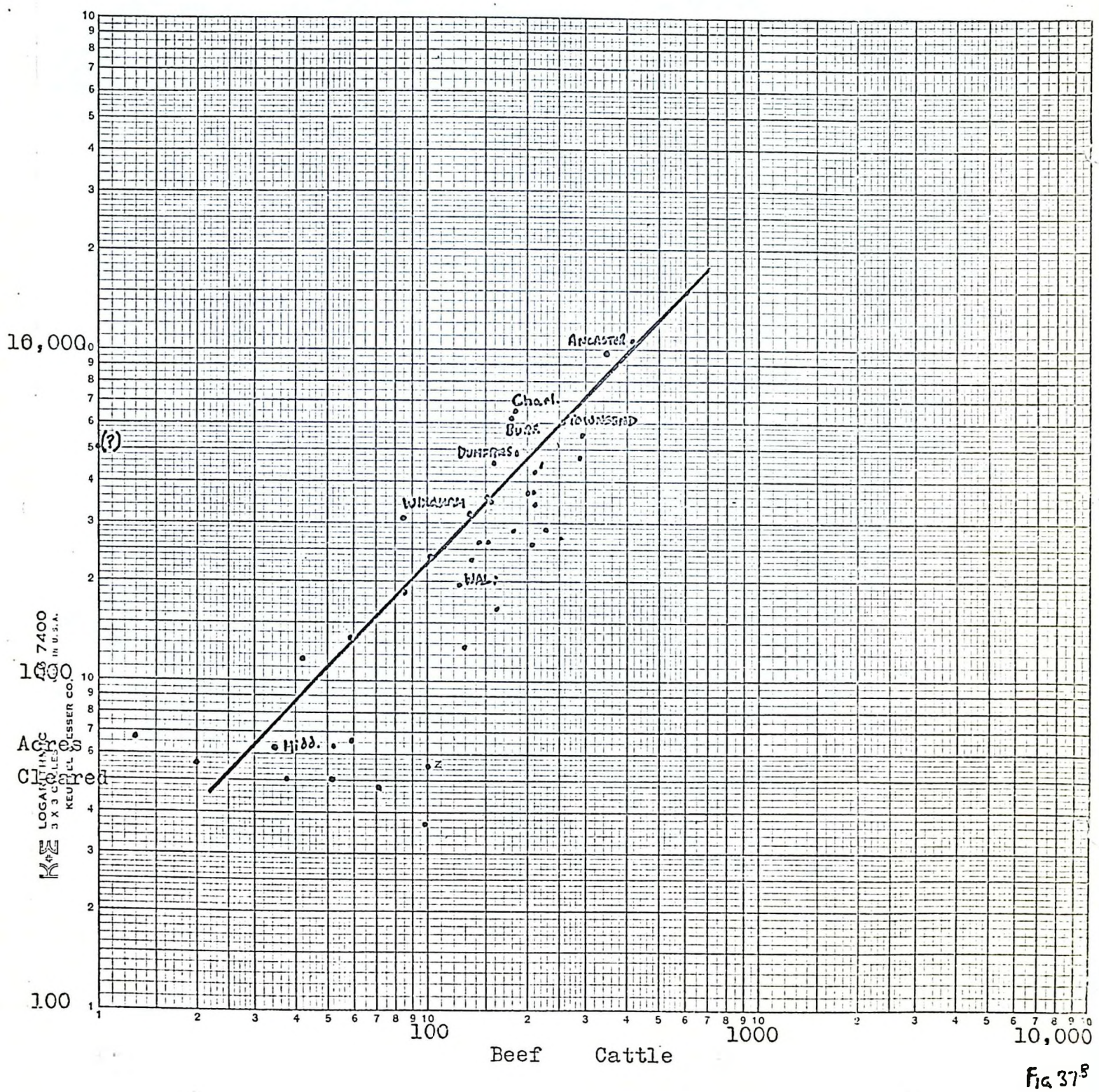



Fig 37.8

Thus, the area was accessible, easy to clear and cleared land was of greater value from the individual and national standpoint; for cultural reasons it was also suitable for settlement.

Clearly, as we investigate the particular reasons of efficiency as applied to the Long Point settlement, the study becomes increasingly unique. However, the purpose of this analysis is to show that general theories can be applied to settlement studies even where an area is considered unique in its spatial and temporal dimensions and that the main modifications can be isolated and analysed, at a point in time.

Thus, historical studies consider the area unique from the viewpoint of a certain social group, whereas a geographical analysis shows that they conform to general regularities (of accessibility and efficiency), furthermore, this can be expressed in a simple equation that has all the exceptionalisms of the area concerned, implicit.

An examination of the assessment returns for the western townships of the Province for 1825 brings out the exceptionalisms and unique features of different settlements. Thus, the Long Point townships (along with other oak opening townships such as Dumfries, Burford) have high ratios of cleared land to dairy cows, indicative of the uniqueness of the physical conditions and the date of settlement.(37) This is even more marked in a consideration

of beef/arable ratios where a ratio of 1:35.5 (average 1:18) acres of cleared land per animal is well above average. (FIG 36) (indicative of the fodder problems mentioned earlier).

These variations are shown particularly well in a regression analysis of beef animals against amounts of cleared land. (fig.37[B]). The Long Point townships (with the exception of Middleton and Houghton and Walsingham) emerge as positive residuals in a regression that has a high coefficient of correlation. (r = .8750) Whereas areas of recent settlement such as Zorra township have high negative residuals.

It can be seen that at a different scale of analysis we have a parallel between the variation between the median and particular areas, and the variation between the individual and the majority at the Long Point scale of analysis. The next logical step is to test the general formulations elsewhere for different time periods. Insofar as the Long Point settlement is concerned it was shown that the simple model of settlement evolution could be applied and the particular local conditions analysed and measured according to their significance.

On this basis it was felt that an explanation for the observed conditions could be offered, that of human efficiency or the principle of least effort. Rather than leave the explanation for the observed patterns in its simple form, the modifications according to its point in time were discussed. The purpose was to test the

framework of analysis (rather than the explanation which is based upon empirical findings by Zipf elsewhere). The concluding note re-emphasised that uniqueness can be observed at the regional scale besides that of the individual.

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1. Sauer, C. op. cit.; 124

2. Guillet, E. The Pioneer Farmer and Backwoodsman (Toronto 1963);3.

3. Tasker, L. "The United Empire Loyalist Settlement at Long Point," Ontario Historical Society, 2 (1902)

4. See under pages vii - x.

5. See appendix 2. for sources of settlement data.

6. Scaefer, F. "Exceptionalism in Geography," Annals of the Association of American Geographers 43, (1953);230.

7. Bunge, W. op. cit.; 3 and 35-6.

8. Hartshorne, R. op. cit.; 149-150.

9. Bylund,E. op. cit.; 225 ff. Bylund's study was concerned with few immigrants and settlement expansion relying upon natural increase. Thus, one would expect the time scale to be compressed in our case, where the total number of immigrants was higher, and also increased at a faster rate.

10. Dunham, A. Political Unrest in Upper Canada (London 1927); 22.

11. "Niagara Gleaner," Oct. 12th 1823.

12. Bidwell,P. & Falconer,J. op. cit.; 67-76.

13. Kirk, D. op. cit.; 51-58.

14. _____, Collections of the Norfolk Historical Society, Miss. Papers, Jabez Colver to Ebenezer Colver, 4806-4809.

15. Tasker, L. op. cit.; 125.

16. Owen, E. op. cit.;

17. Cruickshank, E. "Collected Papers of Robert Nichol" Ontario Historical Society, 20 ( 1923);47.

18. Smith, M. A Geographical View of the Province of Upper Canada (New York 1813) ; 10.

19. _____, Collections of the Norfolk Historical Society, Walsh Papers, 550- 1365.

20. Ibid.

21. Gourlay, R. A Statistical Account of Upper Canada (London 1822); 354.

22. _____, Big Creek Conservation Report (History), Dept. of Lands and Forests, Toronto 1963; 62-83.

23. Owen, E. op. cit.;

24._____, Appendix to Legislative Assembly Journal of Upper Canada,(York 1828); unpaginated.

25. Kirk, D. loc. cit.

26. This was fortunate in that it resulted in official references to the squatters.

27. Chewett, W. op. cit.

28. _____, Big Creek Report, History, op. cit.; 54.

29. Ibid.

30. _____, Surveyors' Notes filed under Charlotteville Township Dept. of Lands and Forests, Toronto (unpublished)

31. Kirk, D. op. cit. ; 51 -58.

32. Cruickshank, E. "Petitions for Grants of Land," Ontario Historical Society, 24 (1928); 17 - 145.

33. Tasker, L. op. cit.

34. Simcoe had probably not envisaged this when he wrote his original proclamation to settlers (Feb. 1792) although the the Government in Britain thought that settlement would increase faster by this system.

35. _____, Province of Ontario Archive Report (1921) ; 7.

36. Land Patent Records filed under Charlotteville township, Crown Land Papers, Province of Ontario, Archives.

37. This is one of the main reasons why the land patent records are not a good guide to the date and spread of settlement.

38. Boulton, D'A. op. cit.; 60.

39. Ibid.; 59.

40. Glazebrook,G. A History of Transportation in Canada (Toronto 1964);59 - 96. Vol. I.

41. Cruickshank, E. op. cit.; 41- 74. (1923)

42. _____, Canadian Library Association, Newspaper Microfilm Project, Niagara Newspapers, Hamilton Public Library.

43. _____, Big Creek Report, op. cit.; 177-179.

44. _____, filed under Talbot Road Surveys, Dept. of Lands and Forests, Surveys Dept. Toronto (unpublished)

45. _____, Big Creek Report, op. cit.; 173.

46. _____, Collections of the Norfolk Historical Society, Walsh Papers; 3787 - 3826.

47. Ibid.

48. Gourlay, R. op. cit.; 315 (vol. I)

49. Ibid.

50. "Niagara Spectator" March 15th 1816.

51. Patterson, G. op. cit.; 26 and 31.

52. Bylund, E. op. cit.; 230.

53. _____, Big Creek Report, op. cit.

54. Dunham, A. op. cit.; 83 - 101.

55. The occurrence of several individual locations that appear to disregard the general pattern are accomadated in the probability equation.

56. Haggett, P. op. cit.; 4-8.

57. Ibid.; 95.

58. Gregory, S. Statistical Methods and the Geographer(London 1963); 151-166.

59. Chisholm, M. op. cit.; 114-119.

60. Kemke, E. The Theory of Sets (Eng. Transl.) supra Ch. I. (1950)
Kooros, A. Mathematical Economics ( 1965 ); 79-83.
Haggett, P. op. cit.; 13-15.

61. Hagerstrand, T."The Propagation of Innovation Waves," in Readings in Cultural Geography, P.L. Wagner and M.W. Mikesell, ( 1962); 355-368.

62. Mitchell, J. Historical Geography,(London 1954); 82-124.

63. Haggett, P. op. cit.; 87-100.

64. Zipf,G. Human Behaviuor and the Principle of Least Effort, (Cambridge Mass. 1949); 1-18 and 347-416.

65. Wood's explanation of the predilection for the oak plains in Dumfries township is that the early settlers had 'Good pioneering sense, not due to opportunity or laziness' see, Wood, J.D. "The Woodland Oak Plains Transition zone in the Settlement of Upper Canada," Canadian Geographer, 5 (1961); 47.

66. Isard, W. Location and the Space Economy:..(New York 1956) supra Chapter I.

67. Bunge, W. op. cit.; 2.

68. Later in the same century it was no longer efficient to locate on the plains, but in the present century the conditions have once again reversed.

69. Bunge, W. op. cit.; 12.

70. Mitchell, J. op. cit.; 123.

71. Bowman, I. The Pioneer Fringe,(New York 1931); 7 ff. It is significant to note that his analysis opens with a consideration of the generalities of settlement.

72. B idwell, P. & Falconer,J. op. cit.; 7 ff.

73. Wood found that in Dumfries township, the Americans settled on the plains while the Scots avoided them possibly for this reason. Wood, J.D. op. cit.; 61.ff. (1958)

74. _____, Collections of the Norfolk Historical Society, Fairchild Papers, 7299-7302.

75. Dunlop,D. Statistical Sketches of Upper Canada by a Backwoodsman, (London 1832); Ch. 6.

76. Gourlay, R. op. cit.; 354.

77. The first reference to an improved steel plough is in 1823. "Niagara Gleaner," May 24th, 1823.

78. Gourlay, R. op. cit. 316.

79. Ibid. 354.

80. Dunham, A. op. cit.; 26.

81. _____, Collections of the Norfolk Historical Society, Walsh Papers,

82. Owen, E. op. cit.;

83. Smith, M. op. cit.; 9.

84. Cruickshank,E. op. cit.; 27 (1923)

85. The Pioneers had considerable difficulty in finding sufficient fodder on the plains. The Walsh family made frequent purchases of hay from other settlers near the Turkey Point Marsh.see, Collections of the Nor folk Historical Society, Walsh Papers Account Records, 1736 - 2068.

# Part IV

## Concluding the Analysis

*******

## IV.1. Inverting the Analysis, Predicting the Direction of Settlement Evolution.

One of the basic tenets of the analysis was the fact that it could be undertaken within the framework of a general formulation of settlement evolution; furthermore, the modifying factors could be isolated and measured. Since the analysis was concerned with a great number of locations it was felt justified to offer an explanation for the observed patterns. Theexplanation was based upon the theory that in the majority of cases man attempts to maximise (or satisfice ) his returns in the most efficient manner possible.

If it was possible to isolate the factors important in the evolution of settlement, it should be possible to invert the analysis and thus predict the most likely direction of settlement evolution. Therefore, if the probability of location was a function of distance and effort, by assigning values to these variables with a sample network, a surface of efficiency values can be constructed.

### Stage 1. Assumption of the Regional Trend of Accessibility.

The general trend in the movement of population was from south to north. (in an exhaustive investigation where actual knowledge was deficient, this could be varied using methods of high-speed computation). Thus, a series of

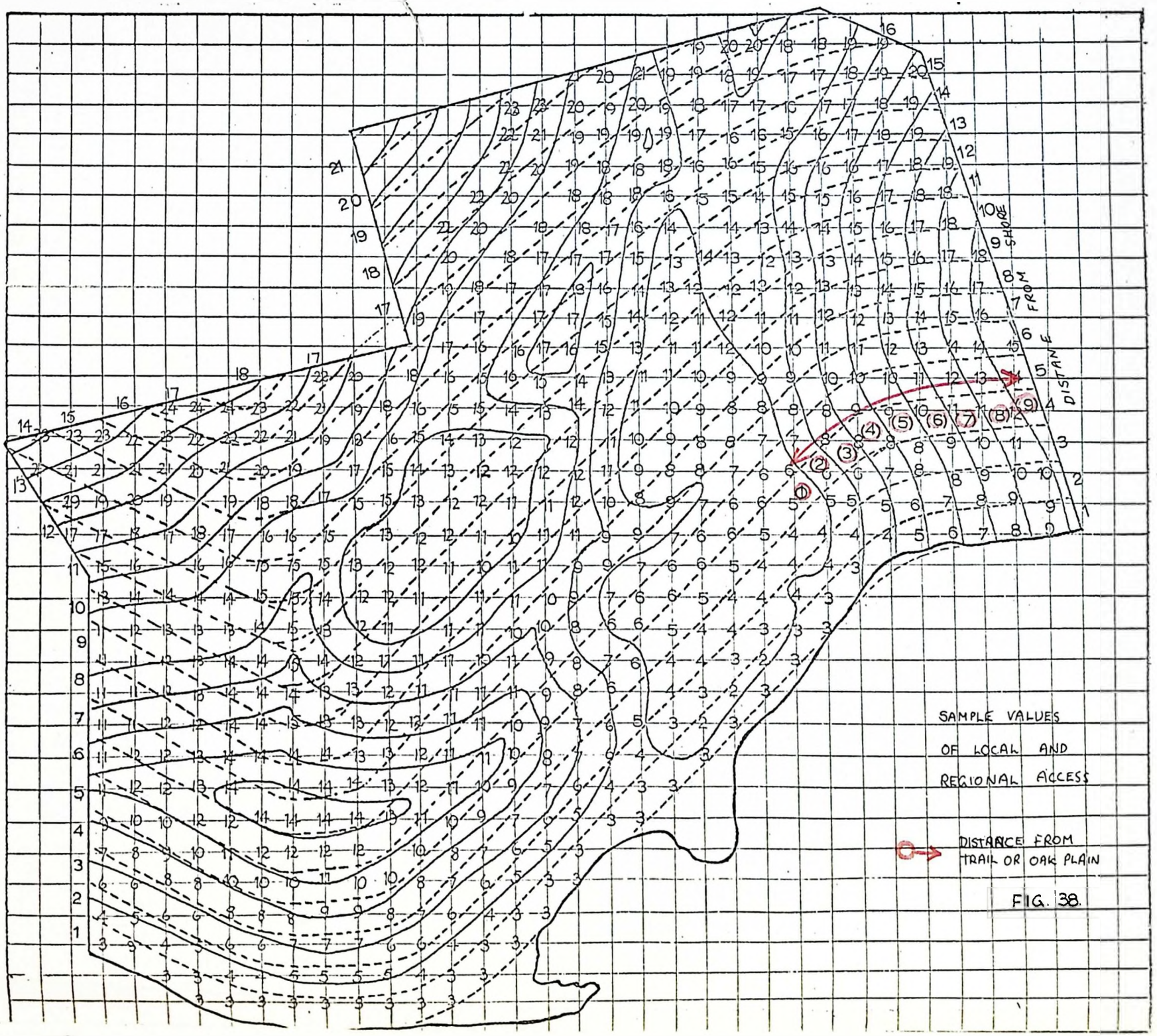

SHORE
FROM
DISTANCE
SAMPLE VALUES
OF LOCAL AND
REGIONAL ACCESS
DISTANCE FROM
TRAIL OR OAK PLAIN

FIG. 38.

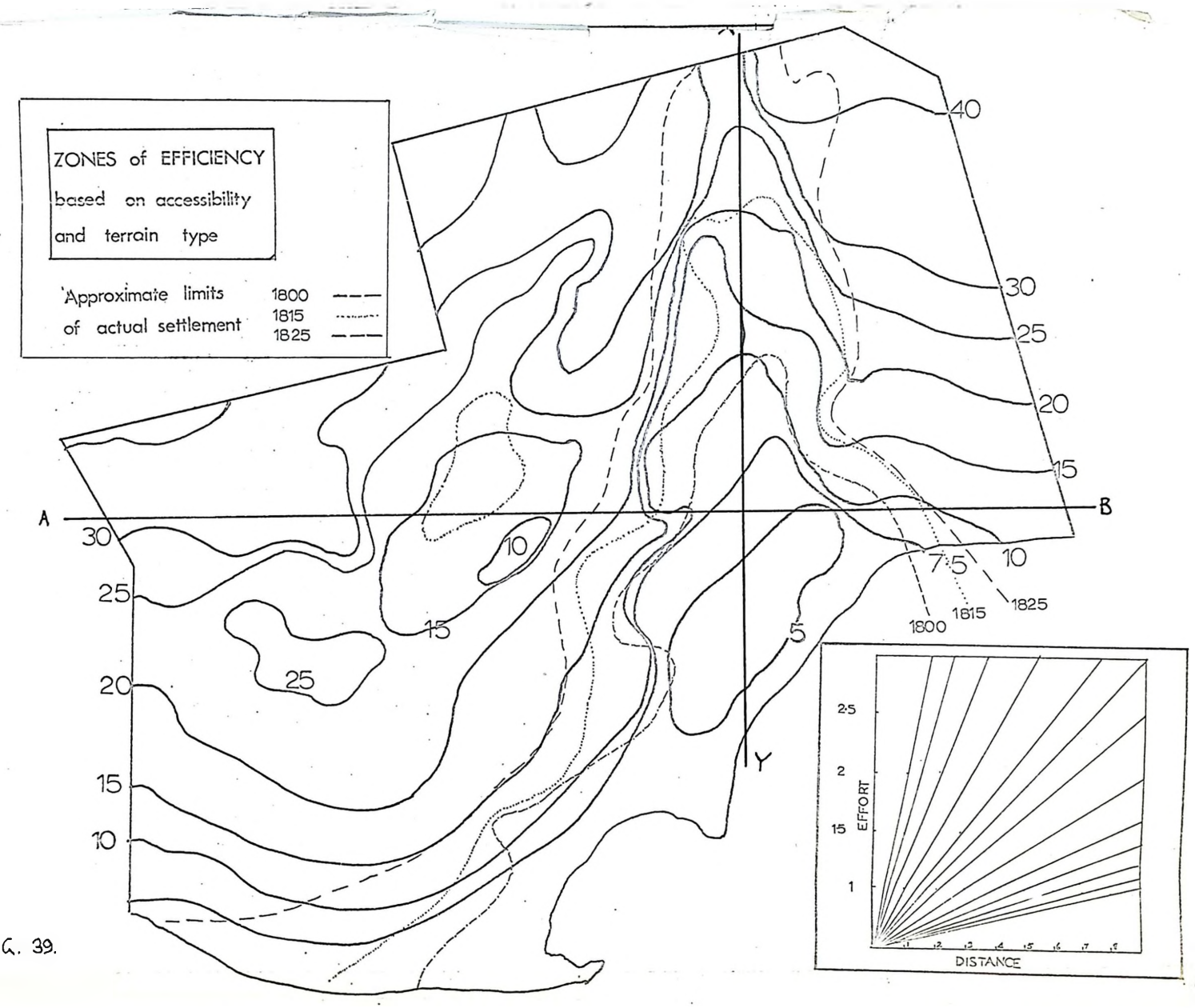

ZONES of EFFICIENCY
based on accessibility
and terrain type
Approximate limits of actual settlement
1800
1815
1825
A
B
Y
40
30
25
20
15
10
5
30
25
20
15
10
25
15
10
7.5
1800
1815
1825
EFFORT
DISTANCE

FIG. 39.

parallel zones of increasing distance from the lakeshore to the interior,having a constant gradient increase.(fig.38) Consequently,those areas close to the shore are relatively more efficient than those at a greater distance: values can be assigned to the parallel zones at one mile intervals.

Stage 2. Variations in local accessibility.

The next step is to assume that there will be a decrease in efficiency from the trails that pre-dated settlement. In addition the oak plains can be considered as trails since points on the plains were accessible in all directions. Again, zones of increasing distance from the trails can be constructed(fig.38).

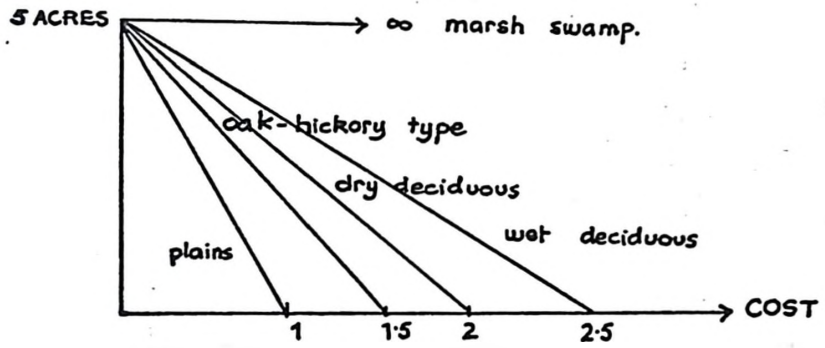
Using the grid system,the regional and local values of accessibility can be combined to give the spatial variation in general accessibility at the appropriate grid points(fig.38)

Stage 3. Variations in the Terrain and subsequent expenditure of effort.

The vegetation distributions reconstructed in Section One, are an index of physical conditions at certain points, (soil,drainage,vegetation) constituting the third major variable. In topological terms this third variable can be incorporated to construct the surface of efficiency.

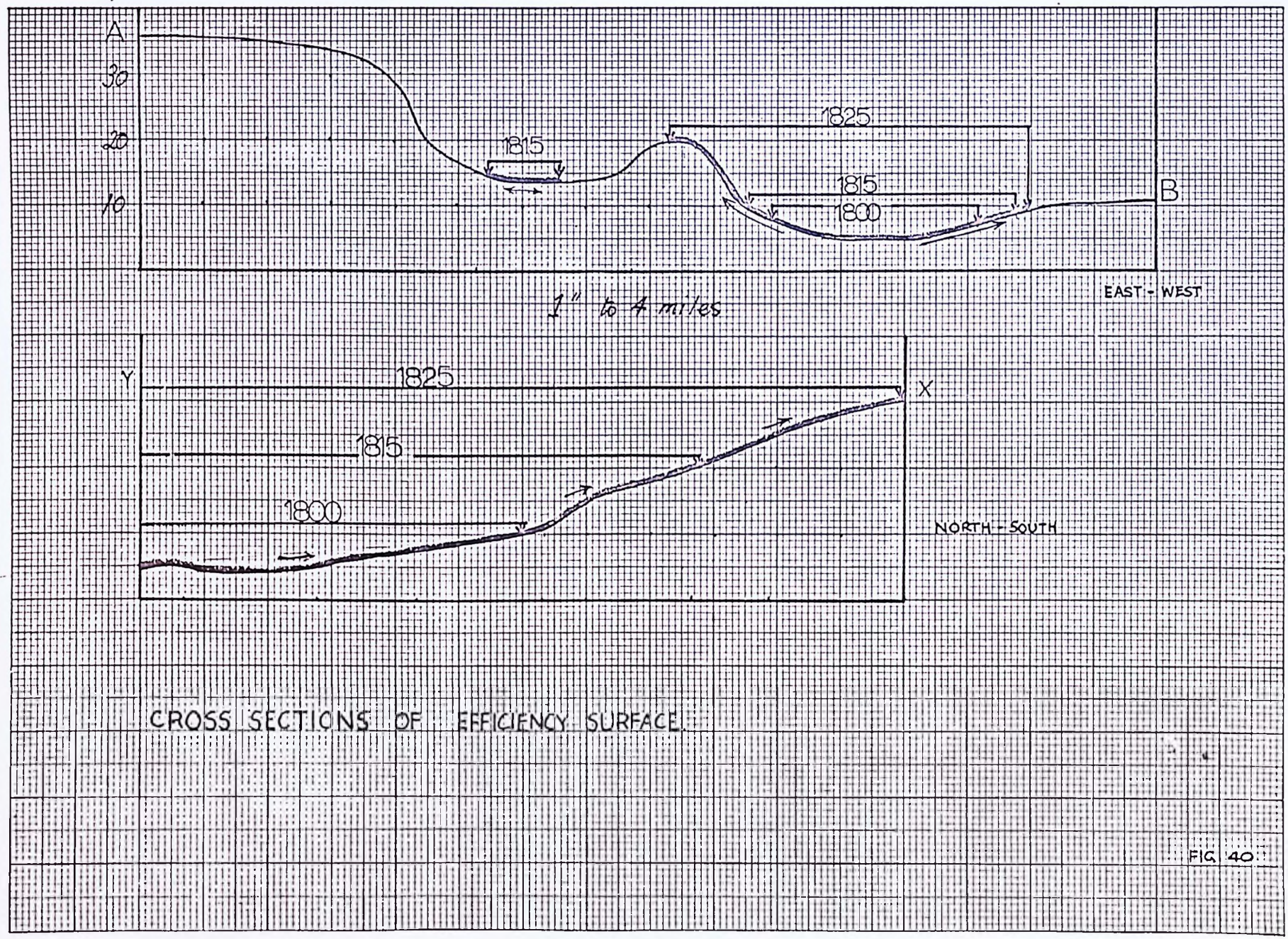
However, the problem is to assign quantitative values to the different types of vegetation.Fortunately, a

relative assessment of the different types of vegetation does exist.One of Gourlay's questions(1817) queried 'the cost of clearing and fencing 5 acres of land,'-- based on the replies,the relative cost (effort in economic terms) of clearing the different land tyes can be estimated. The oak plains appear to have been the cheapest land to clear, other types are a multiple of this,




Values corresponding to the different land types can be assigned to the grid points as multiples of the accessibility index, with subsequent interpolation in contour form. The range of possible values is shown as a graph (fig. 39) - the highest values, points at which resistance to location is greatest, would be low in accessibility (8/9) and high in effort 2.5. (point x ). At the other extreme, a combination of easy access and small effort gives a low value(point y ).

The final product is a surface of varying efficiency values. Inspection of the surface shows valleys of small effort, ridges and summits of pronounced effort and high




CROSS SECTIONS OF EFFICIENCY SURFACE.

FIG 40

basins of small effort within them.

Superimposing the evolution of the extent of settlement at certain dates indicates a significant visual relationship with the surface of efficiency. Cross sections of the surface(fig.40) show that settlement proceeded at a faster rate up the valleys than to the east or west, a function of variation in the terrain of efficiency.Clearly, it can be seen that here is a useful method of combining variations in the physical and human geography in investigating the evolution of settlement patterns. Thus, by regression analyses the data could be tested against the surface of efficiency for other areas.

It can be seen that the final section is the product of sections One to Three, the surface of efficiency being a product of the physical,primitive and European geographies. Inverting the analysis indicated that the preceding analysis had a logical and factual basis; although one cannot be completely satisfied with the visual correlation it must surely encourage further investigation in this direction. Furthermore, the surface also overcomes the problem of scale, since it combines the regional trend, the local trend, and the lot by lot variations in terrain.

Finally,the time variable is absolved since changes can be built into the analysis to produce a dynamic surface.

IV. General Summary:

Recent trends in geographical inquiry have seen a withdrawal from chorographic exceptionalism and a subsequent reorientation, the search for order. In addition, there has been an increase in the use of quantitative methods. Insofar as historical studies of settlement evolution have been concerned few attempts have been made to develop general theories or apply more precise methods of analysis. A review of recent settlement studies undertaken in Ontario indicated that while much has been contributed to our knowledge of settlement comparatively little has been added to understanding the problem of individual location. However, there have been recent attempts to organise analysis within the framework of sequent occupance methedology. This method of treating the time variable was adopted in the present study.

Using original land survey information the physical background at the end of the 18th century was reconstructed; the reconstructed vegetation associations were an index of the variation in soils, drainage and association types at certain points, thus, forming the basis for a discussion of the oak opening 'problem' and setting precise limits to a variable important in human settlement.

The study of human settlement began with the Indian sequence to indicate the continuity of human settlement in the area and examine the patterns for regularities of behaviour,

It was seen that the inhabitants of the Long Point area were subject to two types of movement; an internal diffusion process whereby settlement gradually moved inland and external movements such as migrations, conquets and trade contacts. Since much of the data was incomplete and conflicting the analysis was conducted in verbal terms. The main vestige of the period was the trail, a product of human movement: less significant relics were left in the form of habitat sites.

With the onset of European settlement and the general increase in data available, a more precise analysis was adopted. The growth of settlement was described and then set within the framework of settlement evolution formulated by Bylund. Simple statistical comparisons were made between the general model and the data thus enabling the main modifications to be isolated and analyzed.

Since the analysis concerned a mass of locations, it was considered logically sound to offer an explanation for the pattern observed, in terms of a general theory of human efficiency. The explanation was expanded to account for the efficiency during that period of time.

Finally, the analysis was inverted to test the logic of the analysis and to see whether the direction of settlement could be predicted on the basis of the variables isolated earlier.

IV. Conclusions to the Analysis.

The analysis opened with a description of the physical topography and closed with description of the human topology of the Long Point area. The physical background was described in verbal terms but this was considered inadequate. It was found that a more accurate source of material existed in original land survey information whereby the spatial variation in the terrain could be isolated. Despite the criticisms levelled at survey information it was found that they were accuratewhereas their utility depended upon the scale of analysis.

The areal precision of the information provided a basis for examination of the oak opening problem,which must remain unsolved until more material from soil,pollen and archaeological surveys is available.

The analysis of the Indian period showed that despite the inadequate amount of data certain regularities were apparent in the settlement behaviour particularly in regard to the sand/clay border. Analysis through time also indicated that exotic plants were introduced thus fitting in with the verbal models of diffusion developed elsewhere. The major contribution of the analysis of the Indian period was the isolation of trails. It was found that the scale of the unit area was to small to deal adequately with the material available for the Indian period,since on the basis of present material few surveys and excavations have been carried out to justify conclusive analysis.

The analysis of early European settlement showed that information was available whereby the majority of individuals could be located at a certain date. The growth of settlement was described in relation to the unique attributes of the area. Analysis of the actual patterns through time was framed in the general formulation of the model developed by Bylund. By actual measurement it was found that locations in the Long Point area had a general similarity to the general formulation but the relationship was complex. (fig. 33 )

However, while the general formulation was a useful framework it was thought necessary to isolate the modifications at work. It must also be concluded that given more satisfactory data, a greater range of variables should be included in future analyses. Since the emphasis was upon precision it was felt necessary to measure the variables in precise terms. Measurement showed the fundamental importance of accessibility and the significance of the pre-settlement trails, relics of the Indian period, in the modification of the general formulation. (fig. 34a/b)

By correlating settlement locations and the terrain types it was found that the oak plains were of fundamental importance in the settlement of the area during this initial period; thus, reaffirming Sauer's findings elsewhere and disproving Guillet's statements. It was also possible to show that the plains declined in relative significance through time. Since the variables isolated could not be measured in

exactly the same terms, it was found that set theory provided a useful logical method of indicating the relatedness of the various factors of settlement.

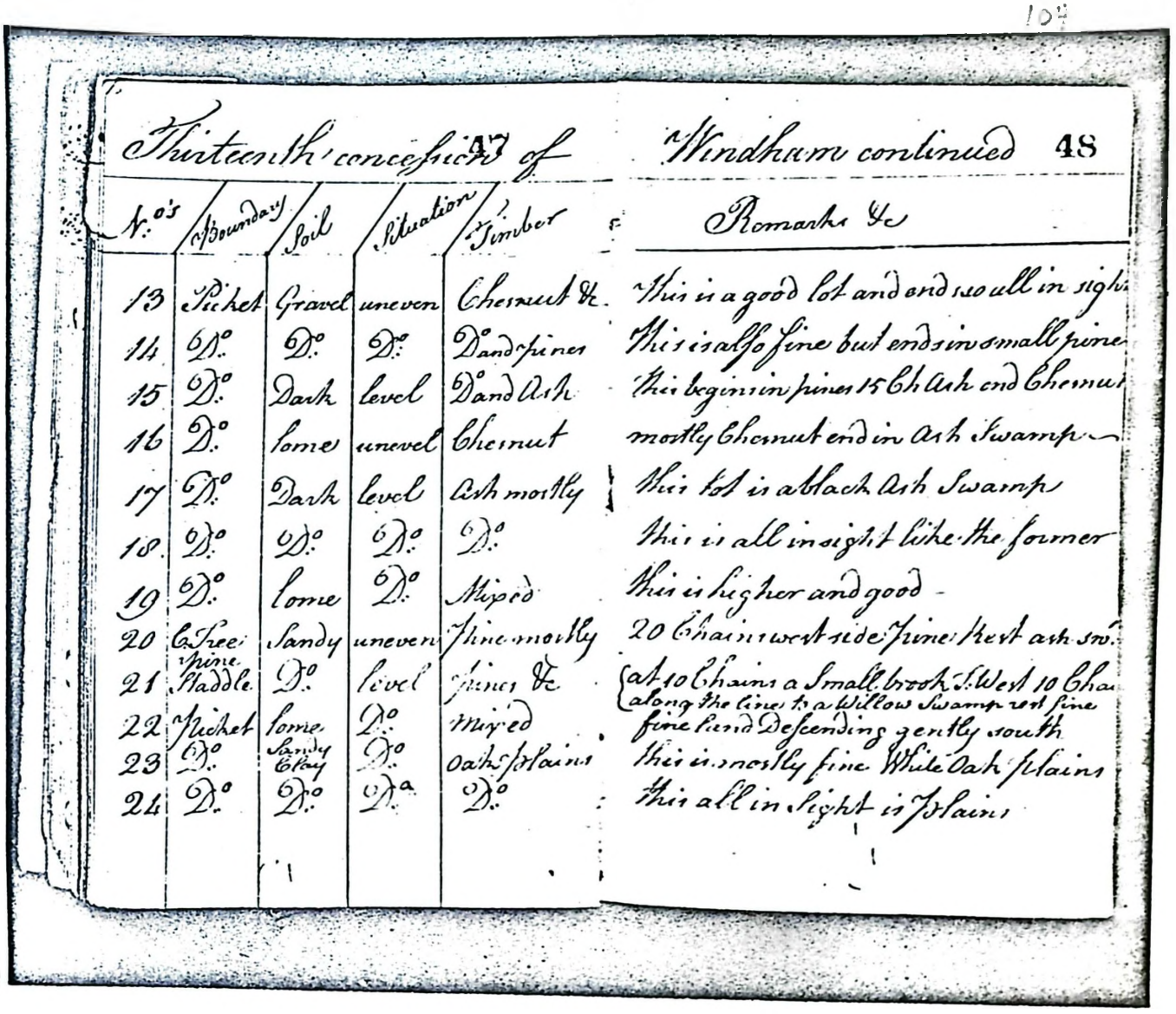
The analysis was not considered an explanation of the settlement patterns observed: explanation was in terms of a general theory of human efficieny, that settlers would attempt to maximize their returns and locate in the most efficient manner possible. It was found that settlers did in fact behave in this manner(which could be synthesised to a probability equation).However, while the general theory explained in this probablistic manner, it found necessary to elaborate the time variable andaccount for efficiency in terms of the period 1790-1825.

Again, the problem resulted in a number of inter-related factors,clearing costs, the grain economy and the availability of the oak plains,but, these were implicit in the general theory. One can conclude therfore once again that the application of a general model or formulation must be in terms of a framework and that the analysis must proceed further and examine the modifying variables. One feature that does emerge is that historically unique features such as the Loyalists, follow the general pattern of spatial behaviour.

To test the logical content of the analysis, of studying a certain area through time, of framing the study in terms of general theories, the analysis was inverted.

Inverting the analysis synthesized the thesis; ideally the actual data should then have been tested against the surface of efficiency by more precise methods than visual correlation, but this was not possible at this stage. Thus, figure 38 is the essence of section II, the Indian trail and its local effects upon location during the following phase: Figure 38 is also the essence of section III, in that it postulates the general direction of movement at a different scale but as applied to the Long Point area. Employing the sample values from figure 38 and combining them with relative costs of clearing different terrain types(which is a product of the First section and the Third section(Gourlay's data)) a topological surface combining physical and human geographical values was the result. Significant visual correlation proved the efficacy and the logical content of the analysis.

Clearly, it can be seen that great potential exists in analyzing human settlement through time in this manner. It introduces precision and opens the way for even more sophisticated analyses within a dynamic framework of human settlement through time.



Thirteenth concession of Windham continued

| N.o's | Boundary | Soil | Situation | Timber | Remarks &c |
|---|---|---|---|---|---|
| 13 | Picket | Gravel | uneven | Chesnut &c. | This is a good lot and end so all in sight |
| 14 | D.o | D.o | D.o | D.o and pines | This is also fine but ends in small pines |
| 15 | D.o | Dark | level | D.o and Ash | This begin in pines 15 Ch Ash and Chesnut |
| 16 | D.o | Some | uneven | Chesnut | mostly Chesnut end in Ash Swamp |
| 17 | D.o | Dark | level | Ash mostly | This lot is a black Ash Swamp |
| 18 | D.o | D.o | D.o | D.o | This is all in sight like the former |
| 19 | D.o | Some | D.o | Mixed | This is higher and good |
| 20 | Chesnut Pine | Sandy | uneven | Pine mostly | 20 Chains west side Pines West ash sw. |
| 21 | Paddle | D.o | level | Pines &c | at 10 Chains a Small brook S. West 10 Chains along the line to a Willow Swamp red pine fine land Descending gently south |
| 22 | Picket | Some | D.o | Mixed | |
| 23 | D.o | Sandy Clay | D.o | Oak & plains | This is mostly fine White Oak & plains |
| 24 | D.o | D.o | D.o | D.o | This all in sight is & plains |

Appendix,1. Example of Original Land Survey Records showing the type and detail of description. Taken from the survey of Windham township by Wm. Hambly,1797. Department of Lands and Forests,Surveys Department, Province of Ontario, Toronto.(unpublished)

## Appendix Number 2. Location Data

**Sources.**

i Norfolk County Historical Atlas, 1877 (Toronto)

ii Collections of the Norfolk County Historical Society, Dominion Archives Ottawa.

iii Map of Norfolk County 1855, Tremaine. P.O.A.

iv Land Patent Records, P.O.A.

v Owen, E.A. op. cit.
Tasker, L. op. cit.
Gourlay,R. op. cit.

Sample of Data.(part of Walsingham Township material)

| Name. | Location. | Approximate Date. | Land Type. |
|---|---|---|---|
| Brown. | 15. I | 1794 | Hc. |
| Backhouse. | 17/18 II | 1798 | Hc. |
| Backhouse. | 16/17 I | 1803 | Hc. |
| Burgar. | 7. II | 1803 | Bl. |
| Cope. | 24. I. (?) | 1793 | Bs. |
| Baumwart. | 12. A. | 1800 | Hc. |
| Dedrick. | 18 I. | 1793 | Hc. |
| Bowers. | 2. I. | 1810 | Hc. |
| Cartwright. | 17. I | 1795 | Hc. |
| Ellis. | ? | 1803 | ? |
| B arnet | ? | 1811 | ? |
| Drestin. | ? | 1817 | ? |
| Dutch. | 23. I. | 1817 | Hc. |
| Cooper. | ? | 1813 | ? |
| Burnham. | ? | 1813 | ? |
| Becker. | 20. B.F. | 1815 | Hc |
| Fick. | 10. A. | 1805 | Hc. |

Comments. Probably about ± 75% of early settlers were accounted for: the fact that it was an early settlement resulted in the lack of complete data.Thus,many settlers could be found but not located exactly and were not marked on the final maps. The apparent disparity between township populations and the number of locations is explained by

the large numbers in each family and also the numbers of batteaux workers, fishermen, laborers and craftsmen that appear in some records but have no real spatial significance in this analysis.

One disadvantage that might appear in other areas is that of common surnames, particularly in the case of some Scottish and Irish settlements. This occurred occasionally in the study area, but in each case was solved by cross checking with Owen's genealogies.

By cross checking it was also possible to keep a check on the reliability of the information. Thus, much of the Norfolk Historical material was Ist generation, the Norfolk Historical Atlas, 2nd and 3rd generation material. Owen's material was based on 4th and 5th generation material but even so, was still mainly accurate in most cases.

.-.-.

Table (I)

The frequency of locations according to certain soil types. (1825)

| | Township / Soil Type | Ps | Fl | Fsl | Fs | Fg | Ml | Ms | Mc | Hc. | Bs. | Bc. | Gl. | Ws-M. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Charlotteville | 157 | 23 | - | 13 | - | 4 | 14 | - | 10 | 6 | - | - | 40 |
| a | Reserved | 41 | 4 | - | 3 | - | 1 | 2 | - | 2 | - | - | - | 6 |
| b | poss. lots | 116 | 19 | - | 10 | - | 3 | 12 | - | 8 | 6 | - | - | 34 |
| c | Locations | 29 | 10 | - | 5 | - | 2 | - | - | 4 | 3 | - | - | 4 |
| a | Townsend | - | - | 67 | 4 | 25 | - | 36 | - | 13 | 20 | 107 | - | 24 |
| a | | - | - | 13 | 1 | 5 | - | 8 | - | 2 | 9 | 42 | - | 9 |
| b | | - | - | 54 | 3 | 20 | - | 28 | - | 11 | 11 | 65 | - | 13 |
| c | | - | - | 34 | 2 | 7 | - | 8 | - | - | 2 | 1 | - | 2 |
| | Windham | 27 | - | 8 | 92 | 63 | 23 | - | 12 | - | - | 1 | 15 | 67 |
| a | | 19 | - | 3 | 40 | 40 | 9 | - | 4 | - | - | - | 6 | 41 |
| b | | 8 | - | 5 | 52 | 23 | 14 | - | 8 | - | - | 1 | 9 | 26 |
| c | | 4 | - | - | 22 | 6 | 14 | - | 1 | - | - | - | 3 | 1 |
| | Woodhouse | 3 | 12 | 6 | 7 | - | - | 2 | 2 | 64 | 24 | 13 | - | 6 |
| a | | 1 | 2 | 2 | 1 | - | - | - | - | 19 | 5 | 3 | - | - |
| b | | 2 | 10 | 4 | 6 | - | - | 2 | 2 | 45 | 19 | 10 | - | 6 |
| c | | 2 | 7 | 4 | 6 | - | - | 2 | - | 3 | 8 | - | - | 5 |
| | Walsingham | 100 | - | - | - | - | - | - | - | 53 | 11 | | | 14 |
| a | | 33 | - | - | - | - | - | - | - | 17 | 3 | | | 4 |
| b | | 67 | - | - | - | - | - | - | - | 36 | 8 | | | 10 |
| c | | 3 | - | - | - | - | - | - | - | 25 | 2 | | | - |
| | Houghton | 5 | | | | | | | | | | | | |

## Table II

Numbers of locations in terms of distance from the lakeshore (FIG.33)

| | 0 - 3.9 m | 4 - 7.9m | 8 - 11.9 | 12- 15.9. | above 16 |
|---|---|---|---|---|---|
| 1795 | 17 | 1 | | | |
| 1800 | 41 | 32 | 12 | 10 | 1 |
| 1815 | 73 | 46 | 44 | 21 | 3 |
| 1825 | 116 | 53 | 66 | 46 | 22 |

## Table III

Numbers of locations within certain distances of the main trails. (FIG33B)

(Numbers in zones bracketed)

| | Within 2 miles | within 4m | within 6 m |
|---|---|---|---|
| 1795 | (18) | - | - |
| 1800 | (78) | 96 (18) | - |
| 1815 | (137) | 182 (45) | 187 (5) |
| 1825 | (232) | 282 (50) | 302 (20) |

Table IIII Locations east and west of the main Brantford trail 1825 (FIG34A)

| WEST 6 | 4 | 2 | tr il | 2 | 4 | 6 EAST |
|---|---|---|---|---|---|---|
| 2 | 26 | 38 | + | 31 | 6. | |

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| 18-21. pages, 50, 51, 1. | Legislative Assembly Journals, 1828, appendix, unpaginated. Province of Ontario, Archives. |
| 22. 53 | B ased upon material shown in Appendix 2. (sample) |
| 23, 24. 54, 5. | Based on measured data, and Bylund, E. op.cit. |
| 25, 57. | Material discussed in text. |
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| 28.a. 64, 64. | Discussed in Text. b. as above (27) |
| 29. 65. | Filed by Township, on Microfilm, P. Ontario Archives. |
| 30. 66. | As above (22) |
| 31. 67. | Niagara Newspapers, Canadian Libraries Microfilm Project. Hamilton Public Library. |

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32. 67. As above, (30) and (22).

33. 72. Based on measurement of Data.

34.a.b. 74, " " "

35.76,7/ Based on data,discussed in text.

36,37.85.Legislative Assembly Journals ,op.cit.

38.-40.95. Based on values given to sample points at
i. distance from shore.
ii.distance from a trail.
iii. terrain type.