

A GEOGRAPHICAL STUDY

OF

BOSANQUET TOWNSHIP

A THESIS PRESENTED TO

THE FACULTY OF THE DEPARTMENT OF GEOGRAPHY

McMASTER UNIVERSITY,

HAMILTON, ONTARIO.

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE

DEGREE OF BACHELOR OF ARTS

BY

JOHN CALVERT WASHINGTON

FEBRUARY, 1961.

ACKNOWLEDGMENTS

The author wishes to express his thanks for the aid given by the staff of the McMaster University Geography Department and especially to Dr. L. G. Reeds, for his advice and guidance in the preparation of this thesis.

I am also indebted to Mr. Donald Frayne, the Township Clerk, for his kind assistance in supplying first-hand information about the township.

I appreciate the assistance rendered by friends and relatives in gathering information in the field, processing data and typing this thesis.

TABLE OF CONTENTS

Acknowledgments	(i)
Table of Contents	(ii)
List of Figures	(iii)
List of Photographs	(iv)
List of Appendices	(vi)
Foreword	(vii)

BOSANQUET TOWNSHIP

Introduction: Location, Size and Shape	2
PHYSICAL GEOGRAPHY	6
Geology	6
Preglacial Topography	11
Glaciation and Glacial Topography	12
Development of Bosanquet's Landform	14
Physiography	22
Climate	29
Natural Vegetation	31
Soils	34
Land Types	54
HUMAN GEOGRAPHY	
History of Settlement	59
LAND USE	
Agricultural	70
General Farms	70
Livestock	73
Fruit Farms	76
Market Gardening	77
Non-agricultural	81
Quarrying	81
Forestry	81
Indian Reserves	82
Ipperwash Military Camp	83
Ipperwash Provincial Park	83
Recreation	84
Hunting and Trapping	87
URBAN GEOGRAPHY	89
Grand Bend	89
Port Franks	91
Arkona	93
Forest	96
Thedford	101
Smaller communities	104
Trade Areas	104
SUMMARY AND CONCLUSION	107
BIBLIOGRAPHY	112

LIST OF FIGURES

	Page
1. Location Map	1
2. Relief Map	4
3. General Reference Map	5
4. Cross section of the Michigan basin	6
5. Geological Map	7
6. Map of the "Ontario Island"	14
7. The Glacial Great Lakes	15,17
8. Physiographic Map	21
9. Soil Map	39
10. Land Types Map	55
11. Natural Drainage	56
12. Surface Texture	57
13. Lake Hurwell 1840	61
14. Population Graph of Bossanquet Township	68
15. Agricultural Land Values	80
16. Importance of Smith Lake in Duck Migration	88
17. Population Graph of Arkona	94
18. Population Graph of Forest	97
19. Trade Areas	105
20. Land Use Map of Forest	back cover
21. Agricultural Land Use Map	back cover

LIST OF PHOTOGRAPHS

1. A "Kettle" from the Kettle Point Formation
2. View across the "cut" near Highway No. 21
3. Typical till moraine landscape
4. Extensive pasture on the sand plain
5. Lake Warren beach
6. Lake Warren beach materials
7. View of the Algonquin shorecliff
8. Cross section of "Pinery" sand dunes
9. Wide view of the Thedford Marsh
10. The Bluewater Highway through "The Pinery".
11. Typical Bosanquet farmstead
12. Field of Oats
13. Installing drainage tile
14. Pasture on the bevelled till plain
15. A fine herd of poll Angus cattle
16. Abandoned house
17. Sheep on the sand plain to the east of Thedford
18. Till moraine farm scene
19. Oats, corn and bush - Con. X.
20. Prize stock farm
21. Tobacco - a new crop on the sand plain
22. Queen Anne's Lace on the abused soils of the ridge
23. Large acreage of beans on the Thedford Marsh
24. Klondyke Gardens Ltd., Highway No. 21
25. Wide view of the market gardens
26. Harvesting onions for Dutch setts

27. Drainage tile
28. Typical "Kettle Point" lake front cottage
29. Lake Huron beach in the Pinery Provincial Park
30. The Old Ausable in the pinery
31. Rock Glen waterfall
32. View down the Canada Company "Cut"
33. Port Franks' harbour
34. Roder's turkey processing plant, Arkona
35. Forest's King Street, commercial section
36. Forest Basket Company
37. Tile Plant, Forest
38. The main street, Thedford
39. Thedford railway yards
40. George Coultis' and Son sawmill and lumberyard
41. Brick and tile plant, Thedford

LIST OF APPENDICES

	Page
Appendix A: Record of well boring in Bosanquet	112
Appendix B: Crop adaptability ratings for soils of Lambton County	113
Appendix C: Thedford Marsh Acreage, June 1960	114

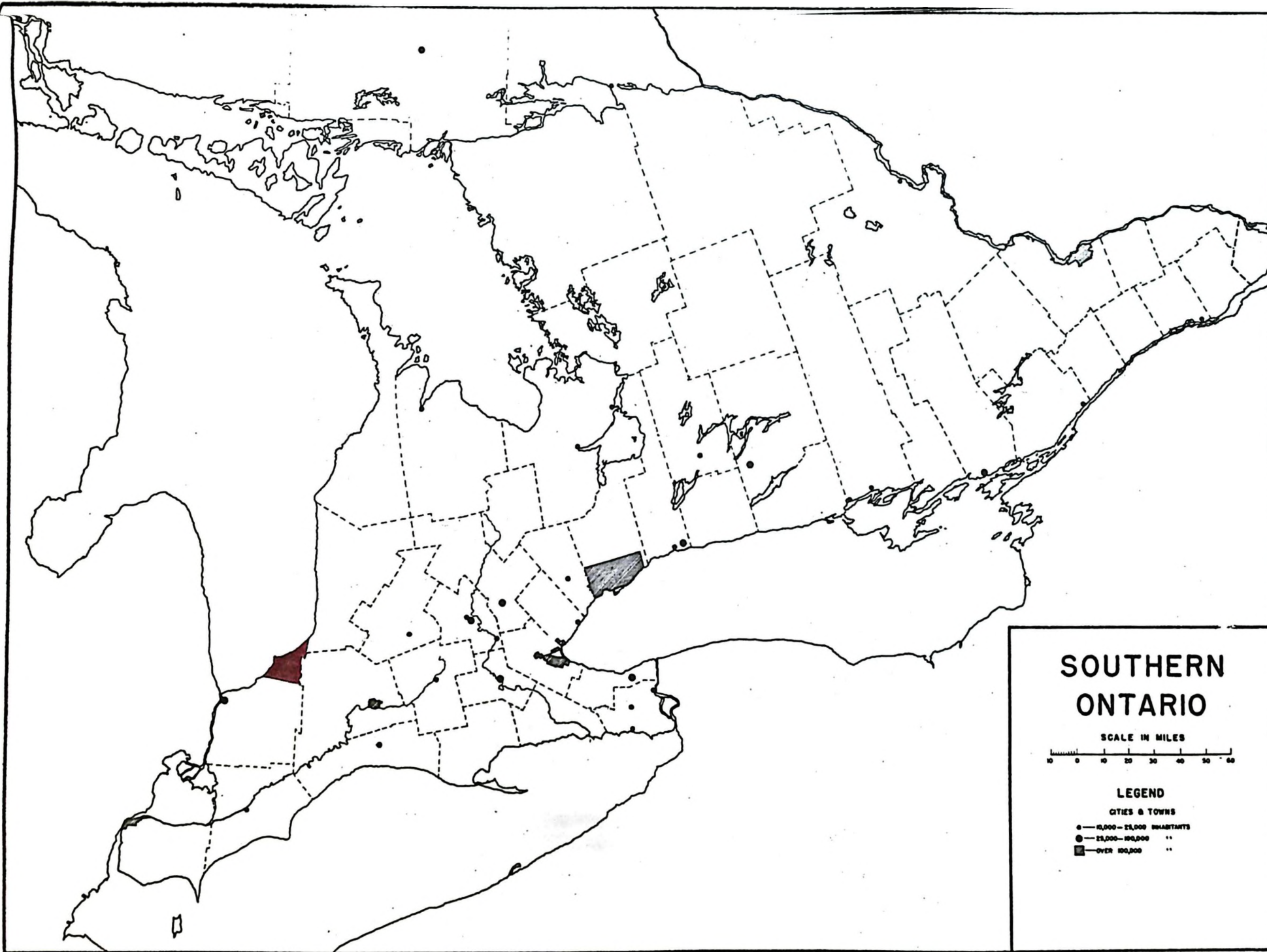
Foreword

The purpose of the thesis is to explain the physical characteristics of Bosanquet township and to show their relationships to each other and to those who have occupied this part of the world for the last one hundred and thirty years.

The "drowned lands" within Bosanquet are considered a paradise for the botanist, and Rock Glen is a veritable treasure chest of fossil finds for the exploring geologist. But it is the entire land area of the township that is so fascinating to the geographer because it is so complicated and diverse. There are no less than five different shorelines, including the present one of Lake Huron, eight different physiographic regions, and at least nineteen different soil types. It thus becomes a challenge to the geographer to see if man's present use of the land reflects the history and natural phenomena of the area.

To begin this difficult task the author carried out field work during the summer months and produced the Land Use map found inside the rear cover. During the autumn and winter months the work of many experts from various fields of learning was read and data concerning the area was compiled.

The plan of the thesis is the presentation of the physical geography followed by the human geography of settlement. Then comes the writer's views on the current land use, both agricultural and non-agricultural, and after a look at the urban geography of the study region, the writer comes to certain conclusions concerning the effect of man on this little segment of the earth's surface.



Bosanquet Township

Introduction: Location, Size and Shape

Bosanquet township is located on the south-eastern shore of Lake Huron at the same latitude as Hamilton. In this position Bosanquet forms the most northern part of Lambton County and the most southern part of the Canada Company's famous "Huron Tract". It is from the Canada Company that the township received its name of Norman-French origin. Charles Bosanquet, M.P., was the first Governor of the Canada Company and the area was named in his honour.

The exact location of the township in relation to the rest of Southern Ontario can best be seen on the accompanying location map.

Unlike most of the square or rectangular townships in Ontario, Bosanquet has a peculiar shape of its own. The overall form is much like a rough sided isosceles triangle with its apex to the north. The western boundary is the shoreline of Lake Huron which, except for the angular, rocky projection of Kettle Point, is smooth and sandy. The meandering Ausable River forms the definite, if irregular, eastern border of the township. In sharp contrast to these two irregular but natural boundaries is the third side of the triangle, the man-made, surveyor straight town line on the south.

In 1959, the township's annual assessment showed a population of 2,658 people living within the borders mentioned above. Since the land area is some 76,497 acres, of which only 53,034 acres are cleared farm land, the reader can see that the population density of Bosanquet township is not high.

As a tantalizing introduction to the thesis area William Sherwood Fox's short but adequate description is worthy of inclusion.

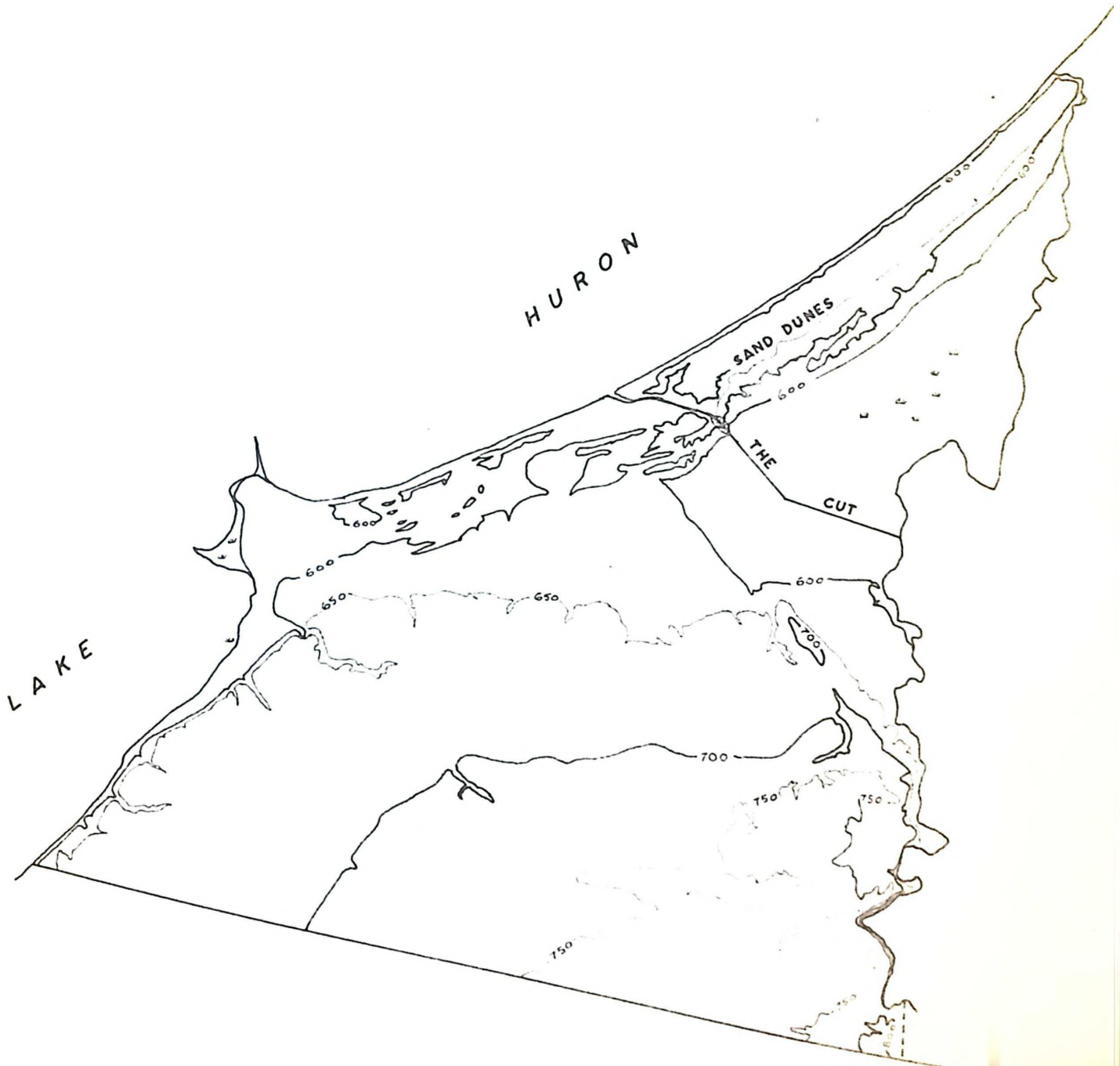
"The region in which I have spent many of my leisure days for a number of summers is one of singular interest. It is, most conspicuously, a natural geographical unit which the eye and a lively imagination can readily encompass, one of those small sharply defined tracts which Nature, in her incisive moods, clips out of the land-mass of a continent. It is even more than lavishly endowed with the manifold forms of life that captivate the lover of the wild. Moreover, there is an interesting story to tell of the successive generations of men who have, at sundry times, chosen to visit it or to dwell within its borders." 1.

Before beginning the analysis of the physical geography the writer would like to draw two more maps to the reader's attention. The first is a map depicting the township's relief. It shows the highest area to be the south-eastern corner of the township with the land sloping downward toward the other two corners of the triangle. The other map is the general reference map showing the urban centres and the numbers of the concessions. During the course of reading the following text the reader may find it helpful to refer to these maps for orientation.

1. W. S. Fox, 'T AINT RUNNIN NO MORE Wendell Holmes Ltd. London, Canada, 1946.

BOSANQUET
TOWNSHIP
LAMBTON
COUNTY

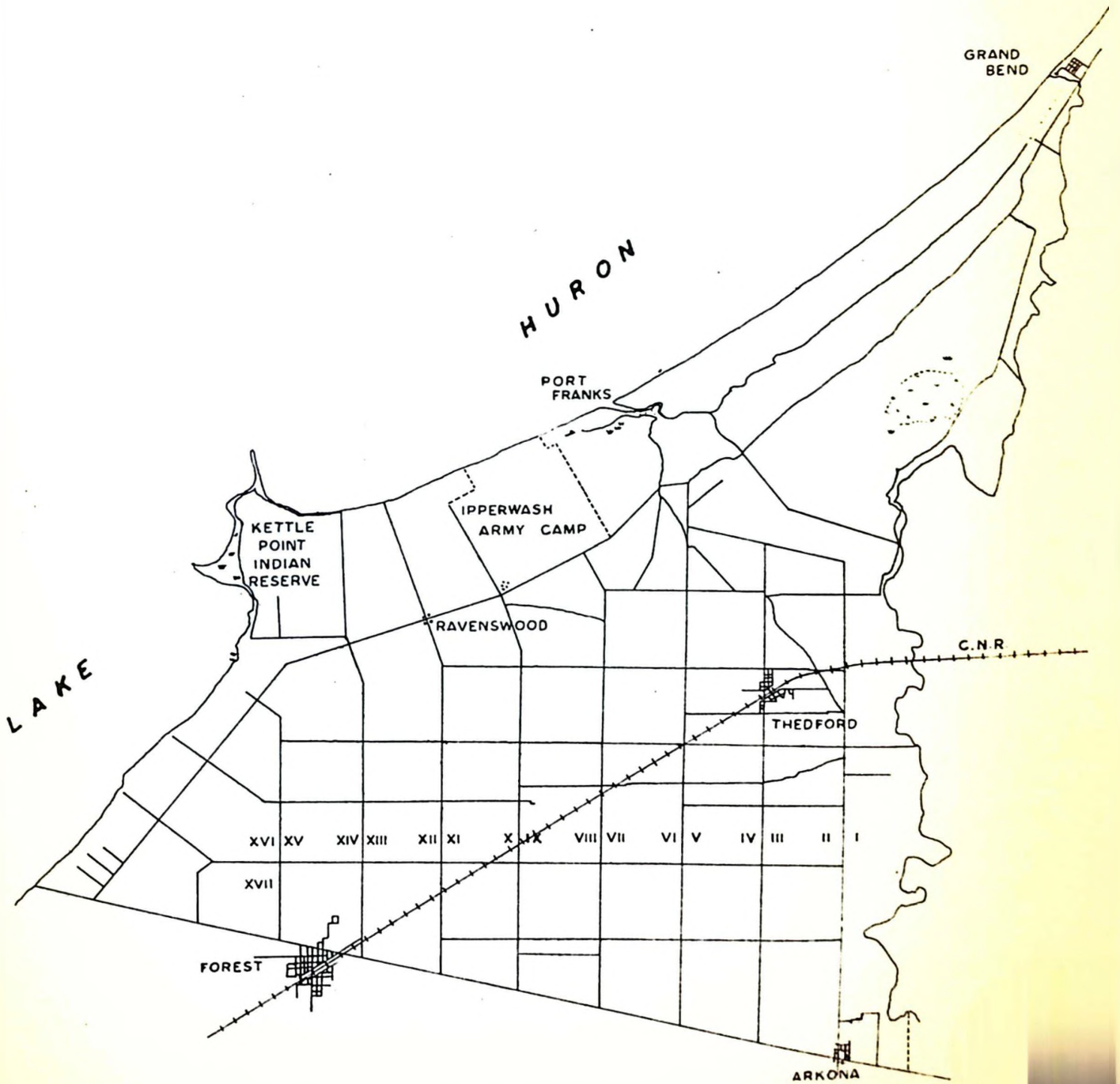
RELIEF
CONTOUR INTERVAL 50 FEET



SCALE — 2 1/2 MILES TO THE INCH

BOSANQUET
TOWNSHIP
LAMBTON
COUNTY

GENERAL REFERENCE MAP



SCALE — 2 1/2 MILES TO THE INCH

PHYSICAL GEOGRAPHY

Geology

Bedrock Morphology - Like the rest of Southern Ontario west of the Niagara Escarpment, Bosanquet township is part of a rock plain dipping to the southwest into the Michigan Basin. (See cross section Figure 4). From Collingwood to Kettle Point the beds dip twenty feet per mile.

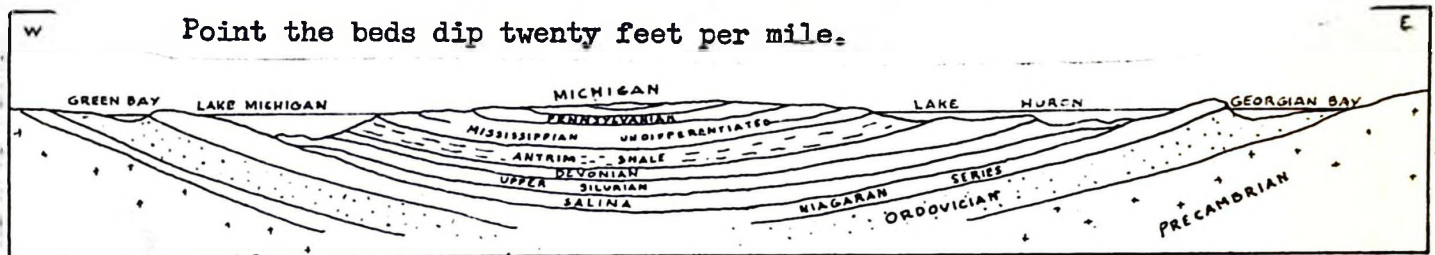


Figure 4 . Geologic cross section of the Michigan sedimentary rock basin, showing Lakes Michigan and Huron lying in zones occupied by relatively weak rocks of the Antrim shale and Salina Group, Green Bay and Georgian Bay lying in zones of weak Ordovician rocks and the escarpment of Niagara dolomite separating the lakes from the bays. 1.

On the eastern edge of the township at Rock Glen near Arkona (photograph No. 31) the bedrock outcrops at the (760') seven hundred and sixty foot elevation. On the western terminus of the township at Kettle Point the bedrock outcrops at the lower (600') six hundred foot elevation.

Formations (after the Canadian Geological Survey)


Kettle Point Formation - A black to brown bituminous, fissile shale with interbeds of green shale, the Kettle Point formation is characterized by a profusion of small amber spore cases usually referred to as *Protosalvina* (*Sporangites*) *huronensis*.


1. J. L. Hough, The Geology of the Great Lakes


GEOLOGICAL MAP

BOSANQUET
TOWNSHIP
LAMBTON
COUNTY

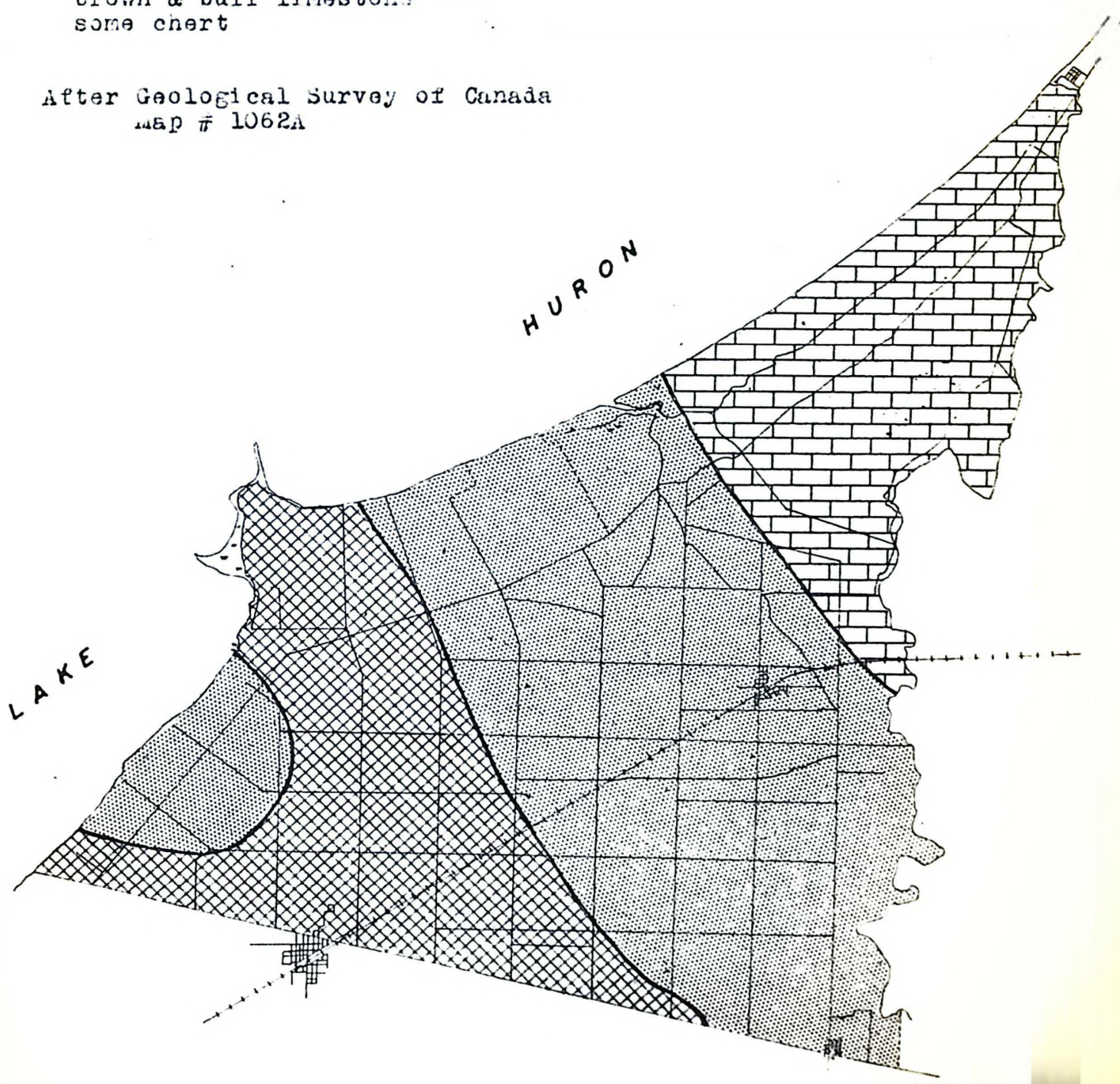
DEVONIAN

Kettle Point Formation 
black shale

Hamilton Formation 
grey shale
argillaceous limestone

Delaware Formation 
brown & buff limestone
some chert

After Geological Survey of Canada
map # 1062A



SCALE — 2 1/2 MILES TO THE INCH

The formation contains spherical concretions up to several feet in diameter that have been called "kettles". The existence of these concretions within the shale has made the formation world famous as a geological phenomena.



Photograph No. 1 . A close-up of a "kettle" with keys to indicate the relative size. Most of the "kettles" are more spherical than this example.

Although the lower part of the Kettle Point formation is considered to be Devonian in age, the upper part has been assigned to the Mississippian period.

Hamilton Formation - The four lithological units of this formation are not recognizable everywhere. The name is from Hamilton, New York where the soft blue and grey shale and grey limestone is also found. (See record of Imperial Oil boring in Appendix A).

The exposure of these beds at Rock Glen, Arkona is well known as a source of fossils. Two species of mollusk found in this area have been named after local communities.

The names arkonensis and thedfordensis honour the villages of Arkona and Thedford.

Delaware (Dundee) Formation - The overlying beds are of buff to brown finely crystalline limestone with chert nodules. The lower beds are a buff, crinoidal, arenaceous limestone that also has some chert. This formation is correlated with the Delaware formation of Ohio and the Marcellus formation of New York and is known to have a maximum thickness of two hundred feet.

Effects of Bedrock

The morphology of the bedrock of Southern Ontario with its dip to the southwest was largely responsible for the direction of movement pursued by the pleistocene glaciers. The bedrock also affected the types of glacial drift that were deposited and hence the soil types. Likewise the bedrock shales weathered into clays that are of great value in the production of drainage tile at Forest and Thedford. It is fortunate that these clays exist in an area where artificial drainage of soils is frequently a necessity.

Bedrock Minerals

Midway between Port Franks and Kettle Point is Stony Point, a limestone outcrop of the Hamilton formation that is dotted with flint. This source of arrowheads and cutting tools was used by the Neutral Indians to supplement their more distant supplies at Point Albino. The Stony Point flint was a valuable trade item with other tribes.

In the surrounding townships gas and oil wells are operating but there are none in Bosanquet at present.

Underlying the entire eastern shoreline of Lake Huron is the salt bearing Salina formation. During the 1860s. the area experienced a salt boom until the industry collapsed suddenly in the early 1880s. Walter Lauriston in his book Lambton County's Hundred Years recounts the story of Mosley and Williams of Goderich who drilled at Port Franks for salt. At the five hundred foot level the men struck a good flow of oil, but "undaunted" they cased this off and drilled to thirteen hundred (1300') feet to strike salt. This well tested one hundred per cent brine and had an output of a hundred and eighty barrels each day. Since the well was located three quarters of a mile up the Ausable from its mouth the salt had to be shipped downstream in scows and trans-shipped to lake craft in the harbour at Port Franks.

This industry flourished for ten years and then closed as many other salt wells did in an attempt to force up the price of salt. This must have proven unsuccessful for the well was never reopened. The salt is still there awaiting man's need for it, and we can only presume that the oil is, too.

Preglacial Topography

Very little is known about the physical landscape of Southern Ontario before the deposition of the glacial drift. Since there have been at least four separate glacial ages it is understandable why the picture is confused.

<u>Glacial Age</u>	<u>Approximate age in years</u>	<u>Interglacial Age</u>
Wisconsin	10,000 - 50,000	Sangamon
Illinoian	300,000	Yarmouth
Kansan	700,000	Aftonian
Nebraskan	1,000,000	

Preglacial drainage is largely conjectural since glacial scouring is believed responsible for the creation of the Great Lakes and the pre-glacial valleys in upland areas have been obscured by a thick layer of drift. J. L. Hough in his book The Geology of the Great Lakes says, " the master valleys obviously were located in the outcrop belts of the rock formations which were least resistant to erosion, and that the divides generally were formed by the more resistant rocks. Broad belts of less resistant rocks were probably broad lowland areas. " 1.

These were the gross features that influenced ice movement.

(See cross-section of Michigan Basin Figure 4 .)

1. J. L. Hough, The Geology of the Great Lakes.
University of Illinois Press, Urbana 1958.

Glaciation and the Glacial Topography

Advance of the Ice

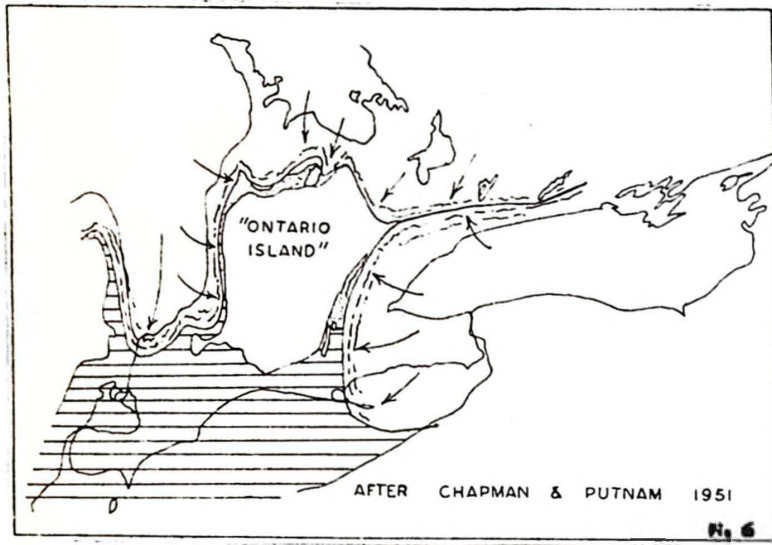
It has been postulated that in Early Wisconsin time climatic conditions were favourable for the accumulation of snow and the growth of glaciers and ice-caps on the high lands of Baffin Island, the Torngat Mountains of Labrador and the highland of central Quebec-Labrador and the "continued outward migration from the many centres of accumulation would lead to coalescence of these ice-caps into a single elongate ice-sheet."¹ Moisture-laden winds from the west, southwest, and south aided in the accumulation of snow and ice so that the ice-sheet became thicker near its marginal position than towards its centre, and being unhampered by physical barriers it began to creep in a south-westerly direction. This huge inland sea of ice, known technically as the Laurentide ice sheet, covered over four million square miles to a maximum thickness of ten thousand feet.

This great mass of ice eroded and depressed the bedrock creating the Great Lakes and the materials eroded were left behind on the surface giving the land its basic shape. On its way southward the ice was pushed around the highlands of Dufferin and Grey Counties in two lobes. It was the westerly lobe that occupied the Huron basin and shaped the features of Bosanquet Township. Chapman and Putnam when they made their survey of the physiography of Southern Ontario for the Ontario Research Council re-

1. Geology and Economic Minerals of Canada.

ported that "in no section of the province have we seen the deeper soil profiles which develop on the Pre-Wisconsin till sheets." 1.

1. The Physiography of Southern Ontario. Chapman and Putnam.



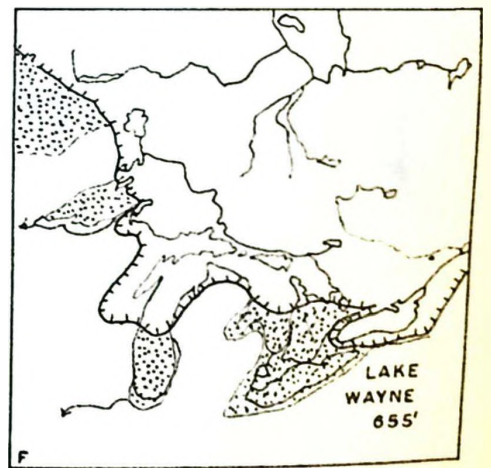
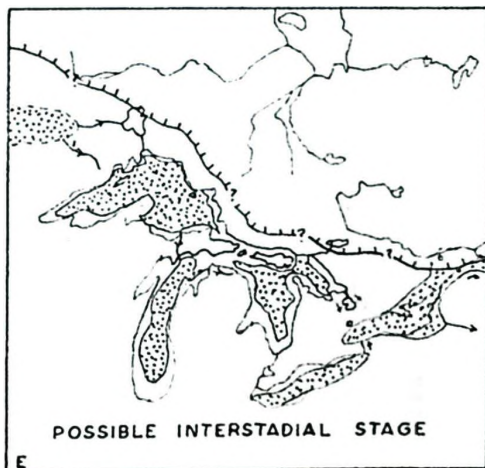
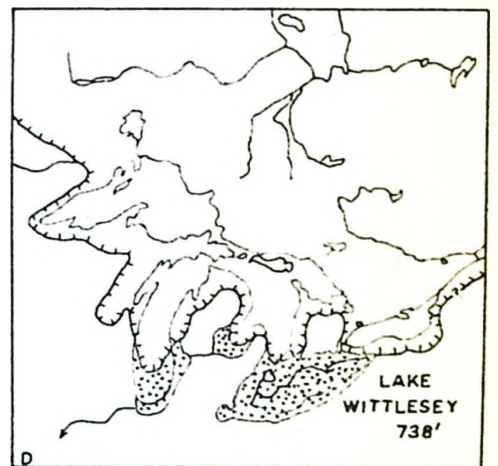
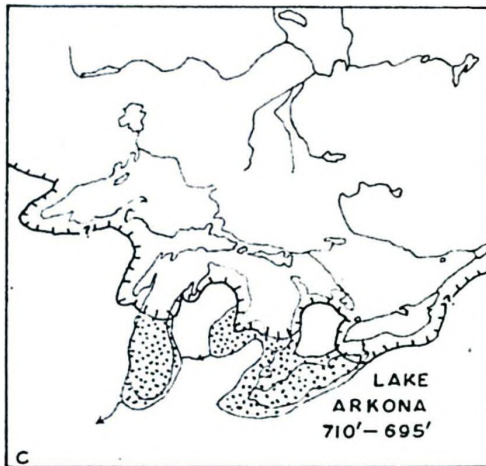
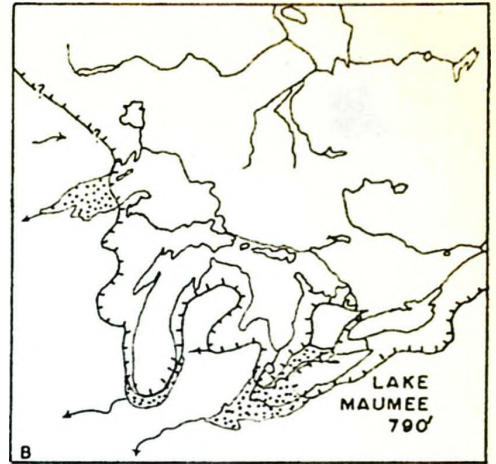
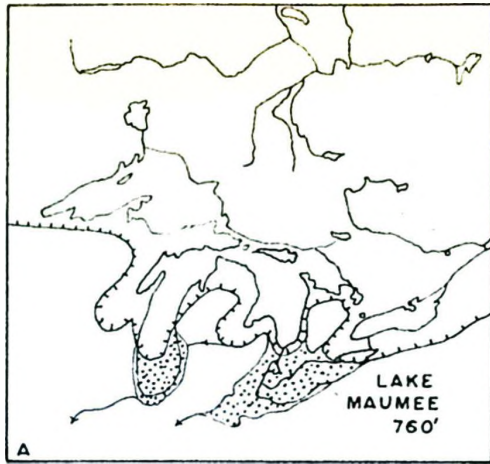
The Development of Bosanquet's Landform

The Wisconsin glacier left a great quantity of drift over central Southwestern Ontario. This highland area north of London is known as the "Ontario Island" because it was the first portion of Southern Ontario to reappear through the sea of ice. It is on the western flank of the slope from the "Ontario Island" into the Huron basin that Bosanquet township is located.

It is believed that a centre of ice pressure existed in the Huron basin south of Goderich. This pressure was responsible for several thrusts of the glacier toward the "Ontario Island". Each of these new advances produced an end moraine so that there were a series of terminal moraines in a horseshoe pattern around the "Ontario Island". (The Milverton, Mitchell, Lucan, Seaforth and Wyoming moraines.)

It is the Wyoming moraine that forms the south-eastern third of Bosanquet township. This portion of the end moraine was created under the waters of Lake Whittlesey.

As the glacier began to backwaste, post-glacial lakes were formed because the movement of water from the melting ice-cap was restricted from draining to the ocean by masses of ice still covering the St. Lawrence outlet. The levels of these post-glacial lakes fluctuated as the land mass, depressed by the weight of the ice, began to rise due to isostatic rebound and the meltwaters found new avenues to the sea. The entire history of their development can be seen on the accompanying series of maps. (Figure 7).



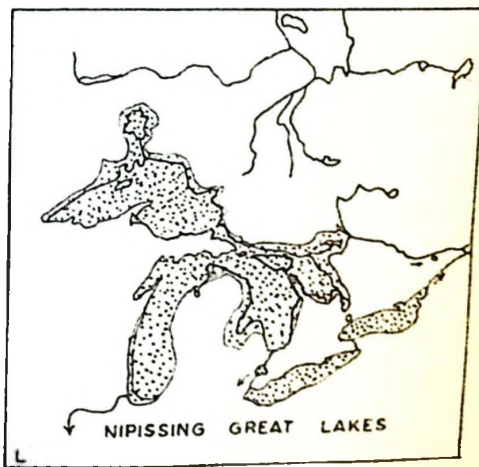
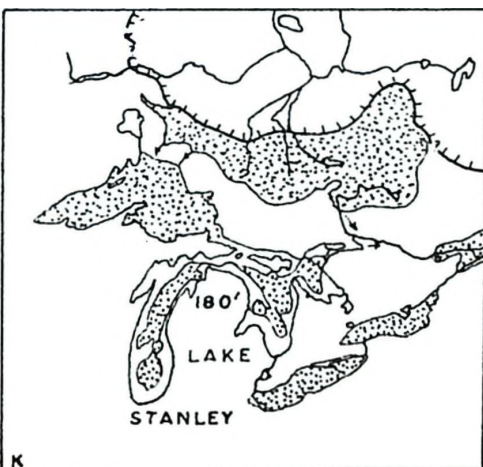
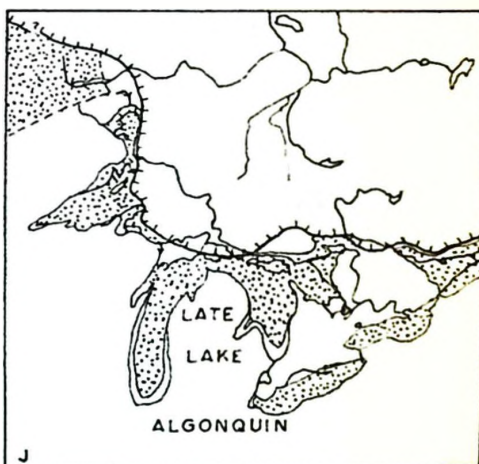
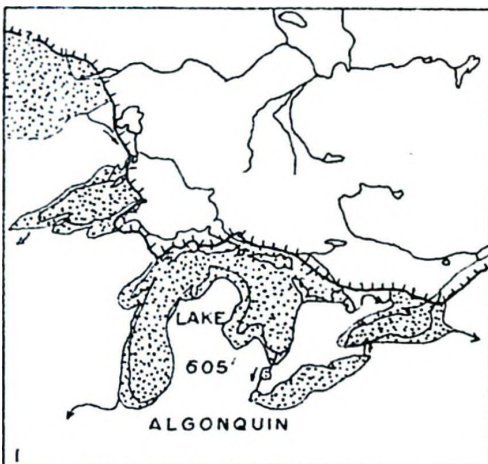
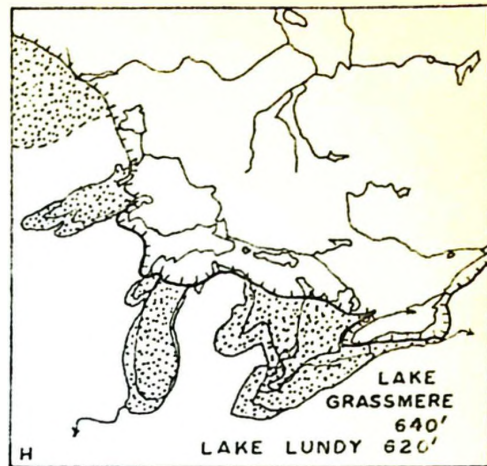
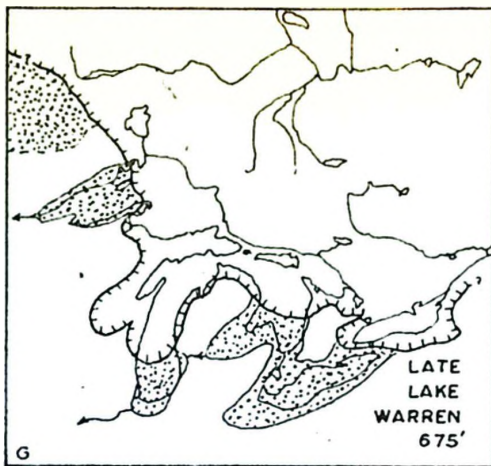
THE GLACIAL GREAT LAKES (MODIFIED AFTER J. L. HOUGH AND OTHERS BY G. S. C.)

During the time of Lake Maumee, Bosanquet was still under the ice; however, by the time of Lake Arkona the glacier had retreated and Bosanquet was completely under water. The beaches of Lake Arkona were largely destroyed by the wave action of Lake Whittlesey. It was during the time of Lake Whittlesey that the ice front and the lakewaters were in contact along the south-eastern part of the township where the till moraine was deposited at the snout of the glacier under the water.

Disregarding a possible interstadial low-lakes stage the next major development in the creation of Bosanquet township's new landscape was the appearance of Lake Warren, sixty feet lower than the preceding Lake Whittlesey. Now, instead of being completely under water only the northern two-thirds of the township was submerged. This lake created its characteristic double beach (caused by a drop in water level) in a great arc from Forest to the south of Thedford. The wave actions of this lake smoothed the surface of the submerged drift, producing a slightly undulating till plain.

As the water level of Lake Warren fell a series of short-lived stages occurred. One of these stages produced a discontinuous, narrow gravel beach for five or six miles across the centre of Bosanquet to the north-west of Thedford.

The water level eventually became stabilized for many years at about the 605' level. This was one of the longest lived of the glacial lakes, Lake Algonquin, and it developed distinct shore bluffs 25' above the level of the present Lake Huron. In the study area the Algonquin bluff parallels the Lake Huron shore to Gustin Grove (2nd. concession north of the southern boundary), then



GLACIAL LAKES 

BOUNDARY OF ICE-SHEET 

veers inland, making a tiny plain before it moves eastward across the township to the north of Thedford. This means that at the time of Lake Algonquin only the northern third of the township was still under water.

The last of the glacial lakes was Lake Nipissing, which, according to Chapman and Putnam, helped create the sand dunes between Kettle Point and Grand Bend. Thus, with the rise of the dunes cutting off the lagoon area of Lake Burwell we come to the end of the post-glacial lakes era of landform creation. From this time on the chief geomorphic agent is the Ausable River.

In the time of Lake Nipissing the Ausable River emptied into the lake north of Grand Bend. At this point the north-west winds and the shoreward currents created a barrier of sand at the river's mouth. As the years passed the sand dune barrier lengthened and the river mouth was forced further and further southward. Eventually the river found itself making a complete U-turn at the original mouth and flowing southward behind the growing dunes for ten miles until it finally reached the lake at Port Franks.

This development had serious consequences because the lengthening of the river effectively reduced its gradient. Now the Ausable "rises a scant fifty miles from its mouth; yet so winding and twisting is its course, it travels a good three hundred miles to achieve a descent of four hundred feet!"^{1.}

The combination of a low gradient and a seasonal flow resulted in annual flooding of the low lagoonal area behind the sand dunes.

1. Lambton County's Hundred Years 1849-1949. Victor Lauriston

The area was occupied by three lakes, remnants of Lake Algonquin. Since much of the surrounding area was flooded for a portion of the year, and hence was unsaleable, the Canada Company excavated a "cut" in 1875, Directly across this wet area to Port Franks, with the result that much of the marsh was drained and Lake Burwell disappeared. (See Map of Lake Burwell.)



Picture No. 2. View across the new enlarged "cut" near Highway No. 21. In this section the water is just entering the gash through the dunes of "The Pinery".

In 1891 a shorter cut was made at the hairpin turn in the river at Grand Bend. This cut relieved most of the flood danger but had the effect, unfortunately, of rendering the last ten miles of the Ausable from Grand Bend to Port Franks a dead river. In the words of William Sherwood Fox " 'T aint Runnin' No More" --at least, so

it seems to dull incurious eyes." In truth, however, the river still drains the natural springs of the sand dunes through which it flows.

The most recent development in the evolution of Bosanquet's physical topography has been the draining of Smith Lake by ditches into the "cut", and the conversion of the surrounding marshes into productive truck-crop farms.









PHYSIOGRAPHIC MAP

BOSANQUET

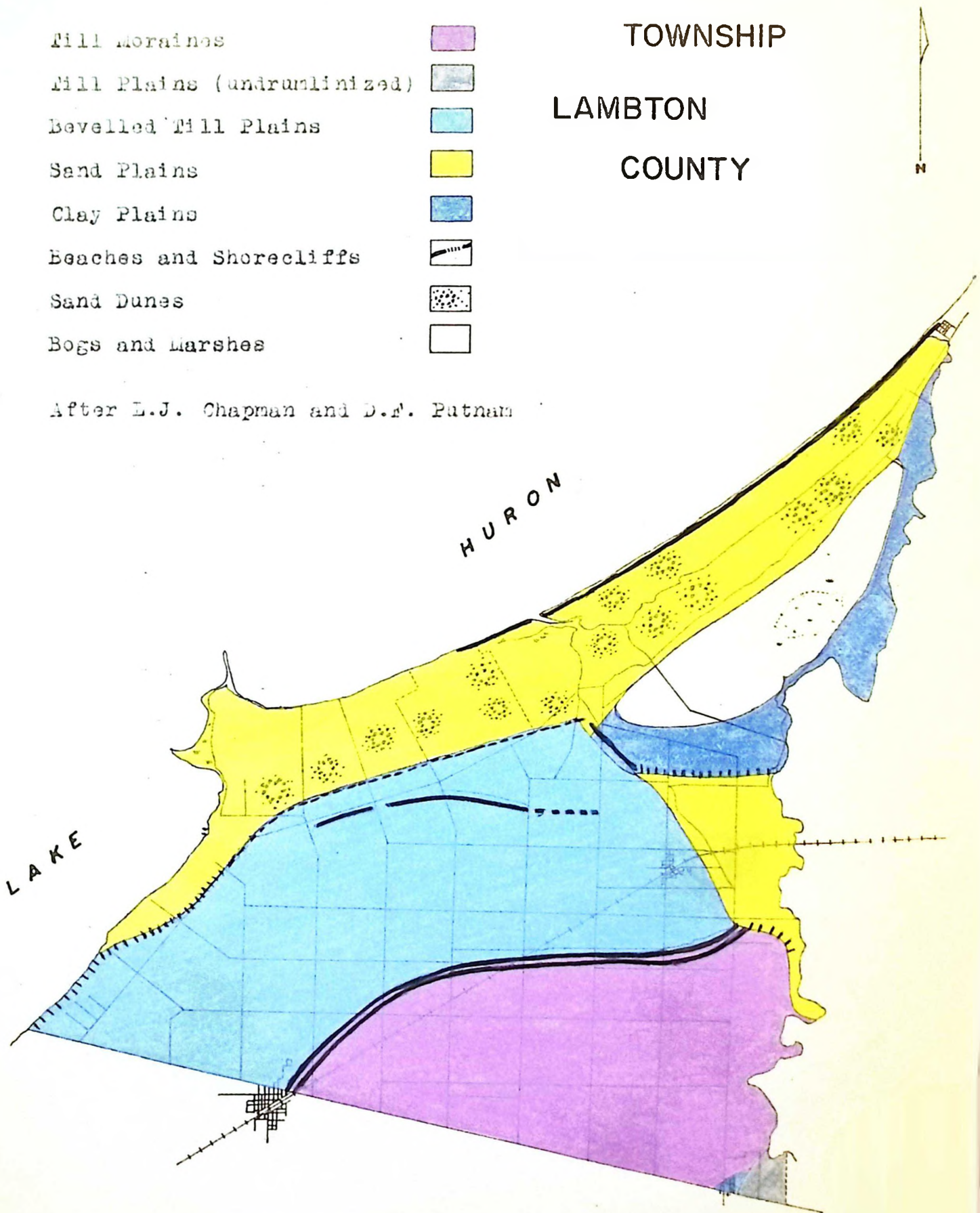
TOWNSHIP

LAMBTON

COUNTY

- | | |
|-----------------------------|---|
| Till Moraines |  |
| Till Plains (undrunlinized) |  |
| Bevelled Till Plains |  |
| Sand Plains |  |
| Clay Plains |  |
| Beaches and Shorecliffs |  |
| Sand Dunes |  |
| Bogs and Marshes |  |

After E.J. Chapman and D.F. Putnam



SCALE — 2 1/2 MILES TO THE INCH

Physiography

In the preceeding pages the author has attempted to show in chronological order the processes that created the area that we know to-day as Bosanquet township. In the following paragraphs he hopes to provide the reader with an adequate description of the physical nature of each of the physiographic regions.

Till Moraines

As mentioned previously the till moraine of Bosanquet was deposited under the waters of Lake Whittlesey as part of the Wyoming terminal moraine. Thus we find it an area of brown, calcareous clay with a minimum of pebbles and boulders. This undulating sheet of till is ten feet thick and rests on stratified clays of the same colour. The following quotation provides the explanation.

"If the second to last glacier was also attended by glacial lakes during its retreat, which seems almost certain, then the Wisconsin glacier overrode lacustrine sand, silt or clay in most of the area bordering the Great Lakes and in smaller depressions. Probably most of the heavy boulder clays are the result of the glacier overriding stratified clays, and mixing them with imported rocky grist." 1.

These boulder tills were very heavy, hence they were not sculptured like the loamier tills of other areas into drumlins and flutings.

1. L.J.Chapman and D.F.Putnam, The Physiography of Southern Ontario. Page 10, 11.

Till Plains

Only a small area of Bosanquet around Arkona is classified as till plain. This area is similar to the till moraine area but has a less rugged surface relief.

The heavy clayey nature of the material is a result of the glacier reworking water deposited materials and spreading them out anew under the ice as a form of ground moraine.

This heavy clay has resulted in the development of heavy soils that frequently have poor internal drainage. Soils of this type are very easily compacted by the weight of farm machinery, rendering them unsuitable for agriculture.



Photograph No. 3. A typical till plain landscape, with hay, corn and bush.

Bevelled Till Plains

This is the type of physiography that exists in the central portion of the township between the Wyoming moraine and the Algonquin shorecliff. The twin beaches of Lake Warren form definite

boundary between the low level bevelled till plain and the higher till moraine. The waves of Lake Warren truncated the humps and filled the hollows with lacustrine clays so that a flatter topography was produced. However, the veneer of lacustrine clay seldom exceeds three or four feet and the underlying till frequently comes to the surface. This is reflected in the mottled pattern of the soil types that developed over this area. (Compare the physiographic map with the soils map.)

Sand Plains

Sand plains occur in two separate locations within the study area. To the east of Thedford is a small sand plain where the Ausable emptied into Lake Warren. In the embayment of the old post-glacial lake the shallow inshore deposits of sand were laid down.



Photograph No. 4. An extensive pasture on the sand plain.



Photograph No. 5. The stony beach of Lake Warren has been of economic importance to Bosanquet as a source of gravel.



Photograph No. 6. Close-up of the Lake Warren beach materials.

A second small sand plain exists in the area between Gustin Grove and Kettle Point. Here, between the Lake Algonquin shore-cliff and the waters of Lake Huron, is a level area of sand plain whose light soils are utilized for fruit and vegetable growing.

Clay Plains

Like the sand plains the clay plains originated in the embayments of the post-glacial lakes, only the clays are deep water depositions. Their topography is flat and their soils are heavy clay loams. The combination of these two factors results in very poor surface drainage over the area.

Beaches and Shorecliffs

The Lake Warren beach separates the rolling till moraines above from the flat bevelled till plains below. (See Physiographic Map.) "South of Thedford brown and blackish shale is found mixed with the limestone and the crystalline rocks from the north. The two beaches, close together, continue with but few breaks through Forest to a point four miles west of Wyoming."¹

The gravels of this beach have been used for many years to surface the township roads. The warm, gravelly soils that develop on this beach are suited to peach and apple orchards.

The unnamed beach near Ravenswood is narrow and discontinuous. This gravel beach is too shallow to be quarried for road metal but it did influence soil development. (See the Burford soil type on the soil map.)

1. L.J.Chapman and D.F.Putnam, The Physiography of Southern Ontario

2

The Lake Algonquin beach is a steep bluff fifty to sixty feet high on the lakeward border of the Huron slope. This shorecliff separates the bevelled till plain from the sand plain along the western side of the township, then it swings south-eastward between the marshlands and Thedford.



Photograph No. 7. View of the Algonquin shorecliff as seen from highway No. 82 in the Thedford Marsh area.

The steepness and height of the bluff above the level of Lake Huron has caused the streams to carve deep gullies to reach their base level of the lake. The severity of this dissection is reflected in the fact that the Blue Water Highway (No. 21) is so far inland that the car driver seldom sees the blue water.

Sand Dunes

Winds from the open expanses of the lake have worked the sands of abandoned beaches and recently elevated lake plains into a belt of dunes several miles wide stretching southward from Grand Bend to Port Franks. The dunes have been stabilized by their forest cover.

Lack of fertility precludes their use for agriculture but they have been of value in the past to the lumber industry and they are becoming of increasing importance as a recreational area.



Photograph No. 8. The road cut from highway No. 21 to Port Franks reveals the height of the sand dunes in "The Pinery".

Bogs and Marshes



Photograph No. 9. Wide view of the Thedford Marsh, showing the low, flat, flooded landscape with its vegetation of sedges and rushes, bordered by poplars.

Climate

"The sun and the neighbouring lake seemed to have conspired to confer upon this area a climate that confounds those who gauge such things solely by rule-of-thumb readings of latitude and longitude. A hot-frame on a large scale, it avidly garners heat in sunshine, and, reversing the process, under cloud or in darkness generously yields it up. The result is a relatively hot climate for the latitude, but a climate which throughout the year tends to be of even disposition, a disposition fostered by the equable temperatures of the near-by lake. Indeed, one might see in this sea a resemblance to the age of old Adam, 'like a lusty winter, frosty but kindly.' In winter its occasional subarctic blasts beat only upon the exposed shoreline; the towering ranges of the dunes bar them from invading the interior with utter havoc." I.

Thus, moderated by the "Sweetwater Sea" and the protective row of dunes, Bosanquet enjoys a growing season in excess of two hundred days. Temperatures are warm enough for growth from mid-April to the first week in November.

Depending on the distance away from the ameliorating lake the frost-free period varies from one hundred and fifty to one hundred and sixty days, (150-160 days).

The temperate nature of the climate is revealed in the record of the temperature means.

Mean annual temperature = 45° F. to 47° F.

Mean winter temperature = 23° F.

Mean summer temperature = 67° F.

It is the mildness of the climate that permits the farmers to raise tender crops such as peaches, tomatoes and even tobacco.

The precipitation is thirty to thirty-four inches annually. Fortunately over half of it comes during the growing season.

1. W.S.Fox, 'T AINT RUNNIN' NO MORE. Wendell Holmes Ltd., London Canada, 1946.

36

May and September are the two wettest months, averaging three and a half inches of rain. June, July and August have only three inches of rainfall each and frequently one of these three months will get less than one inch. This summer drought seriously reduces crop yields.

Each winter there are forty to sixty inches of snow, but it does not accumulate over the season. The utilization of snow-clad hills for the winter sport of skiing is on the increase.

There is some loss of moisture through runoff after the spring thaw and some cropland is always flooded. Fortunately the period of flooding is usually a short one.

Occasionally tornadoes and twisters make their fearful appearance in the summer months but they are less frequent in Bosanquet than they are some miles to the south .

Natural Vegetation

Bosanquet township is within the deciduous forest region where the distribution of trees is controlled by climatic differences and the physiographic features of the countryside. Hence the smart settler could tell much about his prospective farm by observing the virgin forest.

"The nature of the soil may be invariably discovered by the description of the timber it bears. Thus, on what is called hard timbered land where the maple, beech, black birch, ash, cherry, lime, elm, oak, black walnut, butternut, hickory, plane and tulip tree, etc. are found, the soil consists of deep black loam. Where fir, hemlock and pine are intermixed in any considerable portion with other trees, clay predominates; but where they grow alone, which is generally on elevated situations, sand prevails. This also happens where oak and chestnut (sic) are the only trees". 1.

In the area of the sand dunes in the famous "Pinery" only common juniper, red cedar, red pine and balsam poplar were able to survive the onslaught of the cruel north-west winds that kept the sand constantly shifting.

"All through the dunes, the root and wind are ranged against each other in unremitting war. Plants are trying to hold down the sand while every faintest puff of breeze seeks to move the quartz grains on before it. Victory for the plant creates a statuary dune, covered with vegetation. Triumph for the wind results in a sand-hill that moves, a wandering dune that alters its form and its position with the passing years." 2.

Hardy marram-grass, sand-reed grass, blue stem grass, and wild rye were the adventuring "pioneers" that began the process of taming the wild dunes so that eventually "a long hierarchy of plants ranging from shore horse-tails to oaks could in their natur-

1. Hints on Emigration to Upper Canada (Huron Tract) 1831

2. Edwin Way Teale, The Lost Woods, Dodd, Mead and Co. N.Y., 1945, Page 308.

al order establish themselves and rule". 1.



Photograph No. 10. Looking north, along the Bluewater Highway, through "The Pinery".

Behind the protective barrier of the first row of dunes red and white pine flourished. In this area of local micro-climate various species of oak survived but in a stunted condition because of the poorness of the soil. This small natural region marked the northern limit of the range of many species of southern trees. (Chestnut, chestnut oak, sassafrass, tulip tree, etc.)

In the wetter areas between the dunes near Port Franks, silver maple-white elm swamps occurred, as did stands of white cedar.

White pine was distributed sparsely throughout the hardwood bush and thrived on the sandy soils along the Ausable Valley.

Surrounding Lake Burwell, in the lagoon behind the dunes.

1. W.S.Fox, 'T AINT RUNNIN' NO MORE. Wendell Homes Ltd. London Canada, 1946.

was a swamp forest of silver maple-white elm with some black ash and cottonwood. (See Map of Lake Burwell).

The till moraines and till plains of the south-eastern part of the township were covered with a "hardwood sugar maple-beech forest with hickory, black walnut, black cherry, and numerous other southern hardwood species intermixed."^{2.}

1. Ausable Valley Conservation Report, 1949. Chapter 1 Forestry, P.4

Soils

The geographer is continually looking for the functional relationships between natural phenomena in an attempt to explain the world around him. For this reason he should be vitally interested in the soil under his feet, because, by its very nature, soil is the end product of the processes of physical geography.

A contemporary soil expert, Joffe, defines soil as follows.

"Soil is a natural body differentiated into horizons, of mineral and organic constituents, usually unconsolidated, of variable depth. Which differs from the parent material (P.M.) below in morphology, physical properties and constitution, chemical properties and composition and biological characteristics."

Hence we can expect " the characteristics of the soil at any given place to depend on (1) the physical and mineralogical composition of the parent material, (2) the climate under which the soil has developed, (3) the plants and animals that live in and on the soil, (4) the relief and drainage and (5) the length of time the forces of development have been acting on the parent material." 1.

In those parts of Bosanquet township where the factors of climate and vegetation have reached their full expression a single type of zonal soil developed. This is the great soil group known as Grey-Brown Podzolic that develops "in well drained or imperfectly drained locations where moisture relations and nutrient content are favourable for the growth of hardwood trees." 1.

Typical Grey-Brown Podzol Soil Profile

- Ao $\frac{1}{2}$ -0 inches of partially decomposed litter of deciduous trees.
- A1 0-4 inches of very dark brown soil; crumb structure; friable; pH 6.0-7.0
- A21 4-12 inches of light brown soil; weak crumb structure; friable; pH 5.5-6.5
- B2 12-28 inches of greyish brown soil; medium sub-angular blocky structure; friable to hard; pH 6.5-7.2

Soil Survey of Lambton County, Report No. 22.
Canada Department of Agriculture, Ottawa.

C

Grey or brownish grey calcareous material; pH 7.4

(In imperfectly drained locations the A2, B2 and C horizons may be mottled.)

Over much of the township's land area normal soil development has been hindered by inadequate drainage with the result that intrazonal soils have developed. The two intrazonal great soil groups are the Dark Grey Gleisolic and the Organic.

Typical poorly drained Dark Grey Gleisolic Soil Profile

A1

0-8 inches of very dark grey soil; medium crumb structure; friable; high in organic matter; pH 6.5-7.0

G1

8-20 inches of light grey mottled with yellowish brown; weak coarse blocky structure; pH 7.0-7.2

G2

20-30 inches of light brownish grey mottled soil of massive structure; pH 7.0-7.5.

C

Light grey calcareous soil; mottled; pH 7.4+

The soils of the Organic Great Soil Group are very poorly drained and consist of a layer of muck or peat, up to several feet in thickness, over a grey mineral soil material. The muck and peat is of vegetative origin and if the plant matter is still recognizable it is referred to as peat, otherwise it is arbitrarily referred to as muck.

Where conditions for soil profile development have not proceeded long enough for genetic horizons to develop the soils are classed in the azonal great soil group. These are the alluvial soils of the stream bottoms and marshes and the regosols of the drifting sand dunes and shaley gravel beaches.

3

The soils of Bosanquet township can then be summarized as consisting of a single zonal type, the Grey-Brown Podzol; with two intrazonal types, the Dark Grey Gleisolic and the Organic where drainage is critical, and two Azonal types the Alluvial and Regosol where the time factor is critical.

Now let us look at the specific factors governing soil genesis in Bosanquet, although we have already noted these indirectly in the preceding chapters.

Bedrock Geology—The chapter on the physiography states the fact that the bedrock is covered with a mantle of unconsolidated material. Hence, one does not expect to find the bedrock influencing soil development, but it does. For was the bedrock not the ultimate source of the materials that the glaciers eroded, mixed and spread over the land? A calcareous rock produces calcareous till that eventually weathers into a neutral soil, similarly the glacial wearing of the shales of the Hamilton formation produced a heavy clay till, and eventually heavy clay soils. This correlation is made most evident when one compares the area of heavy texture on the soils map with the area of shale on the geology map.

Direct rock exposures with bedrock acting as a parent material are infrequent but at Kettle Point the black fissile shale breaks down into a shaley gravel that exhibits a poorly defined profile that has been classified as the Shashawandah regosol.

Surface Geology—Since the beginning of the Wisconsin glaciation the area of the earth's surface we know as Bosanquet township has been scraped by ice, covered by glacial detritus and then flooded in various parts by post-glacial lakes. Winds have created rows

of sand dunes, and a river with a seasonal flow and insufficient gradient has left generations of alluvium on the flatter areas. The most efficient method of presenting the effects of this most complicated history is by means of the table presented below.

DEPOSIT	COMPOSITION	TOPOGRAPHY	STONINESS	UNDERLYING MATERIAL
Glacial till	loams	undulating	many stones	bedrock
Lacustrine	clay and clay loam	undulating to level	some stones	bedrock
Outwash	sand sandy loam	level	stonefree	clay, or till
Shorelines Beaches	sand and gravel	rolling ridge	gravelly	till
Alluvial	variable	depressional	stonefree erratic boulders	clay or till
Organic	partially decomposed plant material	depressional	stonefree	clay, sand or till

Since most of the topography is nearly level, slope has had little effect on soil development in Bosanquet, except indirectly via soil drainage. If the relief map is compared with the map of natural soil drainage it will be seen that the 700' contour of the Lake Warren beach corresponds to a band of soils with good drainage. In the northern portion of the township the low area north of the 600' contour is distinguished on the drainage map as being the area of poorest drainage and on the surface texture map as an area of organic surface materials.

1. Soil Survey of Lambton County, Report No. 22, Page 34
Canada Department of Agriculture, Ottawa.

Climate--The climate over an area as small as a township is relatively uniform, hence "soil profile differences resulting from variations in rainfall or temperature are not noticeable."^{1.} The small micro-climatic region in the sheltered area behind the sand dunes is evidently not strong enough to modify the soil profile as it did the natural vegetation.

Vegetation--The zonal great soil group of Bosanquet township is, as mentioned previously, the Grey-Brown Podzol type that reaches its climax under a deciduous hardwood forest. The process of podsolization demands an accumulation of organic matter whose decomposition will produce the acids that leach the upper part of the profile to produce the characteristic podzol.

Poor drainage, annual flooding and the texture of the parent material in the area surrounding Lake Burwell restricted the vegetation to a swamp forest type. Thousands of years of accumulated organic matter, kept from total destruction by a fluctuating water table, remain to-day as muck and peat.

Soil Age--It is difficult to evaluate the effects of different lengths of time of exposure to weathering. The moraines are older than the post-glacial lake deposits and the entire region is "one of the oldest in Ontario." Yet, in the Davisian terminology the landmass is still youthful with "narrow, widely spaced and sharply trenched streams"^{1.} and broad level interfleuves.

1. Soil Survey of Lambton County, Report No. 22, Page 34.
Canada Department of Agriculture, Ottawa.

SOIL MAP

- Geolph G1
- Huron Hue
- Perth Pc
- Brookston Bc
- Toledo Tcc
- Blackwell Blac
- Shashawandan Sml
- Burford Bal
- Brisbane Bxl
- Plainfield Pas
- Fox Fxsl
- Brady Bys
- Granby Grsl
- Eastport Ets
- Berrien Bes
- Muck M
- Peat P
- marsh Ma
- Bottom land B.L.



BOSANQUET

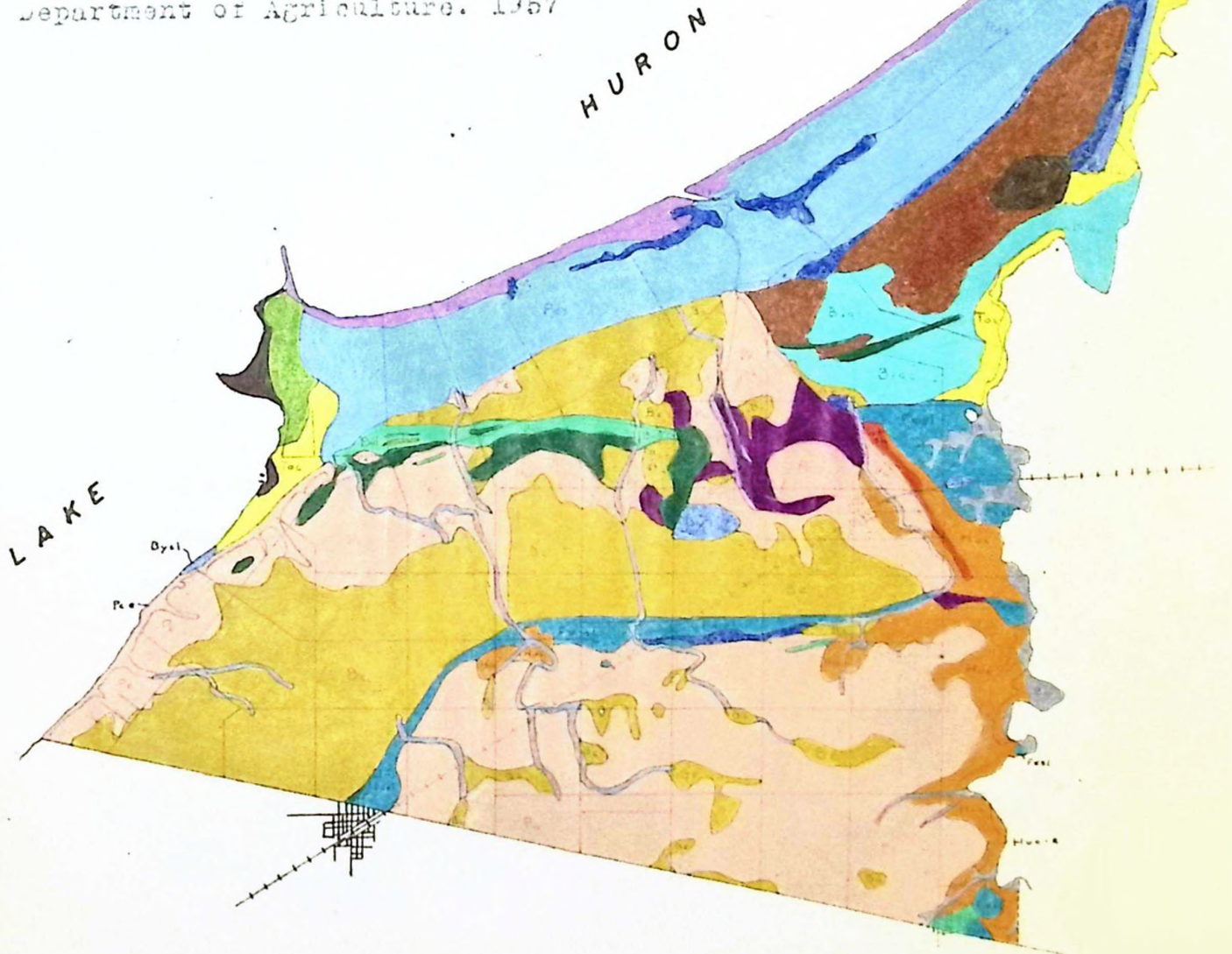
TOWNSHIP

LAMBTON

COUNTY



After U.S.C. Department of Soils and the
Experimental Farms Service, Dominion
Department of Agriculture. 1967



SCALE — 2 1/2 MILES TO THE INCH

SOIL TYPES

In 1957, the Experimental Farm Service, Canada Department of Agriculture, in conjunction with the Ontario Agricultural College, published a Soil Survey of Lambton County. From this report the author has selected the information pertinent to Bosanquet township, and reproduces this abridged description of the soil types and their suitability for agriculture in the following paragraphs.

Soils Developed from Till

Guelph Series

The Guelph series represented by the Guelph loam has developed on loamy calcareous glacial till on undulating to rolling topography. The subsoil is permeable, and internal and external drainage is good. The soils belong to the Grey-Brown Podzolic Great Soil Group.

Guelph soils occur only on a ridge south of Thedford.

Agriculture-- The small acreage is used mainly for pasture because of its stony nature and shallowness. It tends to be droughty, particularly where the bedrock is near the surface. The chief fertility deficiency is phosphorous and organic matter.

Huron Series

The Huron series is mapped, for the most part, along the Ausable River in the Arkona-Thedford area. The topography is rolling to hilly, hence the external drainage is rapid although internal drainage is slow. The natural vegetation consisted of hard maple, beech, elm and ash as well as walnut and oak.

The Huron soils belong to the Grey-Brown Podzolic Great Soil Group. Some slopes along the Ausable have been seriously eroded

and are mapped as Huron clay-eroded phase.

Agriculture— The Huron clay is well suited for the production of winter wheat, spring grains, alfalfa, clover and corn. The soil is susceptible to erosion and so a cover should be maintained on the soil as much as possible.

In order to maintain the organic matter content and good soil structure, farmyard manure, if available, or green manure crops should be returned to the soil.

Clovers and alfalfa are good soil-building crops and should form part of the hay and pasture mixtures for Huron soils.

Complete fertilizers particularly high in phosphate are recommended for maximum yields. Additional nitrogen may be required for corn.

Reforestation or permanent pasture is recommended for the eroded phase that occurs along the Ausable.

Perth Series

The imperfectly drained soils of the Huron catena are classified in the Perth series. The soils are developed on undulating topography that is dissected along some of the stream courses. Elm, ash and soft maple with some hickory and oak constituted the natural vegetation.

The Perth soils belong to the Grey-Brown Podzolic Soil Group.

The profile development of the Perth soils has been affected by inadequate drainage and in some instances the A₂ and B horizons are very poorly defined.

The natural fertility is fair although phosphorous levels are low. A satisfactory physical condition of the surface soil can be

maintained fairly easily by management practises described for the Huron series.

Agriculture—Perth soils are well suited to the production of most crops grown in the County except the tree fruits and early Vegetables.

During dry seasons, these soils usually produce good yields because of their large reserve supply of moisture. Some improvement in drainage is recommended for good yields of fall wheat and alfalfa. Corn, soybeans, and spring grains yield fairly well even without artificial drainage.

If the maintenance of organic matter is neglected, or if the soils are cultivated at improper moisture contents, they become difficult to work and less productive. A crop rotation that includes hay and pasture is commonly used on the Perth soils; hence organic matter depletion has not been serious to date.

Along the Lake Huron shorecliff, erosion has seriously reduced the productivity of the Perth soils. These areas are indicated as the eroded phase. Reforestation or the establishment of permanent pasture on these areas is recommended.

Brookston Series

The poorly drained soils of the Huron catena are classified in the Brookston series. The topography is level to slightly sloping and both the internal and external drainage are slow. Elm, ash, basswood with some hickory and sycamore formed the natural vegetation.

The Brookston clay belongs to the Dark Grey Gleisolic Great Soil Group.

Agriculture—Without artificial drainage, the Brookston soils

can produce pasture, hay and limited yields of cereal grains. When drainage is improved by installation of systematic tile systems, the soils produce good yields of fall wheat, and other cereal grains, alfalfa, corn, soybeans, or sugar beets.

The soils are inherently well supplied with all plant nutrients except phosphorous. Unless adequate organic matter levels are maintained, the soils may become puddled when wet and baked during dry weather.

Fall plowing of these soils is recommended because frost action promotes good soil structure. Erosion is not a problem because of the level topography.

Soils Developed from Deltaic or Outwash Sands and Gravels

The parent materials of this group of soils were deposited by slowly moving water in the post-glacial lakes that covered the area. The materials occur in the form of sand bars, outwash plains and shorelines.

Coarse Textured Outwash

The soils developed from the sandy materials are members of the Fox catena of which the Plainfield is the excessively drained, the Fox the well drained, the Brady the imperfectly drained and the Granby the poorly drained members.

Plainfield Series

The plainfield series developed from excessively drained dune sand that has been stabilized under a forest cover of oak and pine. Plainfield soils occur along the shore of Lake Huron between Kettle Point and Grand Bend, in "The Pinery".

The coarse nature of the soil materials allows such rapid percolation of moisture that an A-C type of profile has developed. Occasionally a weakly developed B horizon may be evident. The Plainfield sand is classified in the Regosol Great Soil Group.

Agriculture--Very little of this soil is cultivated. It is droughty and subject to wind and water erosion. Hence much of this land is suitable only for trees. The inherent low fertility and organic matter content also limit the possibilities for agricultural crop production.

Fox Series

The Fox series occurs between Forest and Thedford, largely in the form of ridges that were the shorelines of glacial Lake Warren. The topography is smooth, moderately sloping and the natural drainage is good. The natural vegetation consists of hard maple and beech.

The Fox series is classified in the Grey-Brown Podzolic Great Soil Group. Some gravel may be present in the Fox soil materials. The ridges mapped as Fox sandy loam, therefore, are good areas to prospect for gravel pits of commercial value. (Note correlation between Warren beaches of the physiographic map and the Fox soils of the soil map.

Agriculture--Although the sand deposit is deepest near Thedford most of the Fox soils are deep enough for successful cherry and peach orchards. Much of the Fox sandy loam is used for tree fruit production. The soils are deficient in moisture in some seasons. The medium to low organic matter and fertility level require corrective measures.

Brady Series

The imperfectly drained member of the Fox catena is found on level to undulating sand deposits south of the sand hills near the Lake Huron shore. The natural drainage is imperfect because of the presence of clay at depths of four to ten feet. The natural vegetation was maple, ash, hickory and elm.

The series is classified in the Grey-Brown Podzolic Great Soil Group. The cultivated surface is very dark grey sandy loam approximately five inches thick with a slightly acid surface reaction and low to medium fertility.

Agriculture—Truck crops yield very well on these soils provided relatively large amounts of commercial fertilizers are used. Provision must be made also for maintaining the organic matter content. In a general farming program this can be done by including clovers and alfalfa in the rotation.

Granby Series

The Granby series developed on sand deposits in level to depressional areas. They are poorly drained because clay at four to ten feet restricts water movement, thus they are of the Dark Grey Gleisolic Soil Group. Granby soils occur in association with the Fox soils on the Lake Warren beach. The natural vegetation consisted of elm with some soft maple and white cedar.

Agriculture—Some of the Granby sandy loam is cleared and cultivated but most of it is in permanent pasture or woodlot. In most instances the cost of drainage improvement is justified only for the production of high cash value crops. After drainage improvement is effected, the organic matter is readily depleted.

The natural fertility is low.

Soils Developed on Gravelly, Calcareous, Outwash

Gravelly, calcareous water-laid materials occur as beaches or outwash plains along the main drainage channels. The gravel consists mainly of dolomitic limestone with small amounts of shaley and siliceous material. The gravel is overlain by one or two feet of medium textured material in which most of the profile is formed. The Burford catena consists of the well drained Burford series, and the imperfectly drained Brisbane series. The poorly drained Gilford series is not found within the township.

Burford Series

The Burford series occurs in small areas near Ravenswood and Arkona. The topography is undulating and the open subsoil provides good natural drainage. The natural vegetation was chiefly sugar maple and beech.

The Burford loam, the only member of the series, is classified as a Grey-Brown Podzolic soil. In some instances the surface soil contains a large number of stones, while elsewhere a layer of relatively stonefree loam may cover the underlying gravel.

The organic matter content of the cultivated soil is medium but the levels of phosphorous and potash are low.

Agriculture—The Burford series is usually intensively cultivated. It is an early soil, warming quickly in the spring, thus it supports good orchards of peaches, cherries and apples. The soil can produce good yields of general farm crops such as wheat, corn,

spring grains and clover. It tends to be droughty.

Brisbane Series

The Brisbane series, the imperfectly drained member of the Burford catena, is found only in small areas of level to slightly undulating topography. The main natural forest species on these soils were elm, ash, oak and maple. The only type in the series, Brisbane loam, is a Grey-Brown Podzolic soil. The cultivated surface soil is medium to low in organic matter and available nutrients.

Agriculture--Brisbane loam produces fair yields of wheat, corn and cereal grains.

The natural drainage is unsatisfactory for alfalfa. The soil responds well to applications of complete fertilizer even without improved drainage.

Soils Developed on Shaley Gravel

Along the present shoreline of Lake Huron south of Kettle Point there is an area of shaley gravel that apparently has been deposited by wave action. The well drained soil developed from this material exhibits a poorly defined profile. Only one series, Shashawandah, has been mapped on these materials.

Shashawandah Series

The Shashawandah series has developed on undulating topography from shaley gravel. Maple and beech with some pine constituted the natural vegetation. The natural drainage is good.

The Shashawandah is classified as a Regosol.

Agriculture--There is no agricultural development on this soil and it is doubtful that it should be used for anything other than

tree production. The excessive stoniness, low soil reaction and low fertility practically eliminate it as a potential agricultural soil.

Soil Developed on Sandy Outwash Material Underlain by Lacustrine Clay or Clay Till at Three Feet or Less.

The shallow sand deposits over clay till in Lambton County are a result of wave action in the post-glacial lakes which left sand bars of one to three feet in depth. On the relatively level topography of the area, the clay substratum hinders internal drainage to such an extent that no well drained profiles occur in the sandy materials. Areas of imperfectly drained soils do occur and they are mapped as Berrien series.

Berrien Series

The Berrien Series has developed on undulating topography. The natural vegetation consisted predominantly of beech, maple and elm.

These soils belong to the Grey-Brown Podzolic Soil Group.

The cultivated surface soil is moderately well supplied with organic matter, but the levels of available nutrients are low.

Agriculture--Because of the low fertility and coarse texture and resultant low water-holding capacity, the Berrien soils are not used intensively for agriculture.

The chief grain crop grown on these soils is rye which gives only fair yields. With relatively high rates of fertilization fairly good yields of spring grains and corn can be obtained.

When left without cover, the soils are susceptible to wind during dry periods. The Berrien sandy loam is usually more suitable for agriculture than the sand type.

Clay and Silt Deposited by Water

The Lacustrine clays and silts occur for the most part in the northern part of the township in the Thedford Marsh. The only series mapped on these materials in the Thedford area is the Toledo.

Toledo Series

The Toledo series is the poorly drained member of the Brantford catena. The topography is level. The natural vegetation consisted of elm, aspen and basswood.

The Toledo clay is classified in the Dark Grey Gleisolic Great Soil Group.

Agriculture--The Toledo soils are suitable for the production of alsike, timothy, oats, barley and buckwheat. If drainage is improved, a wider variety of crops can be grown.

Drainage improvement increases the adaptability of these soils. If they are intensively cropped, however, the organic matter may be depleted rapidly and a poor physical condition may result. Maintenance of organic matter content by frequent applications of farmyard or green manure is necessary. Drainage improvement, however, is the prime requirement of these soils.

Soils Developed from Recent Alluvium

Blackwell Series

The Blackwell series has developed on level topography from alluvial materials deposited in relatively recent times in shallow pondings that were connected to Lake Huron through the sandy area to the north. The natural vegetation was reeds, marsh grasses and cattails. The natural drainage is poor. The series is classified

in the Alluvial Great Soil Group.

- Al 0-8" black clay or silty clay; medium crumb structure; very friable; high in organic matter; calcareous; pH 7.4
- G 8-25" grey calcareous clay with numerous shells; massive structure; plastic; partially decomposed wood and other plant material may be present; pH 7.4
- C grey silt and clay with many shells; calcareous; pH 7.6

Agriculture--The Blackwell soils are intensively cultivated.

The main crops grown are sugar beets, potatoes, onions, garden beets, carrots and beans. By the use of large open ditches the area has been drained. This lowers the watertable enough that the land can be readily cultivated. In recent years some tile drains have been laid. This may be an indication that there has been a deterioration of structure which slowed down the natural percolation of water through the soil.

The Blackwell soils are low in phosphorous as are most Ontario soils. Because of wet conditions they will usually respond to potash as well.

Bottom Land

Soils adjacent to stream courses and subject to flooding during part of the year are mapped as Bottom Land. The soil materials have been deposited recently and indeed deposition may still take place during floods. The tree cover consists of elm, ash and willows. The soil consists of layers of silt, sand and clay intermixed with layers of organic matter. Usually there is a gradation of colour from very dark grey to grey from the surface downward.

Agriculture--Bottom Land is moist at all times and the abundant growth of grass provides good grazing. Good yields of farm

5

crops can be obtained if serious flooding does not occur during the normal growing season of the crop.

Soils Developed from Organic Materials

Organic deposits are formed mainly by the decomposition of grasses, sedges and wood. They occur where drainage is very slow, or where the water becomes impounded.

Muck

The organic material comprising muck is well decomposed. Muck soils are classified in the Organic Great Soil Group.

- 1 - Very dark grey; well decomposed sedges, leaves and wood; greater than 12 inches thick.
- 2 - Less well decomposed woody material.
- 3 - Calcareous clay or marl or sand.

Agriculture--Muck soils occur for the most part in the western part of the Thedford Marsh. When intensively cultivated they produce good crops of celery, carrots, beets, potatoes and other market garden produce.

There is some tendency for these soils to be eroded by the wind when exposed. The level of potassium and phosphorous is usually low and good results are obtained from the application of large quantities of these elements in fertilizer mixtures.

Marsh

The Marsh lands are underwater for all or part of the season. Marsh is found along the Lake Huron shore south of Kettle Point and on the bed of old Smith Lake, and supports a vegetation of sedges, rushes and cattails.

Agriculture--The marsh lands are not being used for agricul-

5

ture at present. Large engineering works for water control are required to permit agricultural use of these areas. Some of them may provide pasture during the dry season but for the most part they are used for recreational purposes, such as duck hunting and trap ping and as a wildlife habitat.

Because of their low topographic position they are covered with water for much or all of the season. Thus, dykes and pumping would be necessary to bring these lands into cultivation.

Peat

Peat is an organic soil developed from the remains of reeds and sedges. Peat soils occur in the Thedford Marsh. The peat is often slightly acid but in some places it is covered by silty material that contains free carbonates. This silty covering was deposited by flood waters. The construction of drainage canals has allowed cultivation of the peat area. In its original state the area was probably covered with water most of the year. The soil belongs to the Organic Great Soil Group.

The native vegetation is reeds and sedges with poplars encroaching on the border areas.

- 1 - 0-20 inches of brown poorly decomposed plant remains;
pH 6.1-6.2
- 2 - 20-40 inches of brown fibrous organic material; slightly decomposed; pH 6.1-6.2
- 3 - At 40-60 inches grey clay containing numerous aquatic shells; calcareous.

Agriculture--Most of the area has yet to be reclaimed for agriculture. In recent years some land has been cleared and is used for the growing of celery, carrots and other market garden

5.

crops. Like most organic soils, the peat is low in potassium and phosphorous. Other trace elements are often in short supply on such soils.

Eastport Series

Drifting dune and beach sand along the Lake Huron shore has been classified in the Eastport series. The soils belong to the Regosol Great Soil Group.

Agriculture--The best use for these soils is the production of trees or as recreational land.

Land Types

Crop Productivity Classes and Land Use Management

The Land Types map has been produced from data gathered by The Ontario Soil Survey, which combined the best information available from soil workers, agronomists, and farmers. Even the most perfunctory comparison of the land types map with the maps showing the different surface textures and natural drainage shows that surface texture and drainage are highly critical factors in the usefulness of land for agriculture. It is not accidental that the best agricultural lands are areas of good drainage and medium surface texture, while the submarginal lands have extremes of drainage and texture.

Since the characteristics and best uses of each individual soil type have already been discussed in the chapter on soils there is no need to repeat the information again in detail. The essence of the information can be summed up thusly.

Soils rated as the best agricultural land have the best agricultural potential, while the poorest cropland has the lowest potential. That is, the better soil types give greater returns for unit of time or money spent on them than do the poorer soils. By their very definition the better land types have very few faults and providing (that) the farmer follows good management practices these lands will show high productivity for many years.

To use the good to fair, fair, and fair to poor cropland the farmer has to contend with one or more natural limitations, such as poor drainage, low fertility, droughtiness or erosion. Yet, these problems can be overcome by a scientific approach to farming.

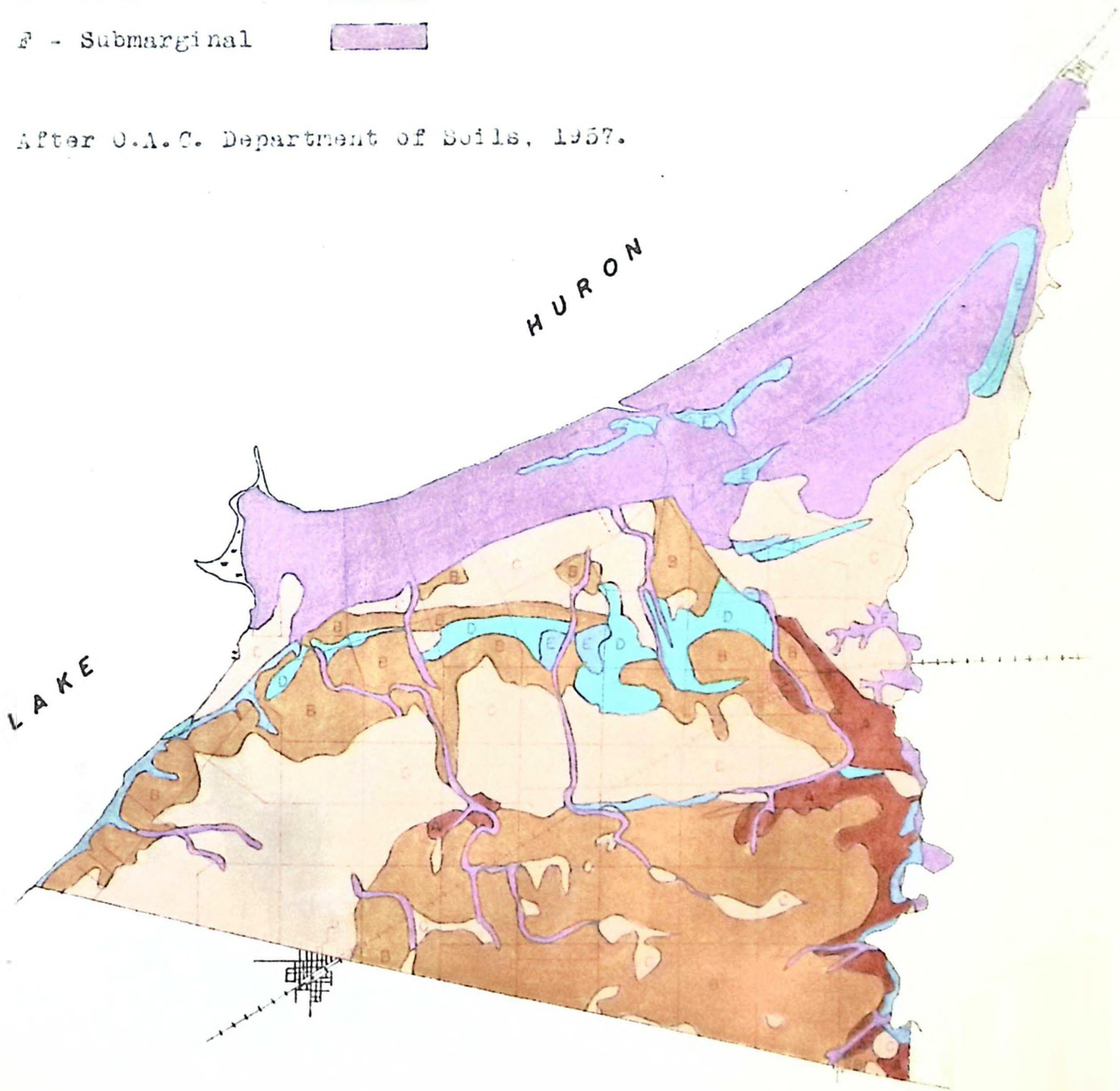
BOSANQUET
TOWNSHIP
LAMBTON
COUNTY

LAND TYPES

Crop Productivity Classes

A - Good cropland	
B - Good to Fair	
C - Fair	
D - Fair to Poor	
E - Poor	
F - Submarginal	

After U.A.C. Department of Soils, 1957.



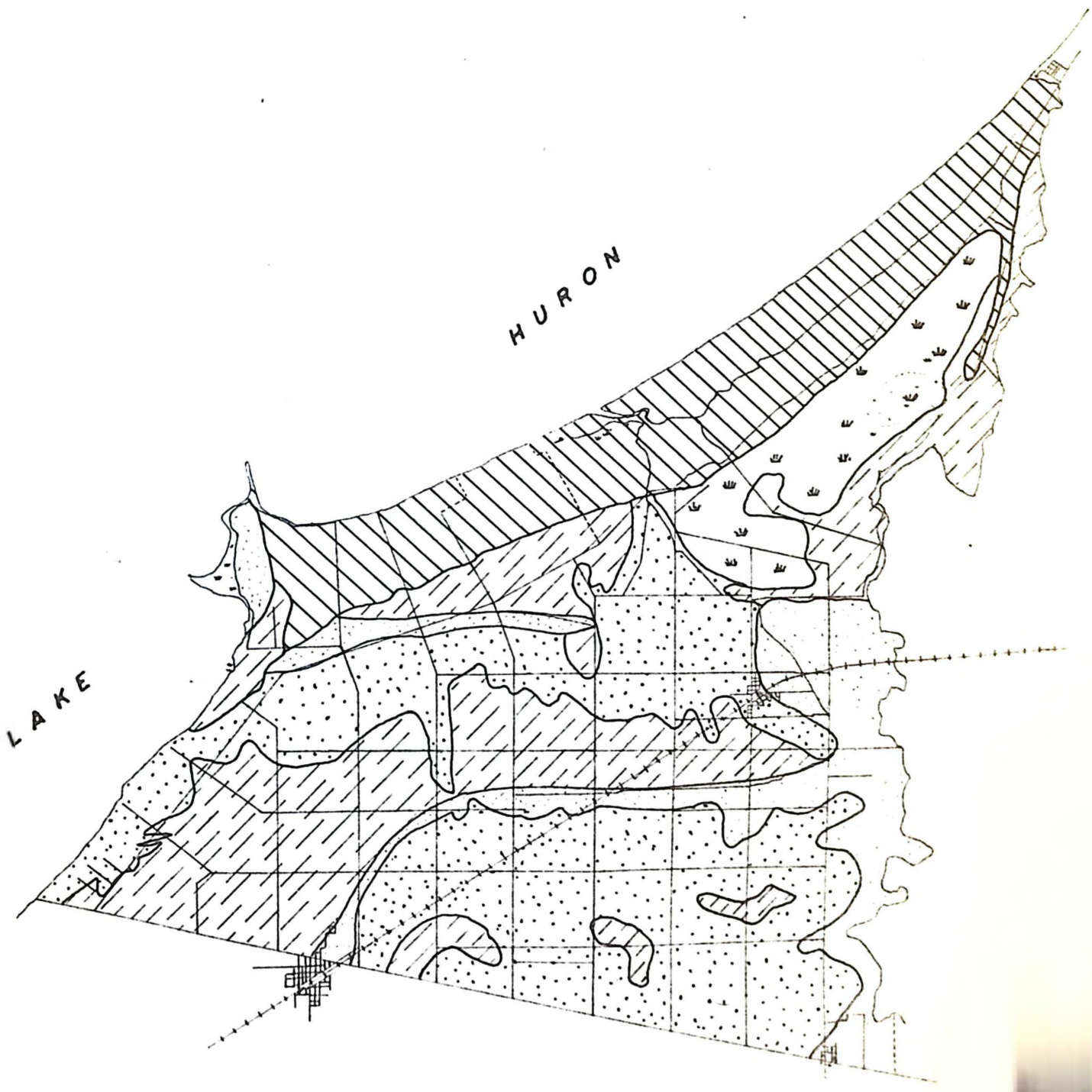
SCALE — 2 1/2 MILES TO THE INCH

NATURAL DRAINAGE

Excessive
Good
Imperfect
Poor
Very Poor



BOSANQUET
TOWNSHIP
LAMBTON
COUNTY



SCALE — 2 1/2 MILES TO THE INCH

SURFACE TEXTURE

Heavy
Medium
Light
Organic

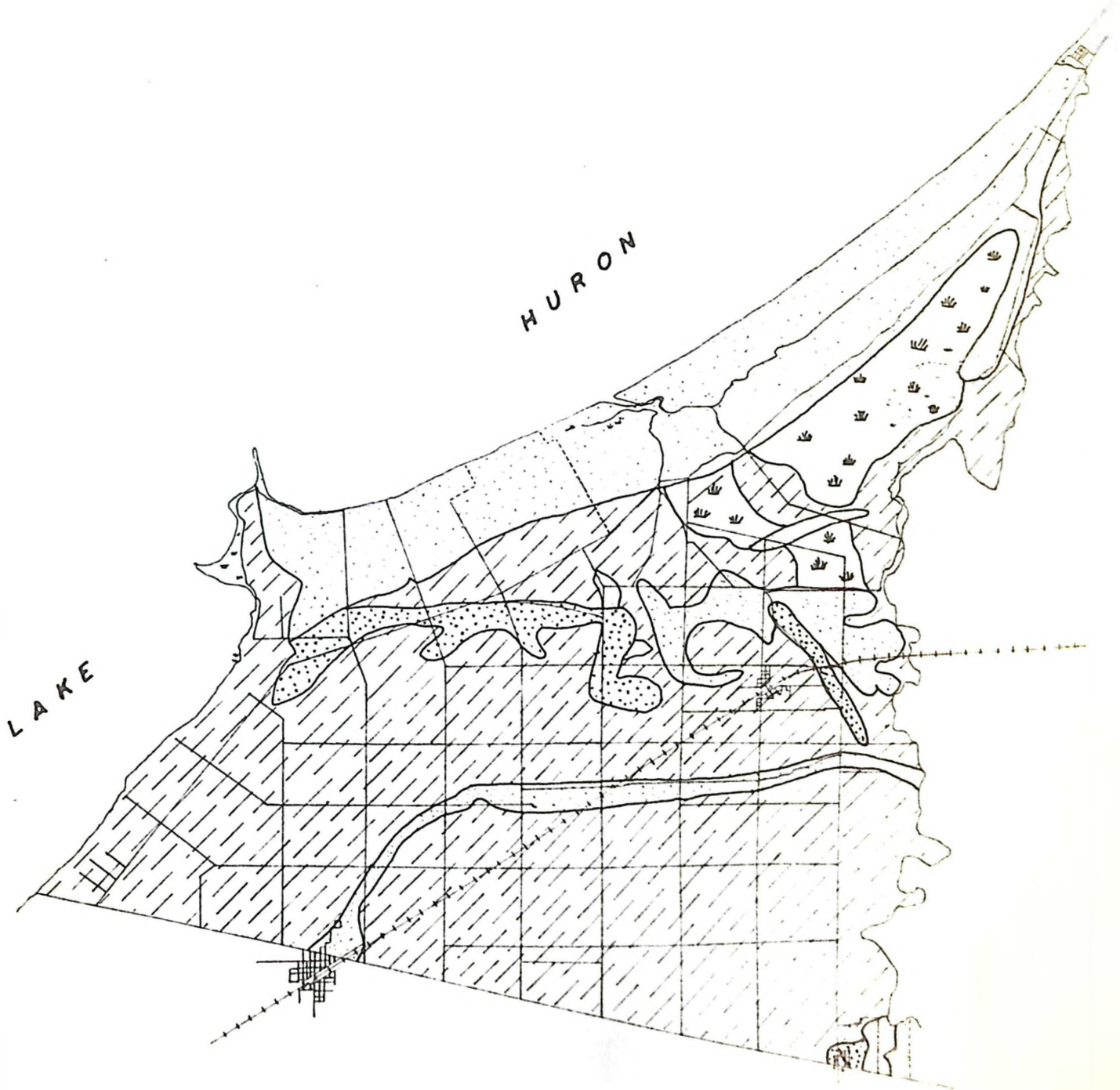


BOSANQUET

TOWNSHIP

LAMBTON

COUNTY



SCALE — 2 1/2 MILES TO THE INCH

Drainage tile, fertilizer, both natural and commercial, and conservation practices are all used by progressive farmers. As an example of their success much of the land around Smith Lake that was classed as submarginal during the soil survey of the late nineteen-forties is now some of its most productive and most expensive land in the township. (See land values map.)

The clever farmer realizes that, "The simplest method of soil conservation and good land use management is the selection of crops that produce most efficiently and profitably on the soil types available"¹.

The crop adaptability ratings for the various soil types can be found in the Appendix.

1. Soil Survey of Lambton County, Report No. 22, Page 65.
Canada Department of Agriculture, Ottawa.

History of Settlement in Bosanquet Township

Exploration and Settlement to 1840

The pattern of settlement in Upper Canada was largely determined by the trade routes to the Upper Great Lakes. The result was that Bosanquet remained almost unexplored until well into the nineteenth century.

The trader's routes to the fur lands were via the Ottawa or Trent rivers and the "portage of Toronto", all far to the northwest. The Indians and voyageurs who travelled the southern route from Niagar to Detroit preferred to travel northward up the protected western shore of Lake Huron, so they, too, did not visit Bosanquet.

However, where men of commerce failed to make contact, the intrepid men of the cloth succeeded. In 1640-41 the Jesuit Missionaries, Breboeuf and Chaumonot, established their mission of Saint Francois at the Neutral village on the Ausable. The site of the mission on the Ausable was an ideal one for making contact with the Indians, for the traditional route overland from Lake Huron was to portage to the Ausable at Grand Bend, then to proceed upstream to Nairn, then overland again to the Thames. The Ausable site was also a suitable one for the support of a mission because the Indians used the flat lands of the river's flood plain to raise their staple crop of maize.

The remoteness of this area is reflected in the fact that we do not hear any more about it until the 1800's.

The war of 1812 made people conscious of the exposed nature of

the water route between Detroit and Niagara, and military officers were sent out to find a more protected route. Two of these men were sent to the Bosanquet area. In 1819, Lt. H. Willson of the Royal Engineers made a careful survey of the Ausable river from its mouth to near its present junction with the Parkhill Creek, but like many other such reports, it was pigeonholed. In the same year, Lt. H. W. Bayfield, of the Royal Navy, began a five year survey of the Lake Huron shore.

Now, the government was conscious of the area and in 1825 arrangements were made with the Chippewas to purchase the land, with the exception of two small reservations that the Indians were to retain.

Beginnings of Settlement 1820-1840

In 1821, a lone pioneer, Asa Townsend, went deep into the wilderness and built himself a log cabin on the bank of the Ausable about a mile east of Arkona.

It was during this period that the government came to the conclusion that its existing method of granting land on the payment of fees was inefficient. It produced very little revenue and incurred a good deal of expense. Thus, in 1826 it abolished "free" land grants and the next year it appointed a Crown Lands Commissioner.

As early as 1823 the enterprising John Galt had proposed the formation of a company to take over the sale of unassigned lands in the colony. Three years later a charter was issued to the new company, known as the Canada Company. Under the terms of the contract the company received 1,000,000 acres of wild land, plus a

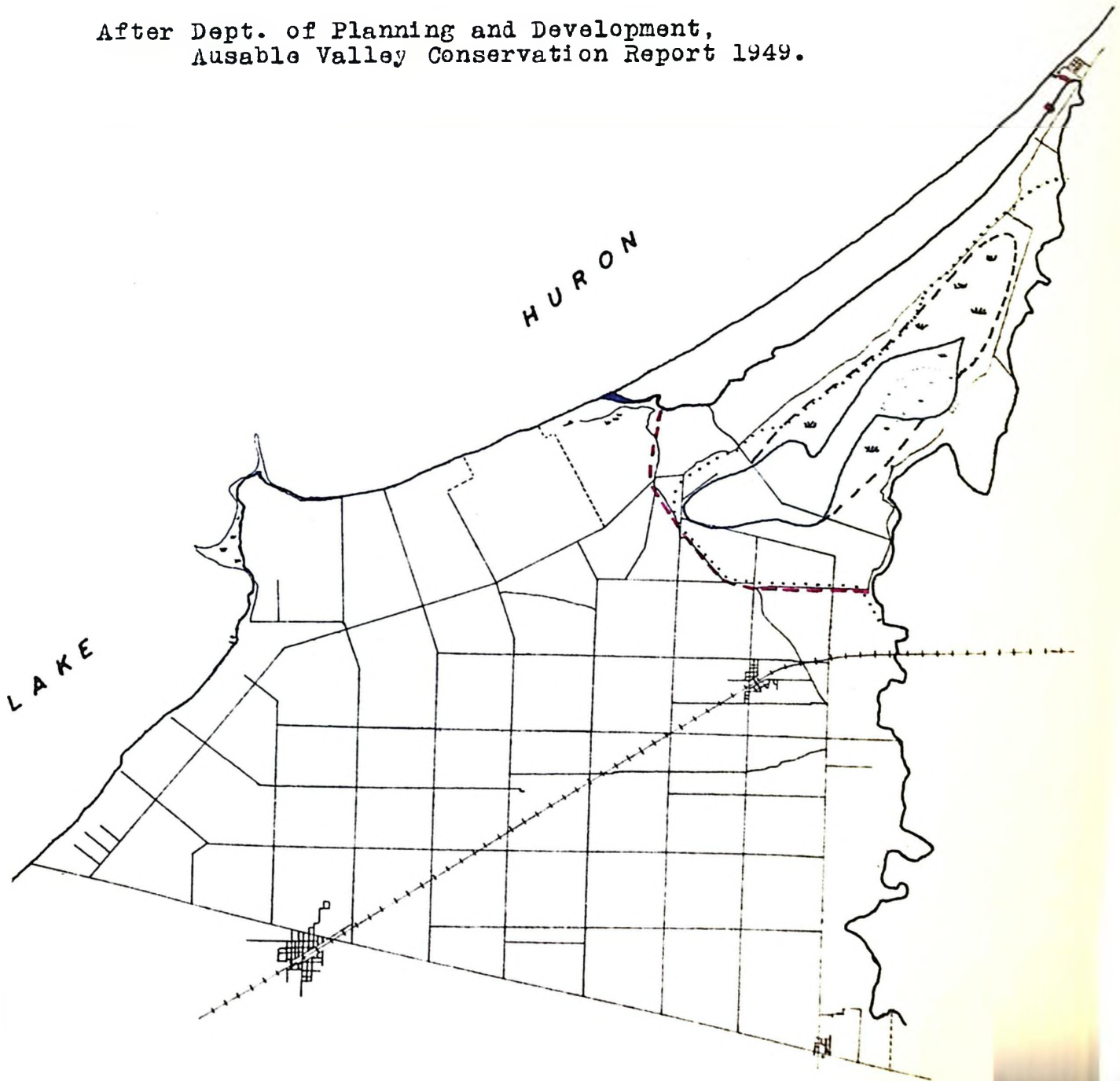
LAKE BURWELL 1840

BOSANQUET
TOWNSHIP
LAMBTON
COUNTY

- Lake Burwell —————
- Swamp - - - - -
- Swamp Forest Boundary
- Indian Portage - - - - -
- Brewster's Mill ■



After Dept. of Planning and Development,
Ausable Valley Conservation Report 1949.



SCALE — 2 1/2 MILES TO THE INCH

6.

100,000 acre bonus to make up for the swamps and other unsalable areas. In exchange for this great tract of land, the Company paid the government £145,150 5s. of which one third was to be remitted on condition it would be spent on "canals, bridges, high roads, churches, wharves, schoolhouses and other works undertaken and calculated for the common use and benefit of His Majesty's subjects resident within that part of the Province of Upper Canada."^{1.}

In its first year of operation the new company secured the services of Mahlon Burwell and sent him out to survey the boundaries of the two Indian Reserves specified in the treaty with the Chippewas. Burwell rediscovered the lake that Willson had found in 1819 and, since Burwell's reports were received by a more appreciative body, the Lake was named after him, rather than after the unrecognized Willson.

Besides surveying the Indian Reserves, Burwell "scaled" the shore of the Lake as far north as "the carrying place", now known as Grand Bend. He also established the southern boundary of what was to become Bosanquet township, by extending a survey line from the NW. corner of Lobo township, through Townsend's "Location" to the Lake Huron shore.

In 1826 another group of surveyors set out from "Townsend's Location" and made an accurate survey of the Ausable to its mouth.

Now the area was known and the boundaries had been defined: all that remained was for the Canada Company to sell this wilderness to prospective settlers.

Settlement in the Huron Tract was to be on a planned basis,

1. Agreement between Crown and Canada Company 1826.

and an attempt was made to run the main roads parallel to the line of the chief watercourses, with the side roads running parallel to the tributaries.

"The company's early policies were calculated to induce speedy settlement; land was sold freely on the instalment plan, and the survey had marked out 100-acre lots, rather than the 200-acre ones of the older townships." 1.

The Canada Company, after selling the land, hoped to increase its margin of profit by building and renting mills to the dependent settlers. The company was also anxious to maintain a complete monopoly of the building lumber industry. Thus it agreed to buy the "entire output" of the mill on the Ausable, operated by two Americans Brewster and Smart. (See map of Lake Burwell for location of mill.) Assured of a market, the shrewd lumbermen proceeded to level the forest. Soon thousands of feet of hastily cut lumber began to arrive at Goderich by rafts towed by oxen. As the piles of wood grew the company realized the mistake it had made. The wood had been so hastily cut that it was unsuitable for the lucrative export market, and the local market was, of course, very small. Before the company could terminate its "disastrous bargain", the two men had made a profit of Four Thousand Pounds in a single year.

It was not until 1833 that the first permanent settler ventured into the "western wilderness of Bosanquet". The Hodgins and the Johnstones took up farms along the Huron shore, and the Ward Brothers settled on the south-western boundary of Lake Burwell.

Settlement of the area was slow because Bosanquet was too far from roads, stores and other settlers. Of the eighteen 100-acre

1. Ausable Valley Conservation Report, 1949. Chapter 4, P.26.

plots sold by 184-, eleven were shortly abandoned or resold.

The principal approach to the Huron Tract was via the "Proof Line Road", (No. 4), from London. It was to London that the pioneers of the area travelled to buy and sell. During the 1840's. the Lake Road, (No. 21), was extended into the township making the area much more accessible.

Period of Growth 1840-1875

The landscape of this area in the 1840's. has been described as "long stretches of woodland, broken here and there by a ten or twelve acre clearing around a log house."

This was a period of subsistence farming and any surplus was quickly consumed by the arrival of new settlers. Grain was threshed on the open floor, sacked and stored in the new frame barn, which was frequently of much better construction than the house. As the fields were extended into the bush the wood was burned and converted into potash or "black salts".

The 1840's. brought a new class of settler to the area. The Canada Company realized that sales were lagging under the instalment system of purchase, so it determined on a system of leases, whereby poor immigrants could lease land for ten years with the option of converting the lease to a sale at any time by paying the full price of the lot. This became modified into a system of rent payments that included instalments on the purchase of the land. Hence, if a settler was in arrears with his payments, then earlier payments for the lot were applied against the rent. Fre-

quently a settler short of cash worked with the road construction gangs of the Canada Company, who were building the township roads in the 1850's.

Farming was profitable during the good times of the 1850's. and hundreds of the ten year lease holdings were converted to sales. As the older townships became fully settled, the movement west to Bosanquet increased and land values rose to 19s.6d. per acre. Among the newcomers was a man named Chase who opened a tavern on the Ridge. He soon had a growing list of neighbours like Furry, Kenny, English and Williams.

The settlement of the Thedford area lagged behind because, being further inland, it was less accessible and the true fertility of the land had not been revealed. Eventually the settlers began to arrive, -men like S. Southworth, the Kennedy brothers, Ketchum (lot 15, Con. 1), Chester, Elliot, Dark, McKellars, Mc Pherson and Rae.

George Durand of Sarnia established a General Store near Lake Burwell but later moved it to the area's growing "metropolis" of Pine Hill, which had opened its Post Office as early as 1850. Robert Rae became Durand's competitor when he too opened a store in Pine Hill.

By 1853 the tin ribbon of railroad steel reached from the growing cities that bordered Lake Ontario as far into southwestern Ontario as London. The Grand Trunk Line from Guelph to Sarnia curved through the southern third of Bosanquet in 1859. This had the effect of skyrocketing the land values along the right of way,

shifting the centres of population and creating new towns such as Forest.

The provision of good transportation to such a prosperous farming area resulted in a shift from subsistence farming to grain growing for export, and to dairying and stock raising.

Municipal Organization

In the early days of the Huron Tract there had been no means of registering deeds locally. Thus, the Canada Company Commissioner at Goderich, Thomas Mercer Jones urged the creation of a county to be added to the London District. This was done and after 1833 legal business was transacted at London, while the Canada Company itself did much of the local administration.

In 1842, the Western District (Essex, Kent and Lambton) was formed. S. Ward was chosen by his neighbours to be an observer, but the District Clerk was "instructed to inform Mr. Ward that as Bosanquet was not a township, there could be no township clerk,"^{1.} Bosanquet then was unrepresented until it organized as a township in 1847. Two years later the Western District became the United Counties of Essex, Kent and Lambton, and finally in 1853 Lambton County became independent.

Bosanquet since 1875

In the period of the late 1870s. Bosanquet was at the peak of prosperity. The region was well settled, and the hard labour of cultivation was well rewarded by good yields. Many of the farmers had begun to change from the pioneer type of agriculture to mixed

farming or to specialized stock breeding. The new mechanized concept of farming had been introduced but had not progressed to the point where there was a lessening of the need for farm hands.

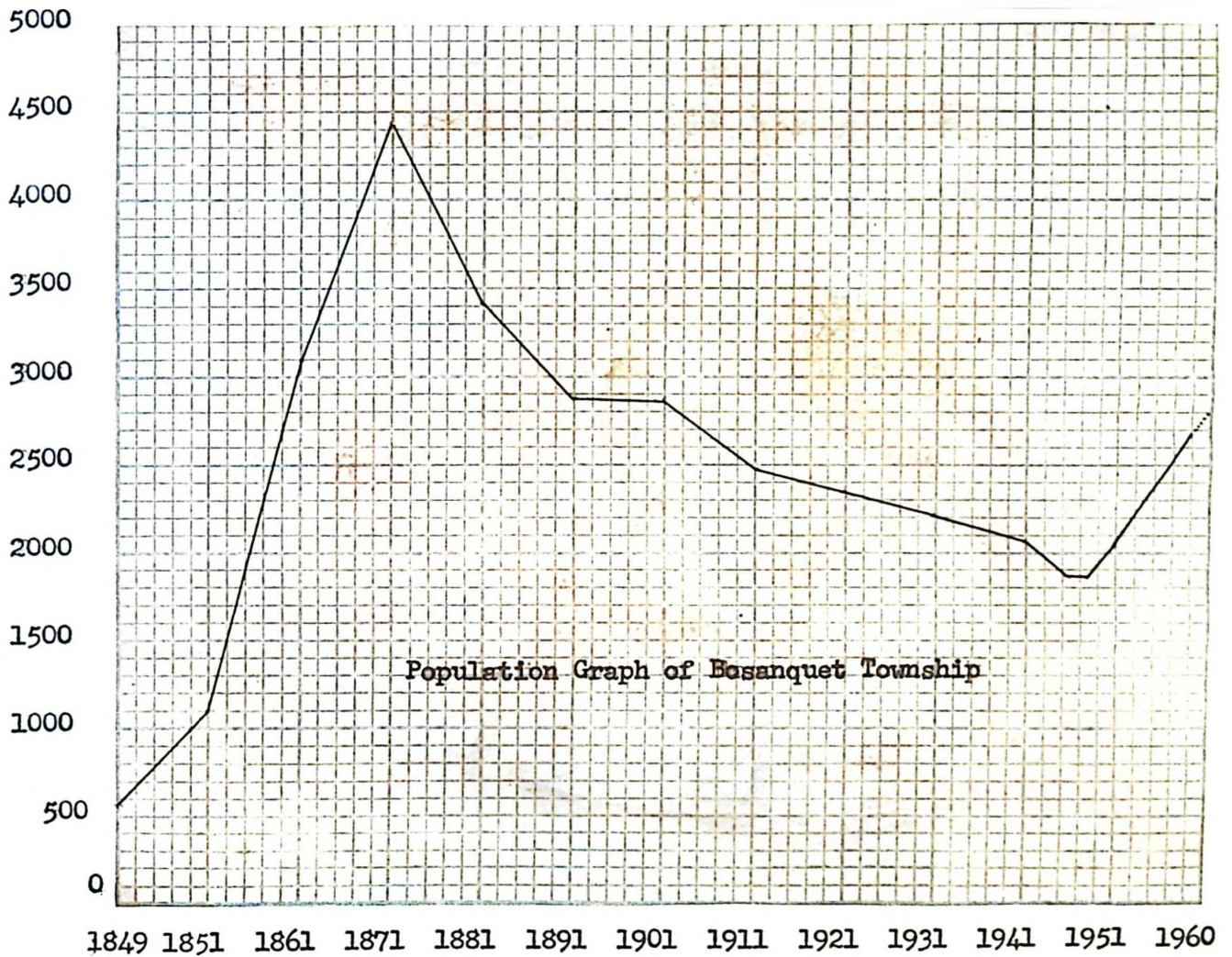
With land in high demand the Canada Company found itself with seven thousand acres along the Ausable near Grand Bend that were too wet even to survey. The Canada Company and the settlers blamed much of the flooding on Brewster's dam but even after an angry mob dynamited the dam and burned the mill the flooding continued unabated. The only solution was to divert the Ausable away from the low areas by means of a "cut". Thus, in 1875 a shallow ditch was dug by hand and with horses across the township to drain Lake Burwell and the "drowned lands" of the Ausable flood plain. A much reduced Lake George was renamed Smith Lake. The fertile black loam that was reclaimed was quickly subdivided into lots that sold readily.

It was fortunate that specialized farming such as the "celery beds" on the reclaimed lands developed at this time, for the eighteen-eighties brought a decline in the market for Canadian wheat. The good market for wool, the export of beef cattle to England, and the raising and exporting of heavy draught horses helped to cushion the impending depression.

The individual farmer was still prosperous, but the trend to mechanization, and the loss of the wheat market indicated that fewer farm workers would be needed in the future.

If we look at the graph of population (Figure 14) we see that this is exactly what occurred. Population numbers declined steadily after 1880.

Figure 14.



The period from 1885-1895 was one of hard times. Poor prices resulted in sharp declines of the acreages of crops with a corresponding increase in the area of pasture.

From this time onward "the drain of population from the townships has continued steadily without relation to the fluctuation of the markets for farm produce."^{1.}

In 1893 a second "cut" had been created. This one was across the narrow neck of land that separated the river from the lake at Grand Bend. Its construction reduced the danger of spring floods and gave Grand Bend a harbour. Grand Bend's rise as a lakeport marked the decline of "Port Blake" and Brewster.

The nineteen hundreds again brought prosperity based on mixed farming.

Developments in farming since this time will be more fully covered in the chapter on agricultural land use.

Unlike many small agricultural villages in Southern Ontario, Thedford and Arkona have maintained their size over the last fifty years. However, the growth of industries outside the area led to the closing of some of the small local plants, and the change in agriculture ended the need for local processing plants.

The history of settlement and the functions performed by the urban centres within the township will be more fully covered in the chapter on Urban geography.

1. Ausable Valley Conservation Report, 1949. Chapter 4 Page 65.

Agricultural Land Use in Bosanquet Township

See the map of Agricultural Land Use inside the back cover.

Although many farms are still of the mixed type a good number of Bosanquet farms specialize in livestock, fruit or market gardening.

General Farms

General farms exist on the heavy clay soils of the till moraine and the clay and silt soils of the water modified till plain.

While each farm is a unit unto itself one can make generalizations about the local mixed farms. They average around one hundred acres, of which half is cropped and the other half is utilized for pasture, hay and woodlot. The local farmers believe that the following crops are typical of a hundred acre farm.

- 10 acres wheat
- 20 acres oats
- 15 acres corn
- 8 acres bush
- 10-12 acres used for a double hay crop and fall pasture.



Photograph No. 11. Typical Bosanquet farmstead. Note the closeness of the bush, the corn crib and the broken windmill.

The trend at the moment is to decrease the acreage devoted to wheat, oats and barley in favour of increased acreages of corn, soybeans and sugarbeets.



Photograph No. 12. Oats piled in stooks develops a good head for use as seed.

The amount of land in pasture has changed very little in the last thirty years.

Soil drainage is a problem with which the farmers on the beveled till plain below the level of the Lake Warren beach must deal. See the map of soil drainage. The modern 'mechanized' farmer uses tractors that accentuate the problem by packing the land, something that the horses of past generations never did. These heavy soils are generally plowed in the fall since the freezing and thawing of plowed soil during the winter months improves the soil structure so that the fields drain more quickly in the spring. Some farmers have found it necessary to drain their fields by means of clay tiles. In the last six years alone the district farmers have borrowed over \$17,000 to install tiles.



Photograph No. 13. Farm surveyors at work laying out a pattern of tile to drain the field more quickly.

The second and even more serious problem facing farmers in the township is the lack of water during the summer drought. During dry years, such as 1960, farmers are forced to carry water to the fields and to chop green corn to feed their cattle when the waterholes dry up and the pastures turn brown.



Photograph No. 14. This photograph was taken from the Ridge Road overlooking the bevelled till plain, during the month of August. The pooriness of the pasture and the deplorable condition of the waterhole in the foreground are obvious.

There is little that can be done to increase the amount of precipitation but the creation of proper, deep farm ponds with fences

about them would prevent the cattle trampling the water into a muddy ooze and would also lessen the loss due to evaporation.

Livestock

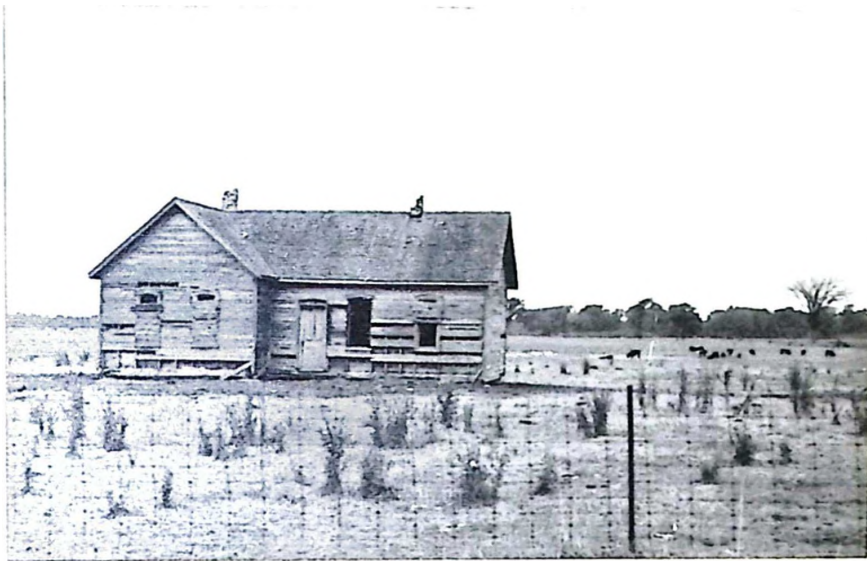
A combination of factors has ensured the success of livestock raising in Bosanquet. There is a long summer season with an abundance of feed for cattle - good pasture, corn and alfalfa, and the winter is relatively short so that cattle need hand-fed hay and ensilage for only five months at the most.



Photograph No. 15. A fine herd of Poll Angus cattle.

The man responsible for introducing black Angus cattle to the district was Howard Fraleigh "the Pasture Man". Fraleigh maintained that "Grass, not gold, is the basis of empire", and he repeatedly proved that he required less land to feed each animal than any other farmer in the province. He bought many of the debt-ridden mixed farms that had been "mined" and made a profit by converting them to grass farms. Many of these grass farms can be seen on the Land Use map in the southernmost parts of the township. (Fraleigh also encouraged the growing of flax for seed to be exported to Ireland and for fibre to be processed in his mill in Forest. He also proved that it was

possible to grow hemp in Canada.)



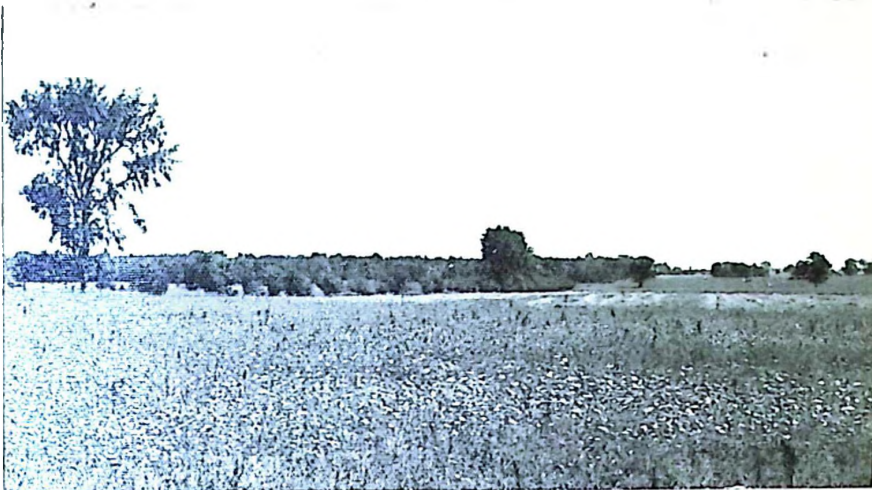
Photograph No. 16. When the old mixed farms are converted to ranch land the houses are no longer occupied and so are used as hay storage barns.

The beef cattle raised on Bosanquet's grass farms are retailed in Toronto and Detroit. Fat cattle are bought by packing house buyers at the local farmers' auctions.

There are almost as many dairy cows as beef cattle in the township. Those farmers who have proven that they can maintain a high standard of milk production during the entire year have steady contracts with Silverwood's in Sarnia or with Carnation Milk in Kerrwood. Bulk milk is also bought from the farmers by the Parkhill Creamery and the Forest Co-op.



Photograph No. 17. Sheep are raised on the well drained land of the sand plain to the east of Thedford.



Photograph No. 18.

Idle land, a field of grain which has been harvested, pasture and bush on the till moraine.



Photograph No. 19.

A fine crop of oats and corn stands before a dense bush on Con. X, near Camp Ipperwash.



Photograph No. 20.

To feed their prize cattle this farm planted 300 acres of corn. However, the yield was only two-thirds of what was expected.



Photograph No. 21.

Tobacco is a new crop on the sand plain to the east of Thedford.

Fruit Farms

Fruit growing is restricted to the sandy loams and gravel ridges of the Huron shore and the glacial lake beaches, especially the Lake Warren Beach. The location of orchards on the land use map coincides directly with the beaches on the physiography map. These locations offer good drainage and the type of soil that warms up quickly. In the mixed farming area, where these conditions are not found, nearly all the orchards are winter killed or are so unproductive that they are neglected.

In the early part of this century there was an emphasis on the production of early apples for the lucrative western market, but the widespread use of cold storage has eliminated this market.

Peaches have been an important commercial crop since 1910. The area has a long season and the snowfall, while not heavy, is enough to protect the roots from winter killing.

Raspberries were indigenous to the area and berry farms show a remarkable yield from small acreages.



Photograph No. 22. Some of the soils on the ridge where fruit is grown have been abused. The Queen Anne's Lace is a common weed that indicates the run down condition of the soil.

Market Gardening

The market gardening district north of Thedford has the most distinctive characteristics of any of the areas of different farm types. The land is flat with great expanses of black muck or peat soil that was submarginal until a scientific system of open drains, dykes, pumps and drainage tiles was developed. The area is so newly developed that over great expanses there are no houses, but only small tool sheds.



Photograph No. 23. Large acreages are devoted to cash crops such as beans.

The farmers live in Thedford and drive out to their farms every morning. Whereas the rest of Bosaquet was laid out in 100 acre farms these garden lands are being dissected into little 10 acre plots that sell for \$400. per acre. Potatoes, onions, carrots, celery and lettuce occupy the greatest acreages. A complete list of crops and acreages can be found in the Appendix.

The growers are united in two co-operatives. The gardeners in the Thedford Marsh belong to the Thedford Co-op. and those in the newer area around old Smith Lake belong to the Klondyke Co-op. These co-operatives buy the seed, pack and store the crop and even market the produce for the growers.



Photograph No. 24. The new headquarters of the Klondyke Gardens Ltd. is on highway no. 21 to facilitate shipping the produce to market.

Fresh vegetables are shipped to Hamilton, London, Stratford, Windsor and Chatham in Ontario and to Baltimore, Flint, Toledo, Cincinnati and Detroit in the United States. Carrots, onions and celery are also sent to the Canadian Cannery in Simcoe and to the York cannery in Brantford. Carrots are processed in Exeter, while beans go to the mill in Dashwood. The onions grown on the Bosanquet gardens dominate the southern Ontario market, the nearest rival being as far away as Montreal, Quebec.

The use of the "drowned lands" for agriculture has been fraught with problems from the very beginning. There is a chronic drainage problem and each spring brings the threat of inundation. Although naturally fertile, some of the muck lands have shown reduced yields recently because they have been abused. However, most of the gardeners work their land intensively, applying fertilizer and irrigation water when it is needed.

A high percentage of the gardeners are recent immigrants to Canada from the Netherlands and are experienced in this specialized type of farming.



Photograph No. 25.

Wide view of the market gardens. Note the absence of houses, the numbers of little tool sheds and the use of irrigation.

Photograph No. 26.

A great deal of hand labour is used in the raising of onions for Dutch setts.



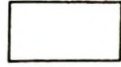
Photograph No. 27.

Piles of drainage tile give mute evidence of the problem that faces most of the gardeners. The wagons in the background are loaded with bushels of carrots on their way to the domestic market.

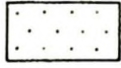
Agricultural Land Values
(1959-60 assessment)

BOSANQUET
TOWNSHIP
LAMBTON
COUNTY

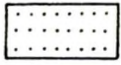
Non-agricultural Land



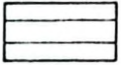
Less than \$40 per acre



\$40 - \$60



\$60 - \$80



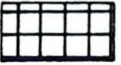
\$80 - \$100



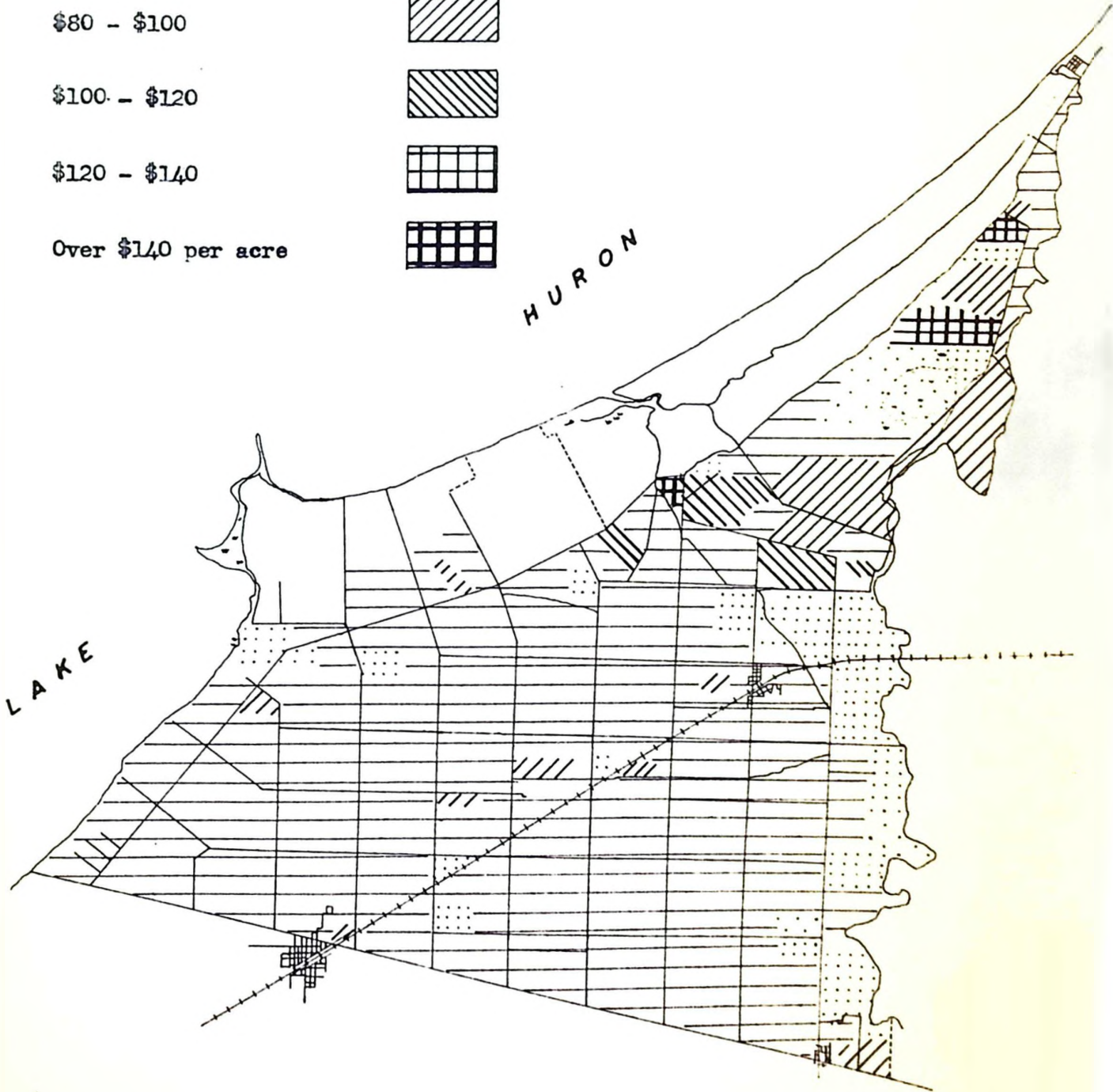
\$100 - \$120



\$120 - \$140



Over \$140 per acre



SCALE — 2 1/2 MILES TO THE INCH

Non-agricultural Land Use in Bosanquet Township

While the use of land for agricultural purposes is most important, both in terms of land area occupied and financial return, no discourse on a study area would be complete without some mention of the non-agricultural land uses.

Quarrying

For many years the beaches of glacial Lake Warren have been used as a source of gravel. As the close-up photograph no. 6 shows, the stratified gravel of the beach is an ideal size for surfacing the township roads.

A short distance to the north of Thedford is a tile plant, (see the small purple square on the Land Use map), that is dependent upon the supply of clay weathered from the shales of the Hamilton Formation.

Forestry

The "Huron Tract" used to be noted for its forests. After the time of Brewster and Smart the area was cut over for lumber and squared timber, and the tanning mills of London provided a market for the supplies of bark from the township. However, as the farmers began to push the forest back the quantity of raw materials from the woodlands naturally decreased. Yet there still remain over four hundred woodlots covering over 15,000 acres within the township.

Some years ago, six hundred and fifty acres to the east of Ipperwash were reforested as a municipally sponsored enterprise. Pines were planted among the existing oaks.

The growing of these trees is an excellent land use since

they stabilize the otherwise unproductive Plainfield sand. It has been suggested that the area be used as a park but there is a very high fire hazard during the drier summer months.

Indian Reserves

In 1825 the Chippewas ceded their lands to the British crown. The payment for these 2,200,000 acres is stipulated in the treaty that is still preserved on the Kettle Point Reserve;

"George Ironside, Esquire, superintendent of Indian Affairs within the province of Upper Canada, doth hereby for and on behalf of our said Lord the King, his heirs and successors, promise, declare and agree that there shall be paid yearly to the said Indians of the Chippewa Nation, now inhabiting the said tract, and to their posterity, the sum of one-thousand and one-hundred pounds of lawful money of Upper Canada, in goods at prices usually paid for the time being for such goods in the City of Montreal in the Province of Lower Canada."

At that time there were 440 Indians in the territory under Chief Wawanosh and they were settled on the four reservations that were set aside. Two of the Reserves were in Bosanquet, the 2,650-acre Sauble Reserve and the 2,575-acre Kettle Point Reserve.

On the Reserves the Indians each had fifty acres of land and the Canadian government constructed a school house, mission house, council house and two churches.

Today the Sauble Reserve has been converted to the use of the army but the Kettle Point Reserve still exists. The Indians live in small frame houses in various stages of repair. In the southern portion of the Reserve where the soils are better, many of the families cultivate gardens, but in the area of unproductive Shashawandah soil along the lake front the land is still densely wooded. Here the marshy shore is lined with small boats that the Indians use when fishing for pickerel, bass and perch.

Ipperwash Military Camp (Department of National Defence)

This army camp is located several miles to the north of the Kettle Point Indian Reservation and extends from highway 21 to the lake. The name has no historic meaning but simply refers to the "Upper wash".

The occupied part of the camp is the southern corner bordering on the Blue Water highway. Stretching to the north of the huts are the various ranges for rifle and small arms practice. Behind this part of the camp is a driving range with obstacles for vehicles to negotiate.

There is a wooded area between the camp and the lagoons of the old Ausable that was used for training exercises during the Second World War. Certain areas have never been cleared of the live ammunition so the area remains waste land, restricted even to army personnel.

The camp has nearly a mile of fine sandy beach which, although fenced, is open to the public.

Ipperwash Provincial Park (Ravenswood)

Ipperwash Provincial Park adjoins Stony Point and the Army camp. Its 109 acres of woodland and beach are intensively used during the summer months. There are 230 campsites with hot water and bath houses and 70 trailer sites. For picnickers there are almost four hundred tables distributed under the trees.

Attractions besides the 145-275 foot wide beach and warm waters are the geological formations at nearby Kettle Point, and the bass and perch fishing offshore.

Access to the facilities could not be easier because the beach

is so hard packed that one can drive from Kettle Point to Port Franks on the sand.

Recreation

Recreation is a major non-agricultural Land Use in Bosanquet township. Numerous private camps and private cottages line the shore on each side of the Pinery and Ipperwash Camps. Public facilities vary from simple roadside picnic tables to the Department of Lands and Forests Camp where one can live with all the conveniences of home for up to twenty-eight days.



Photograph No. 28. Typical lake front cottages near Kettle Point. Note the television aerial and the use of "kettles" for decoration.

Pinery Provincial Park

Situated on Lake Huron off highway (21) just five miles south of Grand Bend is the new Pinery Provincial Park. There are no comparable pieces of natural parkland in the whole of Southern Ontario.

The Ontario Department of Lands and Forests has overcome the original problems of biting insects and poison ivy to make these 4,200 acres an inviting haven for the camper.

Picnickers find ten large lots all paralleling the beach, with parking space for four thousand cars. Each section of the beach has its own comfort station and bath houses.



Photograph No. 29. On hot summer weekends thousands of people come from the urban centres of Ontario to the "Pinery" to enjoy the lake breezes as they picnic, sunbathe, swim or just relax.

Sheltered behind the sand dunes are five hundred campsites each with its own parking area, picnic table and grill. During the long holiday weekends these facilities prove inadequate as five thousand campers converge on the area.

For the small charge of five dollars per week the camper has the complete facilities of the camp at his disposal.



Photograph No. 30. View in the Pinery looking north up the Old Ausable towards Grand Bend. This rustic property has been preserved by the Department of Lands and Forests for the use of canoeists, fishermen and naturalists.

"Rock Glen" Arkona



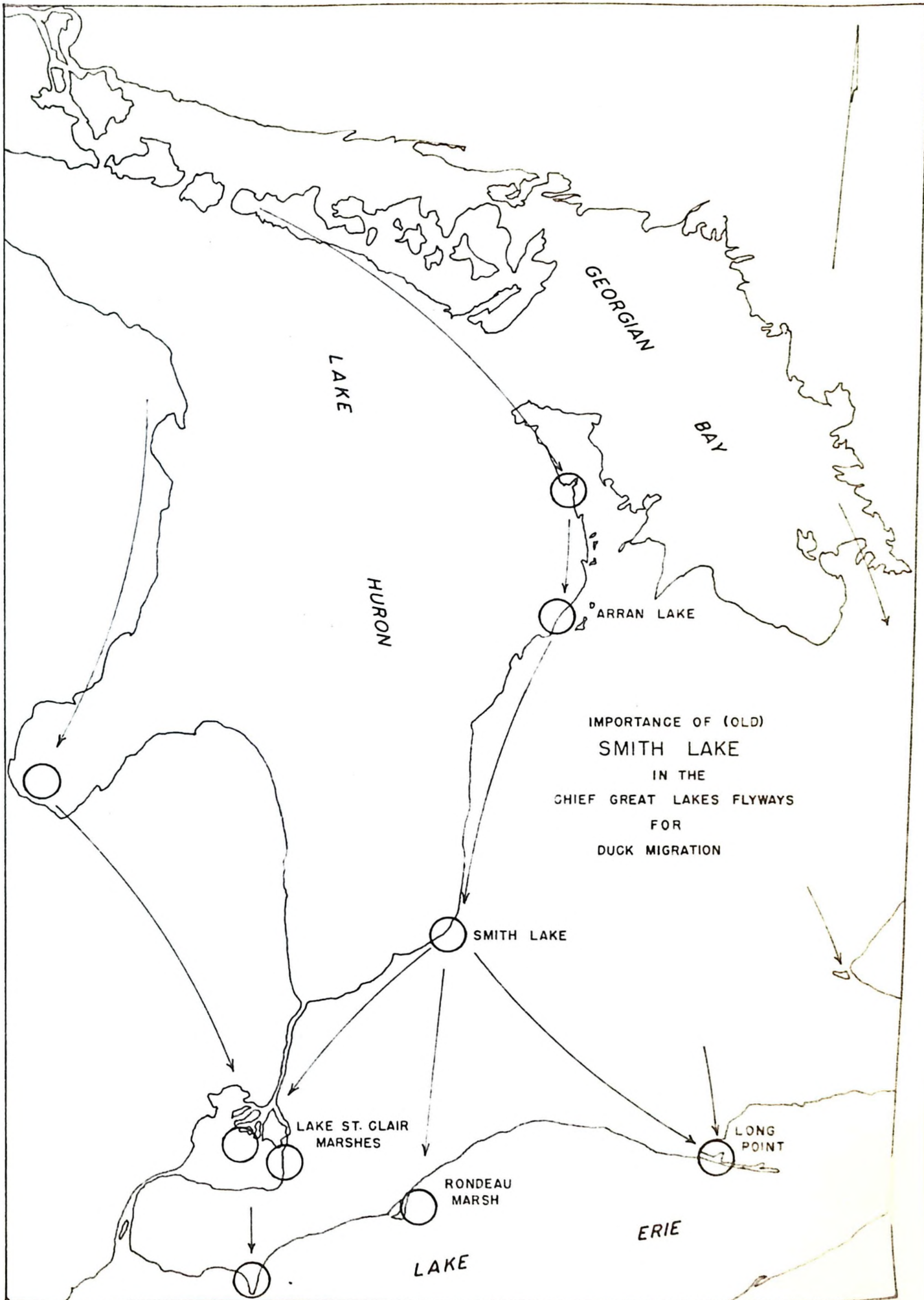
Photograph No. 31. The waterfall at Rock Glen, on a tributary of the Ausable. A natural beauty spot that has been recently developed by the Ausable River Conservation Authority as a public park. This is an historical mill site with attractive scenery and interesting geological formations.

Hunting and Trapping

In the agricultural part of the township very few of the woodlots are fenced to keep the cattle out. The result is that there is only a thin cover for wildlife. Many of the residents within the area travel north to the more rugged areas of the Bruce Peninsula to hunt, despite the fact that there is good hunting of certain types close to home. The White Tailed Deer is becoming increasingly common despite the fact that it is heavily hunted both in and out of season. The illegal practice of "jacklighting" is reported to be quite common in the Thedford Marsh area. The Red Fox is also on the increase, as is the Raccoon who has made a successful change of habitat, moving from life in the trees to life in the drainage tile. Jackrabbits and cottontails are populous enough to supply most hunters with sport.

Smith Lake has been a great centre for migrating ducks, in the past, when five to ten thousand would rest there. (See Importance of Smith Lake to Great Lakes duck flyways, page 36). The draining of the lake and heavy hunting has changed all this. To-day the most common big bird in the vicinity is the Turkey Vulture.

Muskrat have suffered a "serious and continuous decline in population" in recent years. Smith Lake produced four hundred pelts in 1944, only a hundred and twenty-five in 1947, and now, of course, none. Likewise the catch on the Old Ausable has fallen off considerably. It is believed that the factors responsible for the decline are; illegal trapping and spearing, and the arbitrary fixing of trapping dates in advance of the actual season.



AFTER DEPT. OF PLANNING & DEVELOPMENT. AUSABLE VALLEY CONSERVATION DEED 1949

Urban Geography of Bosanquet Township

Grand Bend

Settlement in this area dates from the 1830s. when a small community grew up around Brewster's Mill on the Ausable. The community survived despite the fact that an angry mob had descended on the mill and dam in the dark of night and created such havoc that by morning there was, in the words of a contemporary chronicler "neither a dam by a mill site or a mill by a dam site".

By 1850, the Post Office located in the southwestern corner of Stephen township was called Brewster. It served the hamlet at the old mill site then known as "Summersville" and the little unnamed settlement at the portage from the Ausable to the lake.

The pioneer industries were closely connected to the raw materials at hand. There was a shingle mill at "Summersville" and a grist mill in the neighbourhood. In 1868 John Dalziel, a lumber merchant with sawmills at Thedford and Port Franks, built a "steam and water" flouring mill at Grand Bend. By 1875 this mill had expanded into a grist mill, oatmeal, saw, planing and shingle mill. It is believed that the exact location of this mill of many functions was at the southwest end of the bridge over the Ausable at Grand Bend. There was also another sawmill, two hotels, besides a store and post office, but as yet there was no harbour or pier. "Blake and Company lumber dealers" had a pier out into the lake at "Port Blake", a few miles south of the present Grand Bend.

In 1891, Richard W. Code of Glencoe was hired under the Municipal Drainage Act to create a cut to link Grand Bend to the Au-

sable directly to the lake. The few weeks of work it took to provide the river with a new outlet had profound repercussions on the local communities. Brewster and Summersville were forgotten and the pier at "Port Blake" was abandoned in favour of the new harbour at "the Bend", which soon became the home of a sizable fishing fleet.

The tourists began to come to Grand Bend as early as the 1870s., travelling by coach and steamer to enjoy the fine sandy beach. But, it was the advent of the automobile and good paved roads from the urban centres that brought the real tourist boom to Grand Bend. To-day, highways numbers 21, 81 and 82 funnel travellers into Grand Bend's main street, one of Canada's busiest thoroughfares on a hot Saturday afternoon.

There are still some commercial fishing vessels working out of Grand Bend's harbour, including a few from the Lake Erie fleet, but catches are generally disappointing. Pleasure craft owners are the people who make the port the busy place it is. During the summer months inboard cruisers, from across the lake, line the pier, and smaller boats are anchored along both sides of the river.

Grand Bend is the centre of the tourist trade in Southwestern Ontario, and is probably the most commercially developed resort on the Lake Huron shore.

Port Franks

Named after a member of the Canada Company's board, Port Franks is an example of an artificially developed town which did not grow out of the needs of the region. Tradition has it that the town was laid out at the command of Dr. Dunlop but that the original location was to be at the present Grand Bend, the site Willson had recommended in 1819. (The maps of 1846 show the area north of Grand Bend as "reserved for Port Franks".)

Yet despite the recommendations and maps the settlement was created at the mouth of the Ausable where it was almost inaccessible. The river route to Grand Bend shoaled frequently and marshes and sand hills blocked communications to the north and east. Hence it is little wonder that the village developed slowly. Only four lots had been sold by 1851 and it took another twenty-five years to sell twenty more lots.

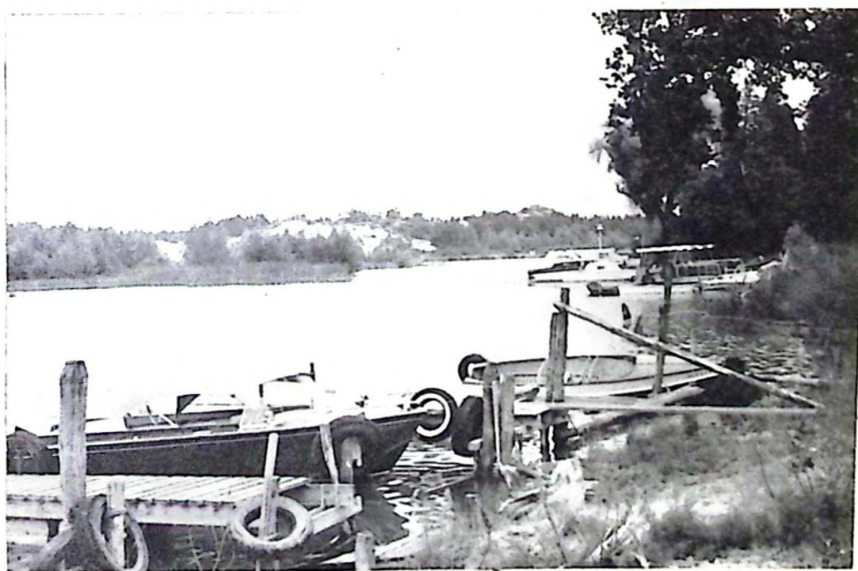
What commerce there was depended on the harbour which, unfortunately, had a sand bar at its mouth that restricted the entry of ships requiring more than six feet of draught. The port became the sole outlet for the "Pinery" lumber and the barrels of salt from the local evaporator. There was also some fishing and shipbuilding.

Port Franks became the western terminus of the Canada Company's infamous "cut" whose creation had unexpected repercussions on the little village. In the spring flood season the unchecked river waters rearranged the sands of the river's mouth and in so doing destroyed the natural harbour and the town's livelihood.

Port Franks survives today as a holiday centre, a mecca, not for the tourist but for the perennial cottager.



Photograph No. 32. View looking down the Canada Company "Cut" towards Port Franks. It was the sand from these hills that destroyed the original harbour when the "Cut" was completed.



Photograph No. 33. Part of the shallow, sheltered harbour at Port Franks where the water's edge is rimmed with pleasure boats.

Arkona

In the southeastern corner of Bosanquet township on number seven highway is the village of Arkona.

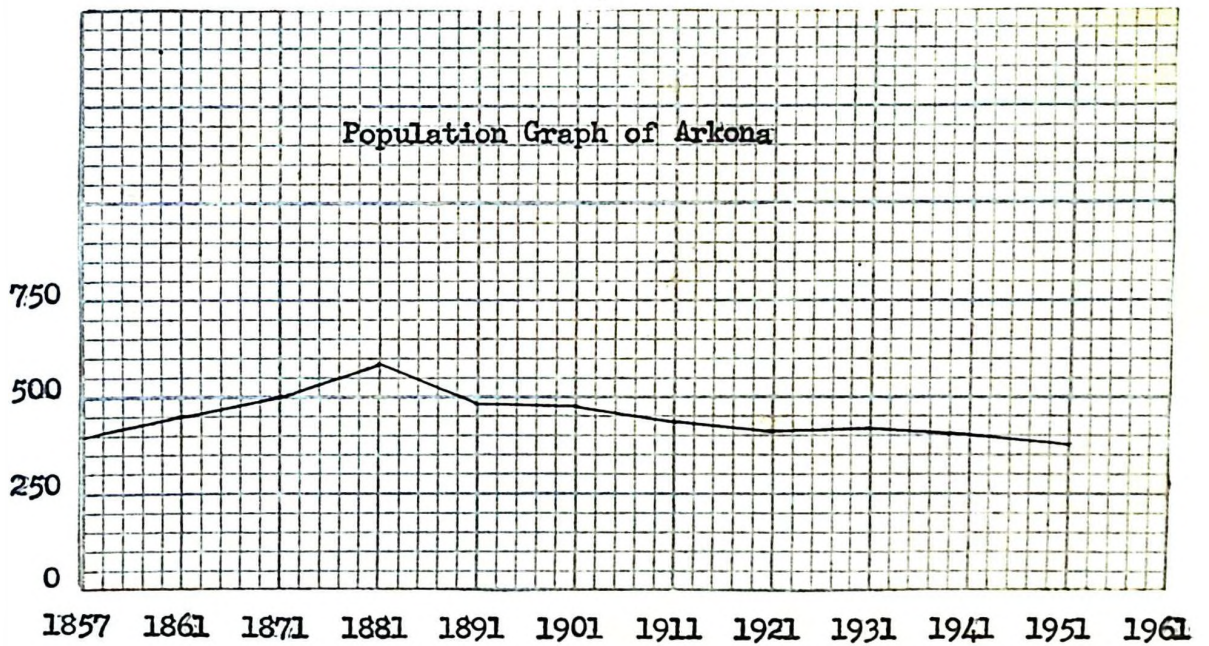
The pioneer settler of the area was Asa Townsend who, in 1821, received a three hundred and ninety acre Government grant in the hope of developing salt deposits. Despairing of developing these he farmed his land in isolation for twelve years until, in 1833, he was joined by Henry Utter, who utilized the local water power to drive a grist mill. Since this was the only mill within a wide radius, new settlers naturally gravitated to the area.

During the 1850s. the settlement grew rapidly into a pioneer service centre with grist mills, tannery, saw and shingle mill. Soon agitation sprang up for a change of name from "Eastman's Corners" to Akron, after Akron, Ohio. The name was accidentally recorded as Arkona and the residents accepted this as the name for their new Post Office in 1851.

Eight years later the Grand Trunk Railroad passed six miles to the north, spacing the village equally distant from three important stations. Thus located at an important road junction, Arkona matured into an industrial village with nearly twenty manufacturing concerns. Champion and Norsworthy manufactured agricultural machinery at their large foundry, and Nichol Brothers' flax mill prepared three thousand bushels of flax annually. Dickison's woollen mill manufactured cloth, blankets and shirtings, as well as doing carding and spinning. Besides the usual flour mills, saw mills, tanneries and blacksmith shops there was a paint mill, manufacturing paint from local ochre deposits.

Arkona incorporated as a village in 1876 and experienced boom conditions for another twenty years. After the 1880s. the village began a slow decline. The exhaustion of the timber brought an end to milling, and the depopulation of the townships. and the rise of centralized urban industries reduced the need for goods processed or manufactured locally.

Figure 17.



Even the Rock Glen Power Company's production of hydro electricity was curtailed when the Ontario Hydro Electric Power Commission took it over and substituted power from Niagara Falls.

Arkona survives today not as an industrial centre but as a service centre, the village's original function. Instead of supplying the surrounding farmlands with goods produced locally the village merely retails goods produced elsewhere.



Photograph No. 34. Roder's turkey processing plant is one of the businesses catering to the local agricultural hinterland.

Forest

History

In 1859 the Grand Trunk Railway decided to establish a station at the junction of Bosanquet, Warwick and Plympton townships. This wooded location had road facilities to the east, west and south and soon the wayside station of Forest grew into a prosperous community that adopted the same name.

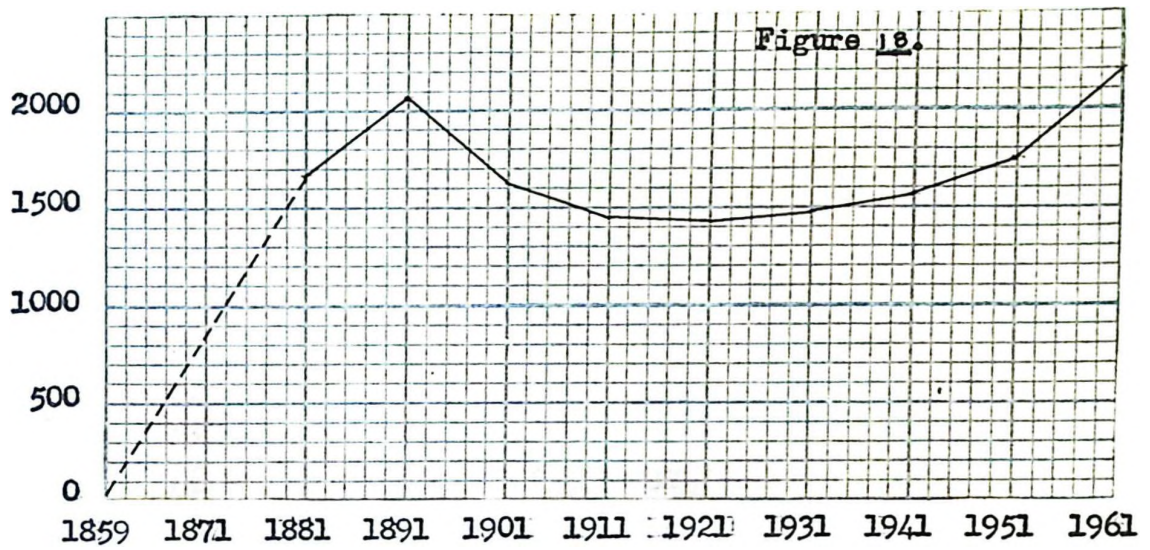
The town expanded to the southwest because an enterprising farmer, Timothy Rusaque, espousing the opportunities, subdivided his property in Plympton township into village lots. In 1870 a large farm on the Warwick side was likewise subdivided.

The territory from three different townships had been built upon and this meant that the community had to depend on the separate township councils for municipal services. To the relief of villagers and the townships alike Forest incorporated as a village in 1873, just thirteen years after the founding of the railway station in the wilderness. The next eight years saw the township's population climb from 750 to 1800. By 1880 there were no less than eight churches in the growing community.

Such phenomenal growth was based on the rich agricultural hinterland that surrounded the village. "It was estimated in the 'eighties that more grain was shipped from Forest than from any other point on the Grand Trunk between Stratford and Sarnia-¹"

By 1889, with a population numbering two thousand, Forest was ready for status as a town.

1. Victor Lauriston, Lambton County's Hundred Years 1849-1949. Sarnia, Ontario.



After suffering a slump, comparable to that undergone by the surrounding area, Forest's population has slowly increased to 2200 people in 1960. Twelve new houses were built during the past year.

Forest's Functions

Commerce—Forest merchants supply families from the surrounding prosperous mixed farming district, and the men and families of Camp Ipperwash, a few miles north of the town. During the summertime some additional two thousand families come from the cottages that line the Lake Huron shore to do their shopping.



Photograph No. 35. Forest's King Street commercial section has not changed much in several decades.

Recreation—Forest is the recreation centre for most of Bosanquet south of the Thedford Marsh since it has the only movie theatre and golf course in the area. There are also facilities for lawn bowling, tennis and night baseball games. The Forest Memorial Community and District Arena was destroyed by fire in November 1960 but the townspeople hope to have an enlarged, fireproof arena rebuilt by the end of 1961.

Industry—Forest has two industries that employ more than one hundred and fifty persons each; the Forest Basket Company and the Lambton Growers Cold Storage.



Photograph No. 36. The Forest Basket Company has since 1913 produced baskets to serve the small fruit, apple, peach and melon industries of Southwestern Ontario.

The Aylmer Canning Company used to employ over one hundred and fifty persons until it was bought out by an American firm and the plant closed. A new business, the Sarnia Sash and Door Company recently moved into part of the empty factory.

Many of the industries of Forest are closely allied to the surrounding agricultural area. The Lambton Growers Cold Storage plant keeps carrots, apples, eggs, poultry, butter and canned goods until market conditions are ideal. The Huctwith Produce Co. Ltd. also markets local farm produce and specializes in eggs, collecting them from the area between Hensall and Thamesville. Milk from local farms is processed by the Forest Co-op Creamery and retailed in Windsor as "Forest Brand" creamery butter.



Photograph No. 37. Tile from Forest's tile plant is used to improve the field drainage on many of the local farms.

Text to Accompany a Complete Land Use Map of Forest, Inside the back cover.

The townsite of Forest is at the junction of three townships, at the location of the Forest railroad station.

John Street in the north is the old Bosanquet town line and the fact that the town developed to the south of this is evidence of the effectiveness of Timothy Rusaque subdividing his farm. This farm was in the northeast corner of Plympton township and was subdivided into the familiar grid pattern - hence the town exists to-day with rectangular blocks of streets parallel to the township boundaries, and not as one might expect from a railway station community, parallel to the railroad tracks. Thus, today the railroad tracks cross the town diagonally through the centre, cutting the town in two.

The commercial hub of the town is the "bank corner" of King and Main, with most of the town's retail stores to the west of this corner on King Street..

The administration centre of the town is the block bounded by King, Main, Jefferson and James streets. Within this block is located the Town Hall, Fire Hall, Library, P.U.C. and the H.E.P.C. Surrounding this core area are located most of Forest's many churches. So this older part of town is also the religious centre.

Industrial land use in Forest is concentrated along the rail line. Coal and lumber yards, livestock pens, and the feed mills are located to the south of the tracks, while the produce storage plant is north of the tracks, just west of the station.

The basket factory requires more land and as a result it is located on the northwestern outskirts of the town, near the park and fairground.

Theford

The history of Theford is a complex one involving changes of name and place. Bosanquet's original concentration of population was at Pine Hill where a post office was opened as early as 1850. The post office was subsequently moved a mile to the north of the community and renamed Widder in honour of Frederick Widder the Senior Commissioner of the Canada Company. A new settlement was laid out on this site by the Hon. Donald McDonald for the Canada Company in 1885 and soon Widder was sharing the local lumber trade with Sylvan and Arkona.

In 1859 the Grand Trunk Railroad by-passed Widder but built Widder Station a mile and a half to the north of the village. The direct pull of the railway was too strong and within a year Widder was declining as businesses moved to a rail side location at Widder Station. Nelson Southworth laid out a townsite during the boom and soon the little community changed its name to Theford after the English community of the same name.

Although Theford incorporated as a village in 1877 its size has varied very little in the last hundred years, since the decline of the lumbering and woodworking was offset by the development of intensive farming and the growth of the tourist trade.

Theford functions today as a packing and shipping centre for the produce of the market gardens and as a place of residence for the families that work the peat and muck lands. The village also serves as a retail shopping centre for the neighbouring farmers and for the summer tourists.

At a time when most of the communities in Southwestern Ontario are suffering a lack of water, Theford can be justly proud of its



Photograph No. 38. The main street of Theford is parallel to the C.N.R. tracks so that all the buildings are on one side of the street.



Photograph No. 39. Directly across the road from the stores in the preceding photograph is the railroad freight yard where sugar-beets are loaded to be sent to the Canada and Dominion Sugar Co. Ltd.



Photograph No. 40. The sawmill and lumberyard of Geo. Coultis and Son has been a mainstay of Thedford industry since the 1880s. This plant has its own source of power and at one time supplied the power needs of the whole village. The scrap from the sawmill provides fuel for the brick and tile factory pictured below.



Photograph No. 41. Local Thedford clays make good brick and tile.

newly installed \$180,000 water system that supplies two hundred and fifty homes with water from a "celery bog" a mile north of the village.

Ravenswood

Ravenswood was originally a post office established in 1853 at lot 61 on the Lake Road East but it later moved to lot 55. Today Ravenswood is a small cross-roads settlement about a general store and school.

Jerico

Jerico, located on Concession eight in Bosanquet, expected to be a station on the Grand Trunk railway but was by-passed in favour of "Widder Station" when the railway had difficulty in purchasing land for the station site. This blow doomed the settlement, and it exists to-day only as a "fossil" village.

Trade Areas

A map showing the trade areas and spheres of influence of the villages and towns in or peripheral to Bosanquet township has been prepared from information gathered by interviews.

Bosanquet township is serviced by the two major centres of Thedford and Forest, with three communities of Grand Bend, Ravenswood and Arkona playing a secondary role.

Thedford provides the central portion of the township with the necessities of life, and automobile and farm machinery repairs. The Hurontario Telephone Company situated in Thedford provides telephone services for the Ipperwash Army Camp, Port Franks, as well as Thedford and the farms of the surrounding district as far south as Arkona.

TRADE AREAS

BOSANQUET

TOWNSHIP

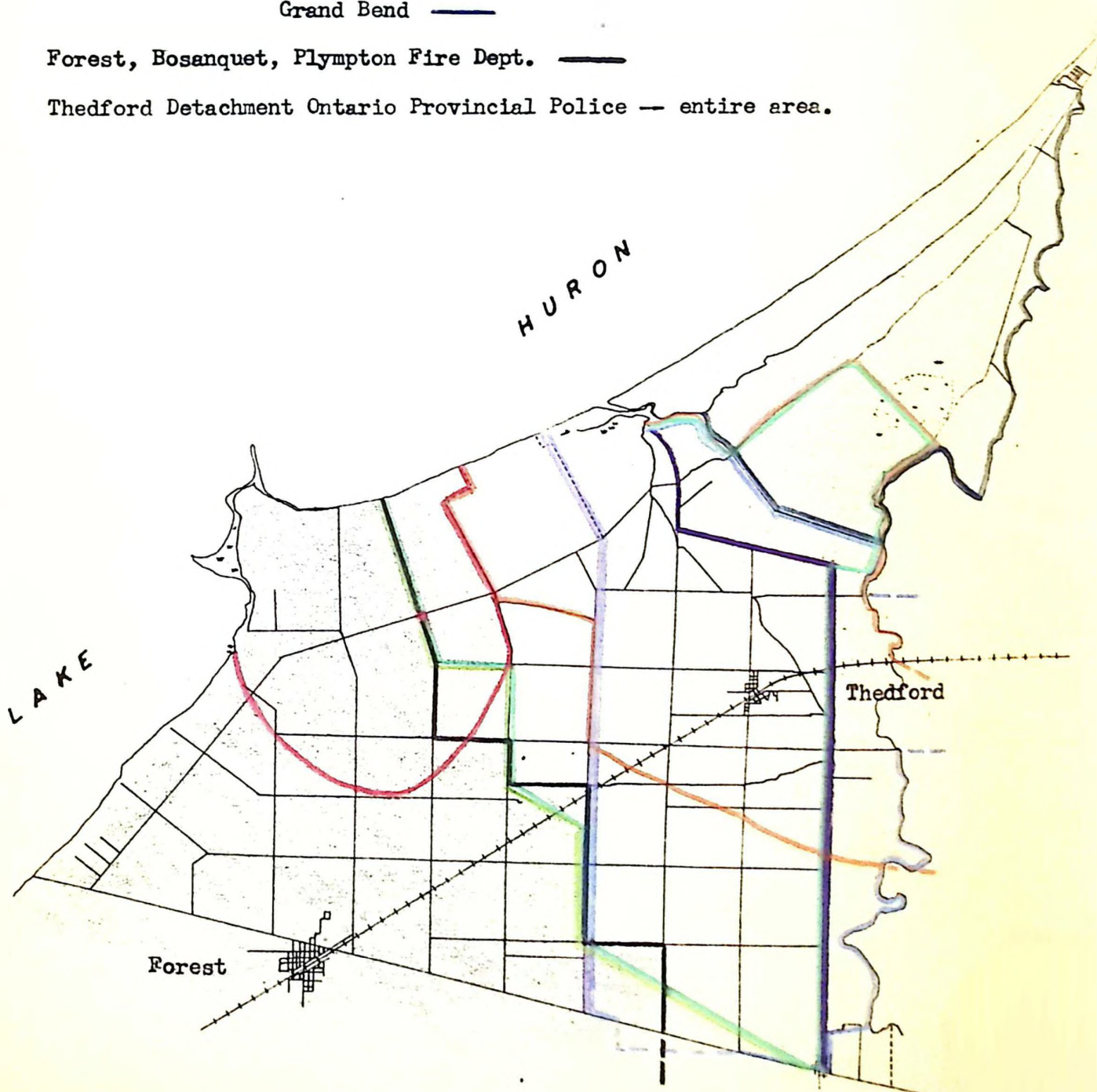
LAMBTON

COUNTY

- Hilborn's General Store ——— (orange line)
- Dew's General Store ——— (red line)
- Fuel Oil delivery from Forest ——— (dark blue line)
- Peoples Telephone Co. Forest ——— (green line)
- Hurontario Telephone Co. Thedford ——— (light blue line)
- Postal Delivery - Forest ——— (purple line)
- Thedford ——— (blue line)
- Grand Bend ——— (black line)

Forest, Bosanquet, Plympton Fire Dept. ——— (thick black line)

Thedford Detachment Ontario Provincial Police — entire area. (dashed line)



SCALE — 2 1/2 MILES TO THE INCH

The entire township is policed from the Ontario Provincial Police, Thedford detachment office, with an auxiliary policeman being hired in the summer months to patrol the beaches.

A look at the map reveals that the trade areas of Thedford and Forest meet about half way between the two communities. This trade area is true of daily services such as fire protection, or the retailing of groceries, but Forest exerts a greater influence over a wide area, especially for such things as fuel oil delivery. Naturally, township residents wishing to make a special purchase, such as a new automobile, etc., would go to Forest.

Superimposed on the line of trade division between Thedford and Forest is the trade area of Dew's General Store in Ravenswood. This is the only store in the vicinity and it is truly a general store, selling everything from groceries to gasoline.

Grand Bend has a small trade area, acting as a shopping centre for the tourists during the summer months. However, most of the stores close during the winter when the population has decreased to a few local residents. The large expanse of blue delineating the area served from Grand Bend's post office is somewhat misleading, since only a small proportion of this area is populated.

SUMMARY AND CONCLUSION

Bosanquet township is underlain by a bedrock base consisting of the Kettle Point Formation shale, Hamilton formation shale and limestone, and the Delaware Formation limestone. Over the entire township the bedrock is buried under glacial drift dating from the Wisconsin glaciation. The heavy clay till weathered into heavy clay soils that supported a natural vegetation of deciduous forest.

Because of its location off the fur trade routes Bosanquet was not settled until the Canada Company subdivided the land as a business venture in the Eighteen-thirties. The pioneer subsistence farming was shortly replaced by an emphasis on wheat production that was short lived. Mixed farming soon became the standard, but careless farming practices ruined many farms. The latest agricultural development has been specialized farming, recovering ruined lands by converting them to grazing land and developing the "drowned lands" for market gardening.

The northwest portion of Bosanquet is unsuitable for agriculture because of the physical conditions of wind blown sand dunes and marshlands. These areas are utilized for an Indian reservation, an Army Camp, and for recreation - a use that becomes more important every year.

The urban communities within and peripheral to the township have all had interesting histories of boom times when local raw materials were exploited. To-day, however, they exist as market centres, retailing to the farmer and the tourist, and shipping the produce of

their local agricultural hinterlands. Grand Bend is the exception, depending almost exclusively on the tourist trade for its livelihood.

In the foreword of this thesis it was proposed that the author show the geographical relationships of the physical characteristics of Bosanquet township. Now that the physical characteristics have been described, it is possible to subdivide the township into five sub-regions. Each sub-region does not necessarily have a core area and a definite boundary, nor is it completely homogeneous, but its individual personality can be summed up with a few general statements.

Region One: The southeastern third of the township.

This is the undulating till moraine above the level of the Lake Warren shoreline. Over this area the heavy tills, that were worked and reworked by the moving ice, have weathered under a hardwood forest into a heavy clay soil of the Grey-Brown Podzolic Perth series. These soils are fertile and are suited to mixed farming. However, when the maintenance of organic matter is neglected they become less fertile and are better suited for use as "grass farms" in the production of meat and milk.

Region Two: The beaches of the post glacial lakes.

These gravel beaches, built by the waves of more than twelve thousand years ago, stand out to-day as abrupt rises on the landscape. The slope provides good drainage and the calcareous gravels weather into the well drained, medium textured Fox sandy loam. Since these soils are deficient in moisture during the summer season they are used for tree fruit production. Some of the land is idle

because of the low organic level and the resulting low fertility; in fact, some sections entirely unsuited to agriculture are quarried for gravel.

Region Three: The plain area northwest of Region One.

This is a bevelled till plain that stretches out to the north before the rise of the Lake Warren shore. It resembles Region One but is at a lower elevation and the landscape is flatter and more subdued, a result of wave action in the glacial lakes that covered the region. The waves moderated the humps and filled in the hollows with lacustrine silt. This combination of erosion and deposition created a patchwork of soil types. The level topography and the heavy soil resulted in broad areas of poorly drained land. In their natural state these soils are used for pasture, hay and some cereals, but when the drainage is improved by means of tile the soils become suitable for general mixed farming, providing good soil conservation practices are followed.

Region Four: The "Thedford Marsh" and the "Klondyke"

This area is a level lowland of artificially drained muck and peat. The landform originated as a flat floor of a series of lakes that remained after the demise of the glacial lakes. These lakes were slowly decreasing in size naturally but their decline was accelerated by the arrival of man, who by means of a "cut" reduced the lakes to a tiny, disappearing remnant, -Smith Lake.

The wet, anaerobic conditions that accompanied the fluctuating water table prevented the complete destruction of vegetative

material over thousands of years so that the soils are now rich and black with organic matter. The same condition of the fluctuating water table rendered the area submarginal for agriculture until the pressure of land demand grew great enough to encourage the investment of time and money to reclaim the land. To-day this region is characterized by highly intensive market gardening and the raising of commercial cash crops by non-resident farmers.

Region Five; "The Pinery"

This is the narrow strip along the Lake Huron shore between Kettle Point and Grand Bend that is distinctive in the fact that it is not used at all for agriculture. The region is characterized by wind created sand dunes that have been stabilized by the forest known since the days of settlement as the Pinery. Famous for its lumber in pioneer days the Pinery is now the heart of newly developed recreational facilities for summer picnicking, camping and swimming, and for winter skiing.

However, one must remember that the above regions are merely an aid to understanding the area better and that in reality Bosanquet township exists as a political entity.

In making an intensive study of an area like Bosanquet one is impressed, even astounded, at the profound changes in the landscape that civilized man has wrought in a mere one hundred and thirty years of occupation.

The natural vegetative covering of deciduous forest has been shorn from the face of the land. Not a single example of the huge hardwood giants that flourished here two hundred years ago survives

to-day. Likewise, the fauna has suffered at the hands of man. The beaver, porcupine, marten, fisher, wolverine, cougar, Canada lynx and the American elk which were once common are now no longer to be found within the township. Birds, too, have suffered as a result of man's intervention. Thousands of migrating ducks stopped at the sheltered inland lakes of Bosanquet on their annual migrations until man drained the lakes and converted their humus rich beds into productive farmland.

In adapting the land to his own use man has done some good, but also much harm. Indiscriminate clearing of land and poor farming practices resulted in erosion and flooding. Fortunately, however, man has realized the error of his ways. Mistakes of the past are now being rapidly rectified through the efforts of the Provincial Conservation Authorities, who are establishing a flood control system and are showing farmers more scientific methods of farming to reduce erosion and produce greater yields.

BIBLIOGRAPHY

Books

- Chapman L. T., and Putnam D. F., The Physiography of Southern Ontario, University of Toronto Press, 1951.
- Fox, W. S., "T AINT RUMMIN NO MORE", Wendell Holmes Ltd. London, Canada, 1946.
- Hough, J. L., The Geology of the Great Lakes, University of Illinois Press, Urbana, 1958.
- Johnston, A. J., Lambton County Names and Places, 1925.
- Lauriston, V., Lambton County's Hundred Years, 1849-1949, Haines Frontier Printing Co. Sarnia, 1949.

Newspapers

- The Canadian Observer, Saturday February 27, 1954.
- The London Free Press, January, 1960.

Government Publications

- Canada: Census of Canada, 1851-1955.
- Canada: Geology and Economic Minerals of Canada, Dept. of Mines and Technical Surveys, Ottawa, 1957.
- Canada: Soil Survey of Lambton County, Report No. 22, Canada Dept. of Agriculture, Ottawa, 1957.
- Ontario: Avonlea Valley Conservation Report, Dept. of Planning and Development, Toronto, 1949.

	Wheat	Oats and Barley	Husking Corn	Soy- Beans	Alfalfa and Red Clover	Alsike Timothy	Sugar Beets	Tree Fruits	Veg. Crops	Canning Tom- atoes	Pasture
GOOD CROPLAND											
Huron clay	G	G	G=F	G=F	G	G	G=F	F	F	F	G
Guelph loam	G	G	G=F	G=F	G	G	G=F	G=F	G=F	F	G
GOOD TO FAIR CROPLAND											
Perth clay	F	G=F	F	F	F	G=F	F	F	F	F	G
Burford loam	G=F	G=F	G=F	G=F	F	F	F	G=F	G=F	G=F	G=F
FAIR CROPLAND											
Fox sandy loam	F	F	F	F	F	G=F	F	G=F	G=F	F	F
Brookston clay	P	F	F=P	F=P	P	F	F	F	F	P	G=F
Toledo clay	P	F	F=P	F=P	P	F	F	F	F	P	G=F
FAIR TO POOR CROPLAND											
Brisbane loam	P	F=P	P	P	P	F=P	P	P	P	P	F
Berrien sandy loam	P	F=P	P	P	P	F=P	P	P	F	F	F=P
Berrien sand	P	P	P	P	P						
Brady sand	P	P	P	P	P	F=P	P	P	F	F	F=P
POOR CROPLAND											
Granby sandy loam	P	P	P	P	P	P	P	P	P	P	P
Brookston clay-stony phase	P	P	P		P	P	P	P	P	P	F=P
Perth clay-eroded phase	P	P	P		F=P	F=P	P	P	P	P	F=P
Guelph loam-shallow phase	P	F=P	P		P	F=P	P	P	P	P	F=P
Huron clay-eroded phase	P	F	P		F=P	F=P	P	P	P	P	F=P
SUBMARGINAL CROPLAND											
Shashawandah loam	P	F	P		P	P	P	P	P	P	P
Muck									P	P	P
Bottom Land											
Plainfield sand											
Peat											
Eastport sand									P	P	P
Marsh											

CROP ADAPTABILITY RATINGS FOR SOILS OF LAMTON COUNTY

APPENDIX e

after Report #22 Ontario Soil Survey

GRAND BEND AND THEDFORD MARSH ACREAGE, JUNE 1960.

<u>COMMODITY</u>	<u>1958 ACREAGE</u>	<u>1959 ACREAGE</u>	<u>1960 ACREAGE</u>	<u>1960 % OF TOTAL</u>	<u>% CHANGE FROM 1959 ACREAGE</u>
BEETS	8	6	2	.09	- 66.67
CABBAGE	17	13	10	.46	- 23.08
CARROTS - TABLE	61	67	43	1.99	- 35.82
CARROTS - PROCESS.	376	322	362	16.78	+ 12.42
CAULIFLOWER	2	1	-	-	- 100.00
CELERY - EARLY	8	12	11	.51	- 8.33
CELERY - LATE	64	55	68	3.15	+ 23.64
CUCUMBERS	4	1	-	-	- 100.00
LETTUCE - EARLY	} 173	53	41	1.90	- 22.64
LETTUCE - MID-SEASON		87	68	3.15	- 21.68
LETTUCE - LATE		56	55	2.55	- 1.79
ONIONS-GRN. BUNCH	1	4	1	.05	- 75.00
ONIONS-FROM SETTS	18	5	1	.05	- 80.00
ONIONS-COOKING	231	322	373	17.28	+ 15.84
ONIONS-SPANISH	2	5	3	.14	- 40.00
ONIONS-FOR SETTS	111	90	118	5.47	+ 31.11
POTATOES-EARLY	82	77	77	3.56	No change
POTATOES-LATE	620	778	876	40.60	+ 12.60
RADISH	8	4	2	.09	- 50.00
TOMATOES	1	1	1	.05	No change
TURNIPS-EARLY	15	22	19	.88	- 13.64
TURNIPS-LATE	14	11	8	.37	- 27.27
MISCELLANEOUS	<u>24</u>	<u>14</u>	<u>19</u>	<u>.88</u>	<u>+ 35.71</u>
	<u>1840</u>	<u>2006</u>	<u>2158</u>	<u>100.00</u>	<u>+ 7.58</u>

From Survey undertaken by the Farm Products Inspection Service, Grand Bend, Ont.
Markets Branch, Department of Agriculture, Ontario.

BOSANQUET TWP.

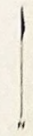
LAMBTON COUNTY

LAND USE

1960

OATS	[Light Orange]
WHEAT	[Yellow]
GRAIN (OTHER)	[Orange]
CORN	[Dark Orange]
HAY	[Green]
PASTURE	[Light Green]
LEGUMES	[Blue]
MARKET GARDENING	[Purple]
IDLE	[Grey]
PLOUGHED	[Dark Red]
WOODED	[Dark Green]
PARK	[Light Blue]
URBAN	[Dark Purple]
ORCHARD	[Dark Blue]

SCALE 1:50,000



GRAND BEND

HURON COUNTY

LAKE HURON

CAPE SPERDIAN
KETTLE POINT
INDIAN RESERVATION

STONY POINT
SPERDIAN BEACH
SPERDIAN CAMP
MILIBAY

MC GILLIVRAY TWP

MIDDLESEX COUNTY

WILLIAMS WEST TWP

WARWICK TWP

CEGAR POINT

PLYMOUTH TWP

FOREST

