A GEOGRAPHICAL STUDY OF MOULTON AND SHERBROOKE TOWNSHIPS

A THESIS

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OF THE REQUIREMENTS FOR THE DEGREE

BACHELOR OF ARTS

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BY

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ACKNOWLEDGEMENTS

I would like to express my appreciation to all those who, in any way, aided me in the compilation of this thesis, especially the following: Dr. H. R. Thompson, my faculty advisor; the staff of the Community Planning Branch of the Department of Planning and Development for their aid during the summer months; Miss Marilyn Emery, for typing the thesis; my family who patiently listened to my problems and especially my brother who did many hours of colouring; and lastly, to all the people in Moulton and Sherbrooke Townships and Dunnville who gave freely of their time and knowledge. To all these people, this thesis is dedicated.

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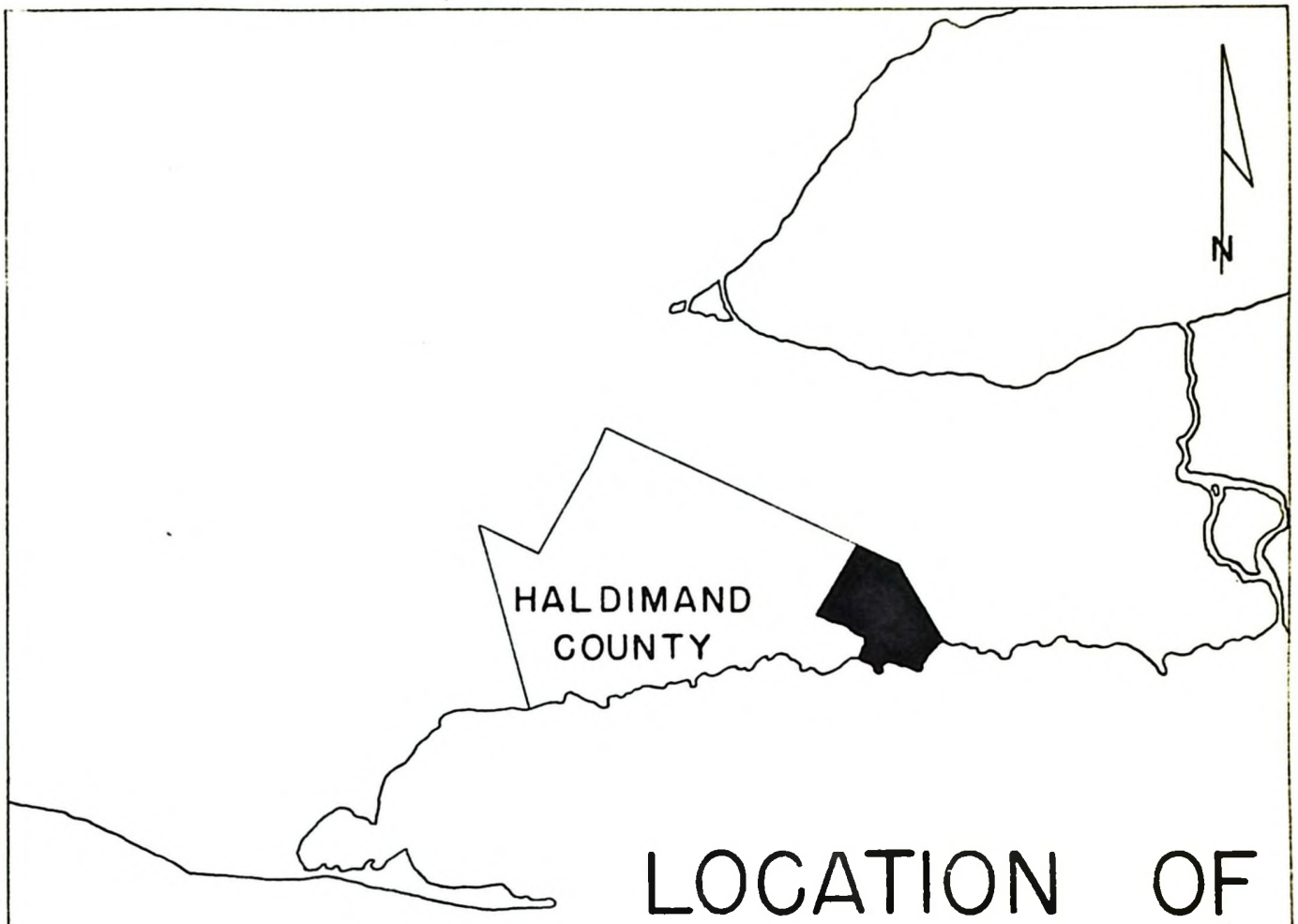
Introduction

A geographical thesis is concerned with areal relationships and regional personality. This thesis is an attempt to discover the areal relationships and regional personality of Toulton and Sherbrooke townships, Muldimand County, Ontario. It is concerned with the history of men upon this extent of land and the changes wrought by them in their fight for survival. An attempt has also been made to show what relationships exist between those who live within the area and those who live outside it. Since the study of geography involves many things, it is necessary to look at each individually and then combine the separate conclusions of this research into a summary and conclusion for the whole. This, too, has been attempted.

Several liberties of expression have been taken in the text to make it more easily read. For example, the word 'Township' has often been omitted after the words Toulton and Sherbrooke to prevent the continuous repetition of the word.

The writer was employed by the Community Planning Branch of the Department of Planning and Development, Ontario and thanks are again expressed for the use of their facilities. The field work was done between September 1955 and January 1956. All maps, graphs, and tables are labelled "Figures" and photographs are referred to as "Illustrations." Unless otherwise marked the scale on all maps is two miles to the inch.



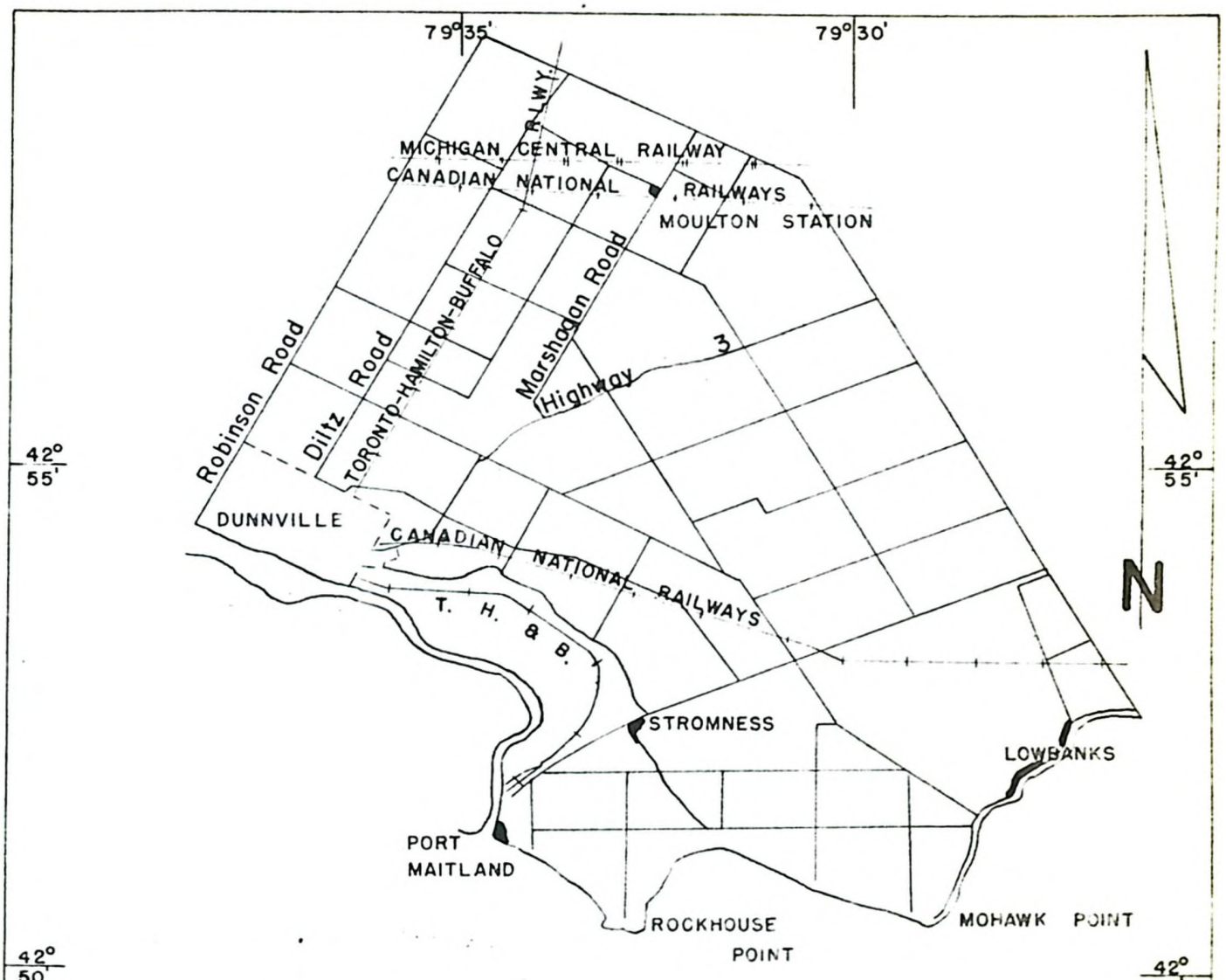
LOCATION OF MOULTON and SHERBROOKE TOWNSHIPS in the NIAGARA PENINSULA

AREA OF STUDY

SCALE: 1"~13miles

FIGURE 1

PETER L. HILL



BASE MAP OF MOULTON AND SHERBROOKE

1 0 1 2 3 4

SCALE IN MILES

FIGURE 2 PETER L. HILL 1958

CHAPTER ONE--PHYSICAL GEOGRAPHY

1. Location, Size, and Shape

Moulton and Sherbrooke Townships are located on the north shore of Lake Erie immediately east of the Grand River. The latitude and longitude of the Townships are 42° 54' and 79° 36' respectively. Of the two, Sherbrooke is the more southerly and also the smaller, being approximately one-fifth the size of Moulton. Sherbrooke is the smallest Township in Ontario. Together, they compromise an area of 90.1 square miles, Moulton having an area of 27,636 acres and Sherbrooke an area of 5,043 acres. Taken together they are roughly rectangular in shape, the Grand River and the Lake Erie shoreline forming an irregular side to the west and south.

2. Bedrock Formations

Structurally, the Palæozoic formations beneath Moulton and Sherbrooke Townships are part of a large monocline covering the whole Niagara Peninsula that dips gently to the south at an average rate of twenty-eight feet per mile. On the north shore of Lake Erie, the Palæozoic sediments are approximately 3,200 feet thick over the Precambrian surface upon which they lie. Since this latter surface is so deep, it has no affect on the surface configuration and the bedrock geology is essentially one of the Palæozoic era.

There are no exposures of any Palæozoic formations in Moulton Township. There are, however, three in Sherbrooke. In all, there are four formations underlying the area.

They are, from north to south:

1. Salina formation - Silurian
2. Fertic-Akron Series - Silurian

3. Oriskany formation - Devonian
4. Onandaga formation - Devonian

From exposures in other areas the Salina formation is found to consist of calcareous shale, argillaceous dolomite and gypsum. This formation underlies all of Moulton Township north of a line drawn to the east from the bridge at Dunnville to where the old Welland Canal feeder leaves the Township (Fig. 3).

The Bertie-Akron series is found to the south of the Salina formation and is much less extensive in area than the latter (Illus. 18). It has an average width of one and one half miles and runs in an east-west direction (Fig. 3). Lithologically, the Bertie-Akron series consists of:

> "thin-bedded to platy, brownish grey, fine grained, argillaceous dolomite at the top, underlain by hard, dark, compact calcareous and carbonaceous shale with thin interbeds of argillaceous dolomite, the whole grading down into grey, creamy weathered, jointed and thin, evenly bedded, argillaceous dolomite."[1]

The Oriskany formation of light grey sandstone is found only in a restricted area around Stromness (Fig. 3). This is due, probably, to the fact that it was deposited over the irregularly eroded Silurian surface and thus its depth varied in accordance with these irregularities. A period of erosion ensued and much of the formation was removed leaving behind only those parts which

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[1] Caley, J. F., Palaeozoic Geology of the Toronto-Hamilton Area, Ontario, Department of Mines and Resources, Geologic Survey, of Canada, Memoir 224, Ottawa, page 80.

filled the depressions.[1]

The most southerly, and youngest of the underlying Palaeozoic strata, is the Onandaga formation (Fig. 3). It consists of grey-blue irregularly bedded limestone. The irregularity is caused by many, and often large, nodules of bluish, glassy chert. The top of the formation consists of almost black limestone with the same cherty nature. Exposures of this formation can be seen at Mohawk Point and Rockhouse Point in Sherbrooke Township where wave action has eroded the overburden (Illus. 1, 2).

These bedrock formations have little influence on the surface topography of Moulton Township since the depth of the drift averages about 100 feet. In Sherbrooke there are two slight rises above the generally level landscape and these are due partly to a sudden rise in the surface of the bedrock to an elevation of 600 feet above sea level leaving between twenty five and fifty feet of drift between the bedrock and the surface. Furthermore, as this drift is eroded, exposures are created like those of Mohawk Point. Other than these features the bedrock has little control over the surface configuration in either Township.

3. Glaciation, Physiography, and Drainage

During the Pleistocene period, there were four advances of the Ice, the last of which, the Wisconsin glaciation, is responsible for the formation of the present landscape in Moulton and Sherbrooke Townships. The ice sheet of the Ontario lobe advanced from a direction approximately north 10° east, ascertained from the orientation of glacial striae on Rockhouse Point in Sherbrooke Township (Illus. 3).

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[1] Ibid. pages 82-83

During this advance the ice sheet encountered an outlier of the Onandaga escarpment in the south of Sherbrooke Township and over this, the glacier plastered till in a thin veneer forming two hills. Over the rest of the two Townships the till was deposited deeply and with a regular surface.

With the retreat of the ice front, a series of proglacial lakes was formed: Lake Whittlesey (738'), Lake Wayne (655'), Lake Warren (675'), Lake Lundy (620'), and Early Lake Erie (585'). The figures in brackets are the approximate heights of the respective lakes above the present sea level. Since the maximum elevation in the area of study is approximately 655', it can readily be seen that all but the last two of these lakes, Lake Lundy (620') and Early Lake Erie (585') completely submerged the two Townships. During the early period of higher lake levels, a veneer of clay was deposited over the whole area.

Gradually, as Lake Warren (675') gave way to Lake Lundy (620'), the two small prominences in Sherbrooke Township became islands. During this period the clay sediments previously deposited over them were eroded away, leaving two "crag-and-tail-like" features. Unfortunately, erosion along the north shore of Lake Erie has washed away the more southerly parts of the two features and their true shapes have thereby been destroyed. But from maps of bedrock contours and thickness of drift published by the Geological Survey of Canada and gas-well records, it is obvious that these features have rock cores and could possibly have been what is known as "crag-and-tail" features.

As the ice front retreated, the level of the proglacial Lake

Warren dropped and the Grand River spillway was opened up. As a result, large amounts of sandy sediment were carried down this large spillway and were deposited as glacio-lacustrine sediment in Lake Lundy. At this time Lake Lundy was in its later stages and was at a low level and because of this the sediments were deposited over most of Moulton Township but not on the two rises in Sherbrooke. The small area of glacio-lacustrine clay plain in the north of Moulton was left untouched by this sandy outwash since the plain had a higher elevation and was not covered by the water.

The physiography of Moulton and Sherbrooke is a direct result of its glacial history. There are five main physiographic regions: dissected or undulating clay plain, level clay plain, sand plain, morainic upland, and swamp. These coincide with the land type regions shown in Figure 4 except that in the latter classification the fine distinctions between bottomland and muck, and level sand plain and undulating sand plain have been observed.(Fig. 4).

The dissected (undulating) clay plain is found in the north of Moulton Township. Here, Oswego Creek and its small tributaries have carved valleys out of the lacustrine clay plain (Illus. 4). The soils of the clay plain are Haldimand clay and Caistor clay loam. They constitute the best agricultural land in the area being well drained and fertile. However, they do lack organic matter, lime and phosphates, and are acidic. It is in this region that a concentration of dairy farms is found.

The level clay plain occupies the northern section of Sherbrooke Township and extends north and east into Moulton (Fig. 4).

The only soil in this region is Caistor clay loam which is poorly drained in this area. There are numerous swampy patches that serve as unimproved pasture (Illus. 5) and except for these very slight depressions the plain is level (Illus. 5). Large acreages of corn, small grains, and hay are cultivated, but much of the land is occupied by woodlot, hay, or unimproved pasture.

Five soil types are found in the sand plain: Caistor loam, Colwood loam, Perrien sandy loam, Wauseon sandy loam, and Granby sandy loam. This is a region of poorly drained sandy soils overlying a hard, compact clay subsoil. The topography is generally level but there are numerous small hills, probably created by wind action since they have typical sand dune shapes, which coincide generally with the Perrien sandy loam soils. Much of the land in the south and east of the region is under woodlot, scrub and idle land, and unimproved pasture. In the north and west, where the land is quite level, corn and hay are grown and there is a higher concentration of dairy farming.

The morainic uplands physiographic region is found only in Sherbrooke Township (Fig. 4). Here, the soils are Ontario loam on the crests of the hills and Haldimand clay on the flanks. The former contains frequent stones and boulders, constant removal of which is necessary. This region is one of the two best general farming regions in the two Townships. However, the soils are deficient in organic matter, lime, and phosphates. Little erosion occurs, since good farm management is practised, the farms being among the most prosperous in the area of study (Illus. 7).

Bottomland and muck soils occur in relatively large areas, the largest being along the Grand River, where lateral erosion by the river has produced a wide flood plain subject to flooding in wet seasons. Areas of muck are confined to the south-east part of Moulton and are used as rough pasture or woodlots. Economically, these areas are of little importance (Fig. 4).

Drainage in all parts of the two Townships is poor, except for the two hills of Sherbrooke and the undulating clay plain in the extreme north of Moulton. The poor drainage over the rest of the area is due to three factors: the very hard and impermeable clay lying beneath the shallow sandy sediments; the generally level nature of both the sand and clay plains (Fig. 4); and also to the very small difference between the water level of Lake Erie, 572' above sea level, and the land level, between 575' and 590' above sea level. Most of the streams are intermittent and many presently run along drainage ditches by the roadside and through the fields (Illus. 8 and Fig. 5).

The terrain is so level that the divide between the Welland and Grand Rivers is little more than three or four feet in places. One of the drainage ditches actually joins the two drainage basins (Fig. 5)! Oswego Creek has cut deeply into the Haldimand clay plain to the north (Illus. 4) and is the only permanent river that runs through the area since the Grand River only borders it.

There are large areas of bog and marsh, mostly wooded, though some is used for agriculture but produce poor crops when not properly drained. Unlike the bogs farther to the east, those in Moulton

and Sherbrooke are composed of muck rather than peat and thus have little economic value. These areas when properly drained are very fertile and one farmer managed to get an average of seventy-five bushels of wheat per acre in 1958 on recently reclaimed land.

Large acreages of bottomland are associated with the Grand River. In the last five miles of its course, the river falls less than three feet. As a result, the river is eroding horizontally rather than vertically and a broad floodplain has developed (Fig. 4)

Another feature of the drainage is the disused Welland Feeder Canal. Though previously used for transportation and for raising the water level in the old Welland Canal, it acts now as a large drainage ditch but since no dredging is being done it is gradually silting up and will soon play an even lesser role in the economy of the townships.

The two well drained areas both have clay soils. One area, that in Sherbrooke, is well drained due to its higher elevation, while the other, that in the northern end of Moulton, is well drained because of its being well dissected by river action. In both these areas small grains and alfalfa predominate rather than the corn, timothy, and pasture of the poorly drained areas.

The major part of the townships suffers from poor drainage but gradually as population pressures increase and people become more aware of the potential of the soil, for this is an excellent area for specialized fruit and vegetable farming, tiling and other drainage improvement methods may be used more extensively and an increased prosperity will result.

4. Climate

The climate of a region exerts considerable influence on that region's economy. The climate of Moulton and Sherbrooke Townships has certain significant features especially important to the farmer. Unfortunately, the weather station at Dunnville has been reporting data for less than five years and as a result a sound analysis of the climate cannot be made from them. It is therefore necessary to refer to a regional classification of the climates of Southern Ontario by Chapman and Putnam.[1]

In Chapman and Putnam's classification the two Townships are found in the Lake Erie Counties climatic Region. This area includes the whole, or parts, of Welland, Haldimand, Norfolk and Elgin Counties. It is characterized by a gentle local relief. The whole region, and more particularly Moulton and Sherbrooke Townships, has its climate modified by its proximity to Lake Erie. Its position at approximately 42° N latitude, places it in the path of the prevailing Westerly winds and its position in the north-east of the continent finds it on the route of many of the cyclonic storms which cross the continent. Its position close to Lake Erie has the affect of keeping the summer temperatures cool and the winter temperatures mild so that the Townships have a definitely moderated climate. A brief survey of the climatic data given by Chapman and Putnam will show the affects of these influences and their consequences (Fig. 6).

The mean annual temperature is 46° F. the mean winter temperature

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[1] Chapman, L. J., and Putnam, D. F., The Climate of Southern Ontario, paper in Scientific Agriculture 16:8, April 1936, page 401.

being 23°F. and the mean summer temperature 67°F. The autumn months have a mean temperature of 49°F. while the mean spring temperature is 43°F. This difference in temperature between spring and fall shows how influential the presence of Lake Erie actually is. The 6°F. difference can be accounted for by the different cooling rates of land and water. The water cools more slowly in the fall and by means of on-shore breezes keeps the adjacent land surface warmer than in spring when the water is cold after the winter period. This ameliorating effect can also be seen in the average daily range of temperature of 15°F. This low range of temperature is associated with the cooling of the land by day and the warming of the land by night by on-shore and off-shore breezes during the year.

The average date of the last frost in spring is May 10 and of the first frost in fall, October 10. Thus the frost free period is 153 days long but the actual growing season is fifty days longer. The growing season is usually considered as being between the dates in both spring and fall when the average temperature reaches 42°F. This occurs on April 14 in the spring and on November 5 in the fall, a period of 203 days. Again it can be seen that the warm season extends late into the fall.

The average annual precipitation is 33.6" with a maximum of 17.1" in the summer months between April 1 and September 30. Approximately half of this falls during the late summer, the harvest period. There is also an average annual snowfall of 61".

It has been found that on the average 10" of snow is equal to 1" of rain. Calculating on this basis there would be 6.1" of winter

"rain." Because of the low nature of much of the land in the area of study, this water surplus left at the end of winter tends not to drain away and it is often difficult for the farmer to plough his land early in spring. It is perhaps a result of this that so much corn is grown on the poorly drained sand plain since this crop does not have to be planted until late in May.

In summary, it can be said that the climate of Moulton and Sherbrooke is moderated by their proximity to Lake Erie and it is possible to classify it, according to Koppen's classification of climates, as being a "D f b" type climate. According to his terminology this would mean a "humid micro-thermal" climate, the characteristics of which are briefly stated below:

*(i) average temperature of coolest month below 26.6°F.

(ii) average temperature of the warmest month between 50°F. and 71.6°F.

(iii) average temperature of four months above 50°F.

(iv) precipitation well distributed through the year.

*Refer to Figure 6 for comparison.

5. Vegetation

Most of the land in Moulton and Sherbrooke has been cleared during some period of history. As a result, much of the present tree growth is secondary and little of the virgin forest remains. Those parts which do remain are in the areas too poorly drained to cultivate. The largest area of bush in the area of study is in the south-east of Moulton Township covering such an area of poor drainage and muck soils. Vegetation can be classified according

to three physical factors: climate, soils, and slope, and W. E. D. Halliday[1] has devised a classification for Canada taking these into consideration. In general the area is one of broad-leaved associations, the coniferous species being poorly represented. He designates the major species as being: beech (Fagus grandifolia), elm (Ulmus americana), red maple (Castanea dentata), walnut (Juglans nigra), birch (Betula papyrifera), cedar (Thuja occidentalis), white pine (Pinus Strobus), and red juniper (Juniperus virginiana).

The most common trees in the Townships, however, are second growth. They include poplar, hawthorn, and ash, and many of the large areas of scrub and idle land are covered with a dense growth of these trees. Cedar and elm are most commonly found in areas of poor drainage, though elm is also quite common on the well drained clay plain, and this would mean their greatest concentration should be in the undulating sand plain. Birch, oak, white pine, and red juniper are also common in the sand plain though these species are found on the sand hills or better drained slopes of the area. Beech, red maple, chestnut, and walnut are found in no clearly defined areas but are scattered through the Townships, though keeping to the better drained areas. Another interesting feature is the large number of apple and pear trees found along the road allowances and hedgerows.

With the decay of the orchards in the 1930's it appears that these trees have spread over the Townships. This expansion may be due to natural means but must have been aided by the throwing away

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[1] Halliday, W. E. D., A forest Classification for Canada, Dept. of Mines and Resources, Ottawa, 1937, pp. 28-9.

or dumping of apples and pears along the roads and hedges since they have spread so extensively and rapidly in such a short period of time. Few of the trees appear to be over twenty years old and there is a concentration along the canal roads.

6. Soils and Land Types

Of any Townships in Haldimand County, Moulton and Sherbrooke have the most varied soil types. This is due to their being in the deltaic region of the Grand River during Lake Lundy times. In all, eleven soils are represented: Haldimand clay; Caistor clay loam; Ontario, Caistor, and Colwood loams; Perrien, Wauseon, and Granby sandy loams; Eastport sand; bottomland, and muck (Fig. 7).

All the sandy loams have clay close to the surface at depths of three to six feet, showing that the sandy sediments deposited by the old river were spread to a depth of only about six feet over much of the area of Moulton. Since their deposition, some of these sandy sediments have been wind blown and sand dunes have developed. This area of smoothly undulating land corresponds roughly to the area occupied by the Perrien sandy loam which consists of grey-brown sandy loam over yellow and then mottled sand with clay at about three to six feet. It is stone free. It was found in the field that the clay in this soil type was generally deeper than the six feet specified by the Provincial Soil Survey of Haldimand County, especially on the tops of the undulations (Illus. 10). However, though this soil is sandy it is imperfectly drained, the run-off being slow and the permeability low. The major limitations to agriculture on this soil are the poor drainage and low fertility and constant addition of fertiliser and barnyard manure is neces-

sary to maintain the fertility and high yields. Drainage is also difficult because the area is so close to the base level and because of the great variation in the depth of the sandy sediments.

Wauseon sandy loam covers a larger area than any other soil type. The land is almost flat throughout the entire area, causing poor natural drainage. The profile shows dark grey sandy loam over grey mottled sand with clay at one to two feet. It is stone free (Illus. 11). Large areas of this land are used for growing hybrid corn and dairy farming is prevalent in the vicinity of Robinson Road. Again drainage is a problem since this soil occurs in level, though depressional, areas. When drained the soil has a fairly high organic matter content and is quite fertile and suitable for general farming.

Granby sandy loam has characteristics almost identical with those of Wauseon sandy loam: dark grey sandy loam over grey or mottled sand, clay at depths of three feet or more, stone free. The area occupied by Granby sandy loam is nearly flat and thus has poor natural drainage (Illus. 12). These sandy loams when drained and fertilized are excellent for canning crops and specialization in this type of farming is taking place, especially along the major roads. Much of the area of Granby sandy loam is presently covered with scrub and bush. It is poorly drained and cultivation of the soil cannot begin until late in the season.

Only a small area of Eastport sand is found along the shores of Lake Erie. It has little agricultural significance since recreation is the main and perhaps the only possible function of the area. The loose grey sand is very low in organic matter and drifts

with the wind (Illus. 5) since vegetative cover is scanty.

Ontario loam is found only in Sherbrooke Township at the peaks of the two moraines. Its characteristics are: light brown loam over grey to reddish-brown stony loam with frequent stones and boulders and having good natural drainage. It forms part of the most fertile area in the two Townships. It has a good natural fertility and is water retentive and being on upland areas is well drained. The only problem is the removal of stones which are constantly turned up by ploughing. Grain and hay crops predominate.

Caister loam occupies a triangular area in the northern part of Moulton Township. It is an intermediate between the sandy loams to the south and the clay to the north, showing brown loam, fine sandy loam and some clay loam over grey, gritty clay and few stones. It has fair to poor drainage, the landscape being not as flat as that of the Wauseon sandy loam and not as undulating as the Haldimand clay topography (Illus. 14). The predominant crops are grains, hay, and corn and there is a strong tendency toward dairy farming. In this area some of the better farms of Moulton Township are found.

Colwood loam is found in the south-east of Moulton Township. It is nearly flat but there are some hummocks. Its profile shows dark grey loam over yellow and grey stratified fine sand, silt and clay. It is stone free and there are frequent small patches of muck. Much of this soil type is still wooded due to poor drainage and much which had previously been cleared is now being allowed to revert to scrub, though if properly drained and fertilised the soil is quite productive.

Caister clay loam occupies approximately one half of Sherbrooke Township and a small area along the northern boundary of Moulton.

Its profile shows dark grey and light brown clay loam over grey, drab, gritty clay. It has few stones and some silty knolls as well as many poorly drained areas (Illus. 5). The chief crop around Lowbanks appears to be hay (Fig. 10), though some of this may be rough pasture or even idle land. Much of the area in the north of Moulton is covered by bush but those areas which are cultivated produce good yields of grain and corn. The soil has a good crumb structure, is water retentive and fertile though low in organic matter, lime, and phosphates.

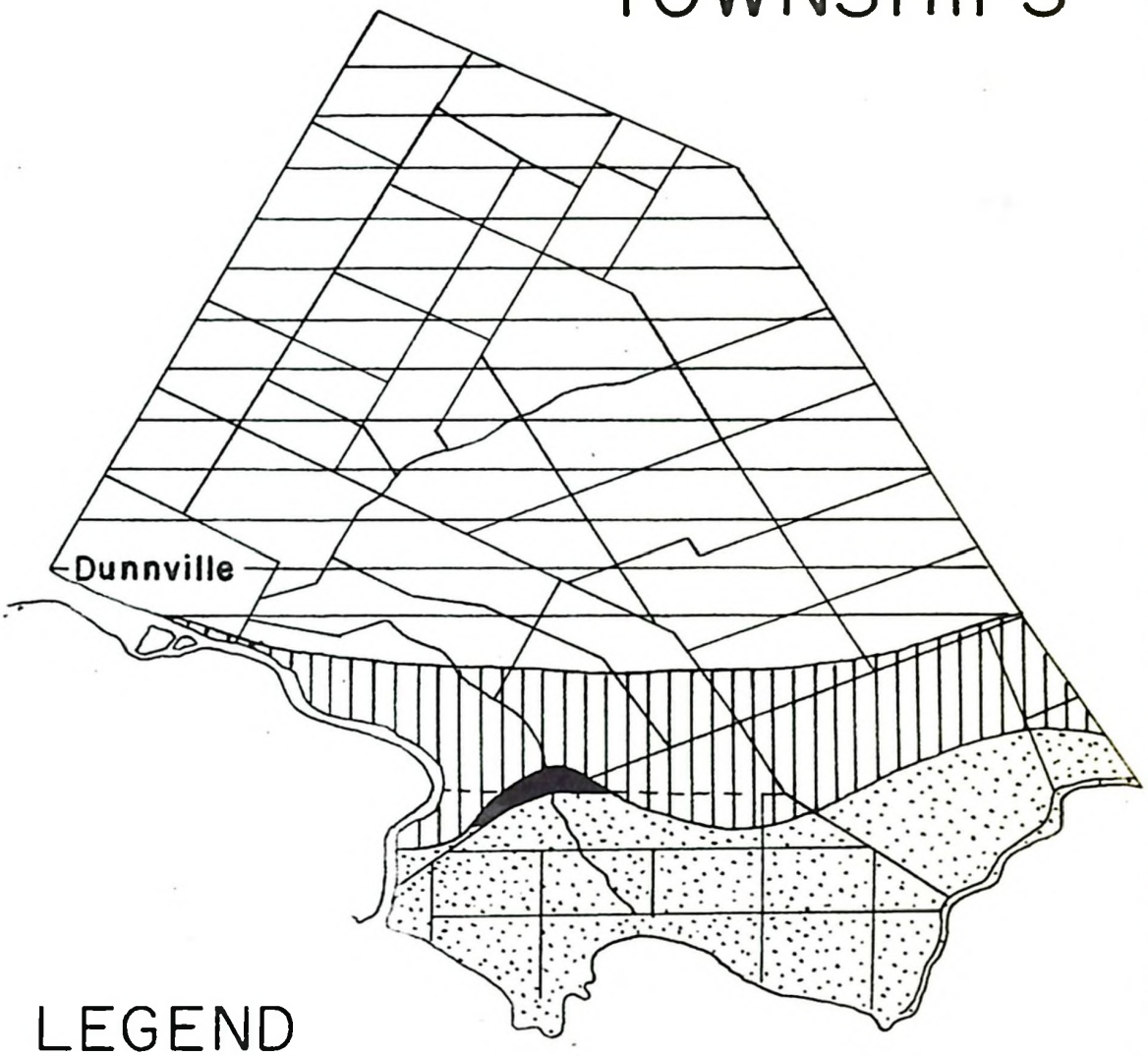
Haldimand clay is found in the extreme north of Moulton Township and in the extreme south of Cherbrooke Township. Compared to its large extent over the rest of Haldimand it occupies only a small area in these two Townships. Its profile shows greyish to light brown clay and clay loam over grey or reddish gritty clay. It has few stones and a few silty knolls (Illus. 15). The topography is gently rolling in the north of Moulton, being the most rugged in the area of study. Deep dissection by Osnego Creek and its tributaries partly accounts for this. In Cherbrooke the area of Haldimand clay roughly coincides with the more productive farmland showing how much good drainage means to crop yields and returns. These areas of clay and clay loam are used primarily for general and dairy farming. They are the most favoured areas since they are found on upland areas and are well drained.

Bottomland and muck soils are found in depressional areas. Large areas of bottomland are found along the Grand River. The area is mostly covered with tall rushes but there is the occasional tree. It is subject to frequent flooding since the water table

almost coincides with the land surface. The only other significant extent of bottomland is along the course of Oswego Creek, and has the same characteristics as that along the Grand River. These areas are of little or no economic importance and only provide breeding places for mosquitoes and other insects.

The only area of muck soil in the area is in south-east Moulton Township. This soil is poorly drained and much has been left uncleared. It consists of black, well decomposed organic matter lying in varying depths over sand or clay. This soil when drained is very fertile and can be used for high value cash crops and give high returns due to large yields.

BEDROCK GEOLOGY OF MOULTON AND SHERBROOKE TOWNSHIPS



LEGEND

- ONONDAGA member
- ORISKANY member
- BERTIE-AKRON members
- SALINA member

FIGURE 3

AFTER DEPT. OF MINES

PETER L. HILL 1958

Illus. 1 An outcrop of the Onondaga Formation at Mohawk Point. Note thin pebble and gravel beach in foreground and the hollows where the fossils of this highly fossilized rock have been eroded by wave action. Note also the thin bedding of the strata and their horizontal position.

Illus. 2 Another exposure of the Onondaga formation. Note the wide expanse of rock from which overburden has been eroded; the narrow gravel beach below sand-dune; the large sand-dune blown over a small cliff; the vegetation growing in joints of bedrock; and in foreground the two dark streaks which are glacial grooves.

Illus. 3 Glacial striae on Rockhouse Point. Pencil is oriented with point about 10 degrees E. of N. Note the sand in the hollows and also how the fossils and chert nodules have disrupted striae pattern.

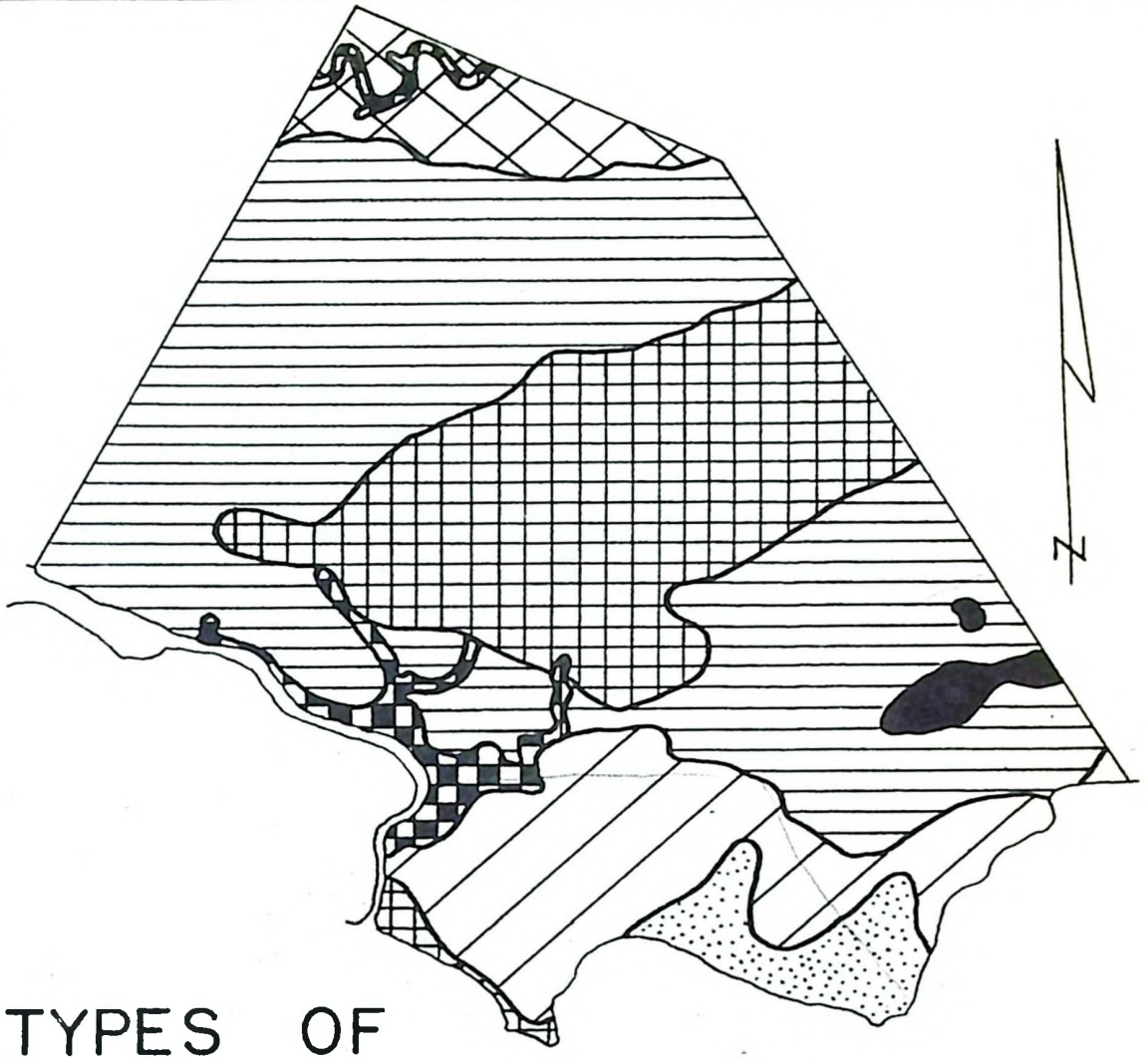
Illus. 4 Cassopo Creek. Note undulating form of the land (clay plain) and deep incision by the river into the overburden. In left far background is a large turkey farm and in left middle distance a small cemetery on top of a small hill.

Illus. 5 Unimproved pasture in Sherbrooke. Note the ledge grass in right foreground and the cattle eating corn stalks thrown over the fence by the farmer from the field in the left background.

Illus. 6 The level clay plain in the north of Sherbrooke seen from south, from one of the moraine hills. Note the extremely level nature of the ground. In right background is seen the largest single area of woodland in the Township.

Illus. 7 One of the moraínic hills in Sherbrooke looking south-east from the level clay plain (foreground). Note how the land rises very gently in a low swell.

Illus. 8 North Forks Creek showing how natural drainage channels have been ditched and deepened to drain away excess water. This ditch was dry in late summer when the picture was taken.



LAND TYPES OF

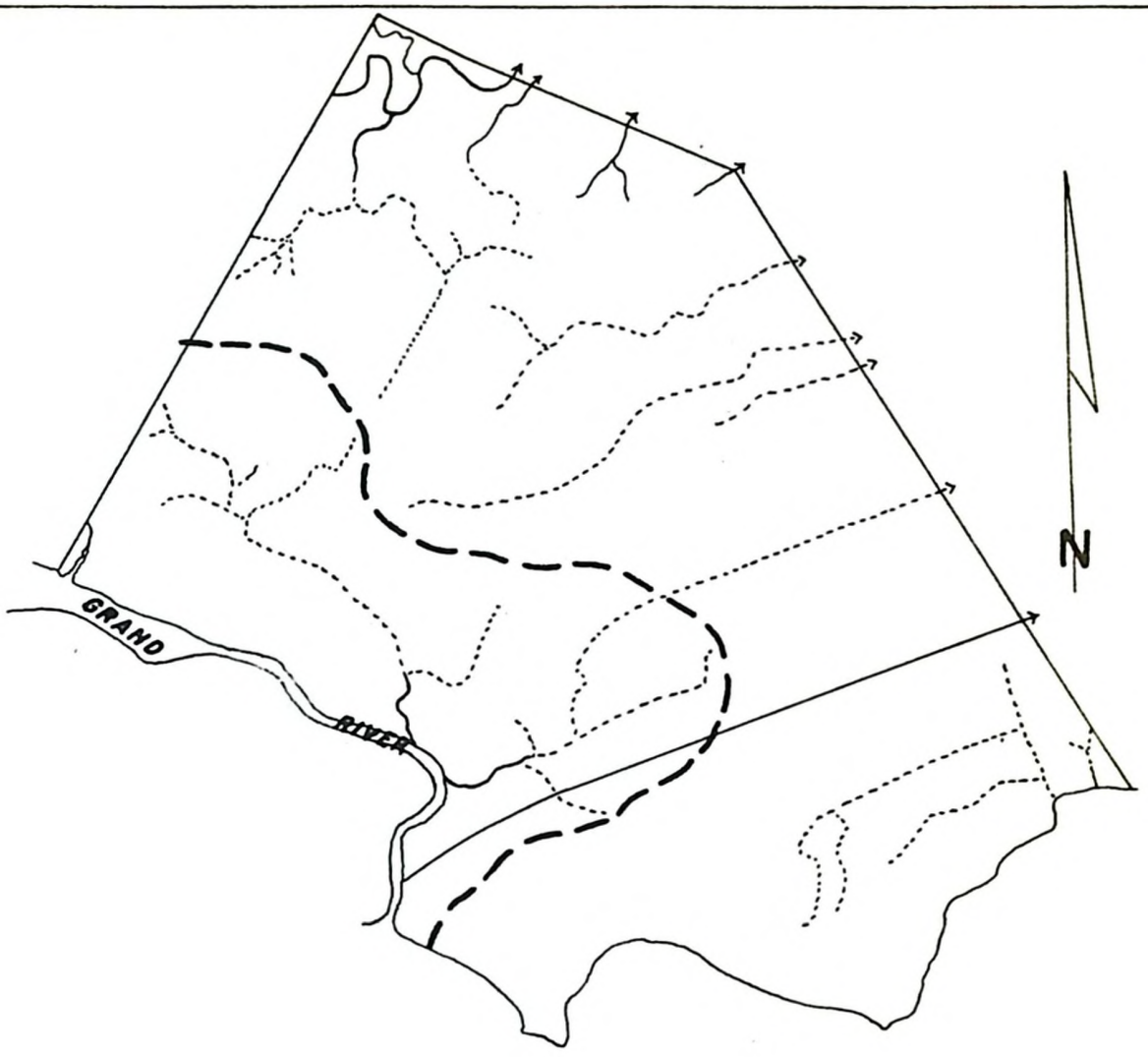
MOULTON AND SHERBROOKE

LEGEND

- LEVEL SAND PLAIN
- LEVEL CLAY PLAIN
- BOTTOMLAND
- MORAINIC HILL-LAND
- UNDULATING SAND PLAIN
- UNDULATING CLAY PLAIN
- MUCK

FIGURE 4

Peter L. Hill 1958



DRAINAGE PATTERN OF MOULTON AND SHERBROOKE TOWNSHIPS

LEGEND

BOUNDARY OF GRAND RIVER WATERSHED

INTERMITTENT STREAM

PERMANENT STREAM

0 1 2 3 4 5 6

FIGURE 5

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Figure #6

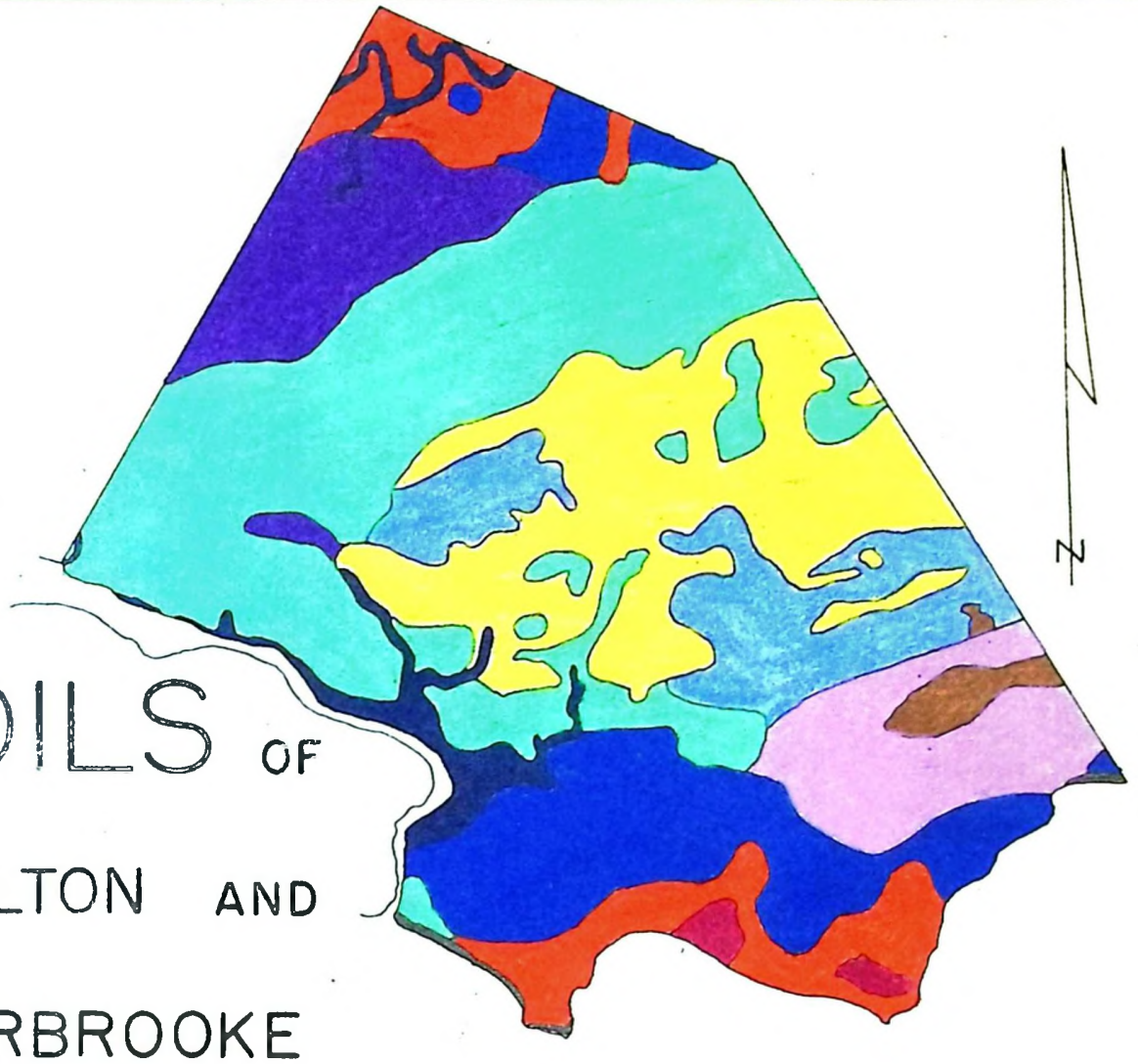
Characteristics of the Lake Erie Counties Climatic Region*

Altitude	600'-800'
Mean annual temperature	46°F
Mean winter temperature	25°F
Mean spring temperature	43°F
Mean summer temperature	67°F
Mean fall temperature	49°F
Extreme low temperature	-34°F
Extreme high temperature	106°F
Daily range of temperature	18°F
Average date of last frost in Spring	May 10
Average date of first frost in Fall	Oct.10
Average length of frost free period	153 days
Beginning of growing season	April 14
End of growing season	Nov. 3
Average length of growing season	203 days
Average annual precipitation	35.8"
Average annual snowfall	61"
Average rainfall April 1 to Sept. 30	17.1"
Average summer rainfall June to August	8.8"
P-E Index (June to August)	12.5
Frequency of drought	20
Per cent possible Sunshine in growing season	54%

*Chapman, L. J. and Putnam, D. F., The Climate of Southern Ontario, paper in Scientific Agriculture 18:8, April 1938, page 401.

Illus. 9 View of woodland over undulating sand plain, showing common tree association: silver birch, beech, oak, and red maple. Note road, a narrow single lane track, common in this little farmed area.

Illus. 10 Profile of Perrien sandy loam. Total depth is about seven feet. All material below the top of the ruler is pure sand and the dark zone near the spade is wet, showing the depth of the water table in the area. Profile was cut on the side of a sand dune.



SOILS OF MOULTON AND SHERBROOKE

LEGEND

- HALDIMAND CLAY
- CAISTOR CLAY LOAM
- ONTARIO LOAM
- CAISTOR LOAM
- COLWOOD LOAM
- BERRIEN SANDY LOAM
- WAUSEON SANDY LOAM
- GRANBY SANDY LOAM
- EASTPORT SAND
- BOTTOMLAND
- MUCK

FIGURE 7

AFTER SOIL SURVEY OF HALDIMAND COUNTY PETER L. HILL 1958

Illus. 11 Profile of Wauseon sandy loam showing the very dark brown A horizon above a yellow to light brown B horizon. The base of the ruler is upon the C horizon, a massive, hard, clay subsoil.

Illus. 12 Profile of Granby sandy loam showing: about seven inches of very dark sandy loam in the A horizon; about twenty-six inches of mottled grey-brown sand in the B horizon; and at the bottom of the profile, the C horizon of light grey sand.

Illus. 13 Eastport sand at Kinsey Beach showing the fine grey sand of this soil type. Note the wide beach containing few stones and also the trees' roots, exposed by wave action.

Illus. 14 Caister loam profile, showing a brown loam A horizon over a lighter brown sandy loam B horizon above a grey-brown gritty subsoil which starts about four inches from the bottom of the ruler.

Illus. 19 Haldimand clay profile showing a deep dark brown clay A horizon over a lighter grey brown B horizon. The C horizon having a massive, blocky structure is below.

CHAPTER TWO--HISTORICAL GEOGRAPHY

1. The Indian Period (—— - 1798)

Long ago in the Finger Lakes region south of Lake Ontario in the United States of America, a confederacy of five Indian tribes was brought about by Hiawatha. These tribes were known later under the collective name of "the Iroquois." Each member tribe was warlike by nature but under the Five Nations (later the Six Nations when the Tuscaroras joined between 1712 and 1722) all lived in peace until the White men came. The tribes occupying the peninsula of Southern Ontario before 1650 were the Neutral and Petun-Huron Indians. They too lived in peace with all their neighbours.

With the coming of the Europeans in the first half of the 17th century, and especially after the Declaration of Independance of 1776, war broke out between the British, French, Iroquois and Hurons, the British and the Iroquois being allies as were the French and the Hurons. Between these two warring bodies lay the land of the Neutrals in the Grand River valley. During the wars between Hurons and Iroquois the Neutral Nation suffered terribly at the hands of the Iroquois for giving help to the Hurons. Thousands of their warriors were slain and just as many women and children massacred.

After 1650, because of the vicious raids by the Iroquois who were incited by the British, the area occupied by the Neutrals became a "wilderness waste." Only the occasional hunter was seen and the land enjoyed a respite from human occupation for a full century. Eventually, the Mississaugas began to use it as their hunting ground.

After 1776 with the loss of the colonies the Six Nations Indians, who had been loyal to Britain, lost their lands in what is now New York State. Joseph Brant, the new leader of the Mohawks, led his tribe up the Mohawk valley to the safety of Canada, which had remained in British hands. He negotiated with Sir Frederick Haldimand, the Governor of Canada, for a grant of land along the Grand River "six miles on each side of it, from its mouth to its source", and received the same on October 25, 1784.

Though the Treaty gave lands to the Mohawk tribe it also stated that any one of the Six Nations tribes was eligible to come and settle here too. In time the rest of the Iroquois came to join their brothers, the Mohawks.

Since the wording of the Treaty was vague and little or nothing of the country ceded was known by the legislators in Quebec, it was necessary to have the area surveyed so that White settlement could be kept out. According to the wording of the Treaty, two lines had to be drawn at a distance of six miles on either side of the river. This, however, would give a very difficult irregular boundary to the area so the surveyors were ordered "to survey the Indian lands, with straight, fixed boundary lines, taking extreme care not to deprive the Indians of any portion of their rightful territory."

To do this they selected two fixed points, one at Brantford and the other at the eastern end of the river near its mouth and drew a straight line between them. On either side of this line they surveyed two lines each six miles from this central line. As a result, the northern boundary of Moulton Township is part of one of these "Indian Lines." Further surveying uncovered the fact that

there was an error in the original survey, due to mistaken points of reference, and the total area of the Indian lands was decreased. Nevertheless, Moulton and Sherbrooke Townships were still within the area granted to the Indians.

Brant began to sell off the land in large parcels to try to support his people and Moulton and Sherbrooke were sold to William Jarvis for 5,775 pounds in 1798. Constant trouble occurred over the legal aspects of this and other sales as land speculators tried to cheat the Indians.

This turbulent history, with the land changing ownership so often and being restricted from White settlement for so long, is one of the direct causes of the relative backwardness of the Townships so far as urban population is concerned. Europeans settled in other parts of the Niagara Peninsula and avoided the low, poorly drained Indian lands and not until the building of the Welland Canal feeder did the area begin to attract more than scant White attention.

2. The White Pioneers (1798 - 1825)

In 1808 Thomas Douglas, Earl of Selkirk, received Moulton Township (at this time including Sherbrooke), but he fell into monetary difficulty and never paid for it. Because of his inability to pay, the Township was put up for sale and in 1820 was bought by a man named Smith. He immediately sold his purchase to Henry John Moulton who named it Moulton after his family estate in Lincolnshire, England. In this period before 1825 there was very little settlement since the government had put restrictions on the area. However, a few early settlers were noted: David Beasud, whose home has now been taken over by the Hamilton Y. W. C. A., settled in Sherbrooke in 1820;

Jacob Niece and William Furry took land in Sherbrooke in 1822; Salmon Minor built his homestead on the east bank of the Grand River and present day Dunnville surrounds this site.

3. Later White Settlement (1825 - 1900)

Though there was settlement before 1825 the major immigration came after this date when the Government had removed the restrictions on White settlement in the area and by 1850 there were approximately 1,770 people living in the two Townships. Most of the settlers were United Empire Loyalists and members of Butler's Rangers, an early body of fighting men, who were given land at a cheap rate by the Government. In this period around 1850 wool was the major agricultural product of the area and supplied the woollen factory in Dunnville.

The following excerpts describe the Moulton and Sherbrooke Townships of 1850. "Moulton is also a small township on the southeast of Canboro. In 1835 it contained four hundred and twenty-six inhabitants, which number has increased in 1850 to fourteen hundred and fifty-one. In 1845 seventeen hundred acres were under cultivation and in 1850 seven thousand, five hundred acres. The township contains two grist mills and four saw mills, and produced from the crop of 1849, five thousand bushels of wheat and five thousand, five hundred bushels of oats, and four thousand pounds of butter. The feeder of the Welland Canal is carried through the south of the township and is bounded by the tamarac and cranberry swamps."

"Sherbrooke, the smallest township of the county is also the smallest township in the Province. In 1841 its population amounted to one hundred and ninety eight, which had increased in 1850 to three

hundred and twenty. In 1843, fourteen hundred acres were under cultivation and in 1850, three thousand acres. Six thousand, six hundred bushels of wheat and nearly six thousand bushels of oats were produced from the crop of 1849."[1]

The production figures in these quotations point to a sharp contrast between the two townships. In Moulton in 1849 there were about 7,500 acres of cleared land and in Sherbrooke there were 3,000 acres yet the latter produced 6,000 bushels of oats and 6,000 bushels of wheat compared to 500 bushels and 5,000 bushels of oats and wheat respectively produced by the former. The 4,000 lbs. of butter produced in Moulton point to the tendency to use its poorly drained land for pasture and milk production.

This last trend is still visible today, though little butter is produced now since most of the milk is sold in a fluid state. Sherbrooke, having well drained clays and clay loams, still concentrates on grain and hay crops while Moulton, with poorly drained sandy soils, has large acreages of scrub, unimproved pasture, woodland, and corn (Fig. 10).

In 1851, according to the Upper Canada census figures, there were 22,771 acres of woodland in Moulton and 2,299 acres in Sherbrooke. During the past century clearing of this land has continued regularly until the present day, when even more land is being opened for agriculture. Today there are 2,182 acres of wood and waste land in Moulton and 392 acres in Sherbrooke. Associated with the clear-

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[1] The History of Haldimand County, Centennial issue of a brochure by Dunnville, 1950, celebrating Centennial of Haldimand County.

ance of the bush was a rise in the rural population. The period of maximum population was between 1865 and 1875 for Chertrooke when there were about 530 residents and between 1895 and 1905 for Moulton when its population was approximately 1,925 persons (Fig. 8).

The period 1825 to 1900 was one of many economic difficulties, wars, and threat of invasion from the south. As a result the population and prosperity fluctuated greatly but an increasing urban market, a feeling of national security, the railways, and other improvements in the efficiency of transportation created, by 1900, a stable base for increased industrialization and economic advancement.

4. The Modern Period (1900 - 1951)

(i) Moulton

In the period 1901 to 1951 Moulton Township experienced a decline in population from 1,931 to 1,871 persons. The decades of the lowest population were those between 1915 and 1935 and the lowest figure shown in the Census is for 1931 when there were 1,697 residents (Fig. 8).

In this period there was no industrial development in the Township itself, and the economy developed upon an agricultural base. The drop in population between 1911 and 1921 was undoubtedly due to the increasing trend for farmers to move to the city to make more money and help in the war effort. After the war and with the continuance of the movement of population to the urban centres the population of the Township remained almost static but between 1941 and 1951 the population returned to a higher level. It was found possible with better roads and automobiles and increased wages to

live on the farm and work in a town and still keep the farm in relatively good order. However, between these years the acreage of improved land decreased from 21,526 acres to 17,635 acres.

Certain trends in the changing of the types of agriculture are apparent since 1931. In 1931 there were 281 acres of market gardens and 290 acres of orchards and vineyards. During 1931 and 1941 with the development of the Niagara "fruit belt" the acreage of orchards and vineyards decreased sharply. This was due to the inability of the farmers in Moulton and Sherbrooke to compete with the new threat of the highly efficient specialized production. While these Townships were unable to concentrate on fruit growing, the Niagara "fruit belt" was able to specialize, become more efficient thereby reducing production costs and market prices and also have a better product. Also with an increased number of fruit trees in such proximity diseases and insects became more prevalent. As a result of these factors, the acreage of orchards and vineyards was only 67 acres by 1941. However, with the decrease in orchards and vineyards came an increase in the market gardens' area, due probably to an increasing urban population in surrounding areas, and in 1941 there were 410 acres of small fruits and market gardens.

Between 1941 and 1951 there has been a general decrease in the number of livestock. The following figures are quoted from the Census of Canada figures for the years 1931, 1941, 1951, and 1956:

	Cattle	For beef	For milk	Sheep	Pigs
1931	1172	--	--	--	--
1941	2143	41	1549	465	2411
1951	2022	151	1486	328	1696
1956	2459	not given	1387	305	1878

The year 1956 has been added to show the continuity of some of the trends up to the present day. Though the total number of cows has increased, there has been a decrease in the number producing milk. The figures given for beef cattle are increasing, showing a trend away from milk production and towards beef production.

The numbers of sheep and pigs also show a decrease between 1941 and 1951 though the latter has shown an increase since then. The decrease in the numbers of sheep, milk cows, and pigs is due to part-time farming methods. All three of these livestock require careful and regular control and a person working in Welland, Hamilton, or Port Colborne all day has little chance to give these types of animal the care which they require. As a result, there has been a tendency to raise beef cattle and crops which do not need so much attention. The hog prices in past years have fluctuated but recently the prices have been good and there has been a trend towards the production of hogs with a hope that the price will not decrease. These, as are beef cattle, are long range products and can often be held on a farm as a type of insurance, for if some ready cash is ever needed they can quickly and easily be sold.

The changes in crop acreages between 1941 and 1951 also show how farming methods and emphases may vary. In the following table all figures are from the Census of Canada and are in acres:

	Wheat	Oats	Barley	Rye	Mixed grain	Cultivated hay	Potatoes
1941	1,915	3,036	194	44	2,001	5,954	162
1951	2,654	1,762	19	39	2,308	4,379	43

In this decade there was a decrease in crop acreage from 13,600 acres to 12,960 acres. There was a corresponding general decrease in all other crops except wheat and mixed grain. This once again is

due to part-time farming and changed methods of farm management. The acreages of oats and barley decreased sharply due to changed feeding methods. The farmers find it advantageous to sell their grains and buy back prepared feeds from the large feed suppliers. In such a situation it is necessary to grow the crop which will give the greatest return per acre, namely wheat. The smaller acreage of hay corresponds to a decrease in the number of cattle.

(ii) Sherbrooke

In the first half of the twentieth century, Sherbrooke Township suffered a slight decline in population from 396 persons in 1901 to 385 persons in 1951. However, the years of lowest population were 1921 and 1941 (Fig. 8).

The trends visible since 1931 show the decline of certain crops and old farming methods and the rise of new ones. Therefore, it will be sufficient to discuss those trends of 1931 to 1951, as was the case in the previous section in Moulton Township. Every trend previously discussed in this latter section also occurred in Sherbrooke Township to a greater or lesser degree. For example the "thirties" was also the period of the decay of the orchards and vineyards in Sherbrooke Township. Acreages dropped from 62 acres in 1931 to 7 acres in 1941. And as in Moulton during this same period the area of small fruits and vegetables increased, from 10 acres to 27 acres.

The number of cattle decreased between 1941 and 1951 and again as in Moulton the numbers of sheep and pigs dropped sharply too. The following tables when compared with the previous ones for Moulton show how closely the fluctuations of Moulton and Sherbrooke

conform:

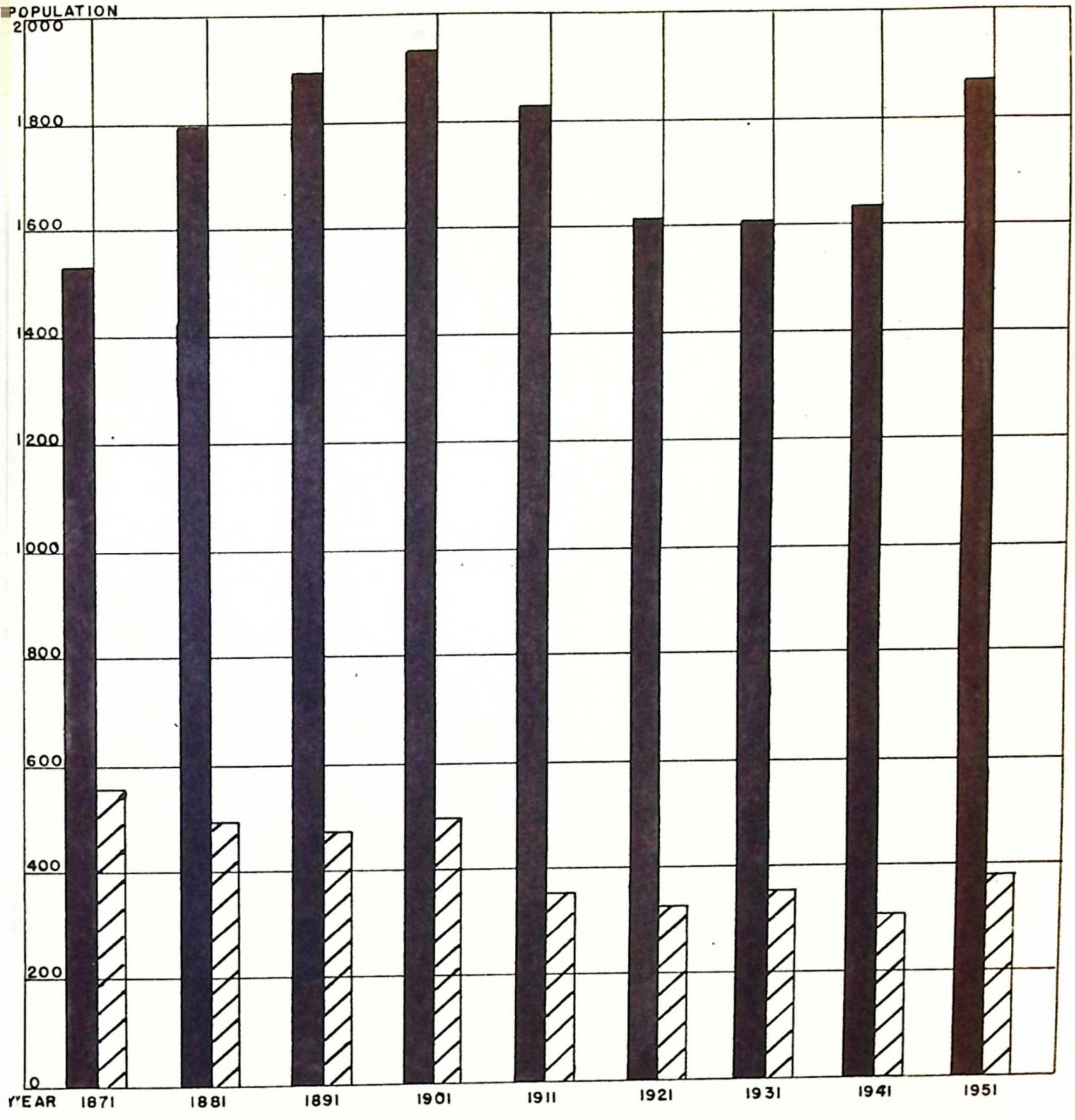
	Cattle	For beef	For milk	Sheep	Pigs
1941	539	27	329	409	468
1951	500	16	318	196	438
1956	484	not given	218	173	991

	Wheat	Oats	Barley	Mixed grain	Cultivated hay
1941*	329	463	34	384	1,619
1951*	479	390	10	715	1,051

*all figures are in acres

The total number of cattle has decreased slightly as has the number of pigs while the total number of sheep has decreased sharply. Though Sherbrooke was more intensively cultivated than Woulton these decreasing trends which conform closely to those of Woulton still occurred. The reasons were pointed out in previous paragraphs.

In 1941 there was a total acreage of land under crops of 2,964 acres and in 1951 of 2,869 acres, a decrease of 95 acres. This total is insignificant as far as the abandonment of land is concerned and actually very little of this has occurred in Sherbrooke. Wheat and mixed grains showed sharp increases during this period while all other crops suffered a decrease in acreage.



MOULTON and SHERBROOKE POPULATION TRENDS

MOULTON

SHERBROOKE

FIGURE 8

PETER L. HILL

CHAPTER THREE--PRESENT CONDITIONS

1. Transportation

(i) Road

Moulton Township does not possess the best of Township roads. Many have no gravel and several have surfaces of loose sand only. The latter are usually found through the areas of poor drainage. Three roads, however, Robinson Road (the Town line with Canboro Township), Diltz Road, and Marshagan Road, do stand out above the others (Fig. 2). Robinson Road is hard surfaced over its total length, Marshagan Road is hard surfaced from Highway #3 to Moulton Station, and Diltz road is surfaced for half its length through the Township.

It is interesting to note that these three roads are all oriented north-east to south-west and join the Grand River to the old Talbot Road and the River Road which runs sub-parallel to the Welland River. Though they are surveyed roads and therefore not created by the natural flow of traffic between two points, the mere fact that they are the best roads in the Township shows how important the north-east to south-west movement of traffic was, and is, and how influential Hamilton was in the 19th century, and still is today.

Another important Township road is the one parallel to the Old Welland Canal Feeder between Dunnville and Stromness (Fig. 2). This road carries heavy traffic since all the roads of Sherbrooke Township funnel the traffic along it. Each morning and evening the people who work in Dunnville and live in Stromness, Port Maitland, Sherbrooke Township, Lowbanks, and the other ribbon developments along the shore of Wainfleet Township, commute back and forth.

The reasons for the channelling of traffic along this road are

two: the Old Welland Canal feeder has disrupted the road pattern and several rights of way are closed; also, the northern part of Sherbrooke and the south-east part of Moulton contain extensive poorly drained areas; as a result, the road pattern breaks down and there are few roads through the area, except those that lead into the Feeder Canal road.

The lake shore road is the only other hard surfaced road in the Township other than Highway #3 (Fig. 2). This follows what used to be an old Indian trail that itself closely followed the shoreline. Lowbanks, a long established settlement, has developed in a linear pattern along this road.

Sherbrooke Township has an excellent system of roads. However, due to its small size and irregular shape, the surveyed grid pattern did not develop too well, except for one concession (II). From the east-west concession road between concessions I and II there are several long road allowances going down to the shore. In the past, some of these became overgrown but recently, with the building of cottages along the shore, they have been re-opened. From the concession road between concessions II and III the allowances have become overgrown and are now unused. This is due to the swampy nature of the land in the northern part of the Township.

The most important roads in Sherbrooke run between Stromness in the north-west and the lakeshore road of Moulton Township in the south-east and between Port Maitland in the south-west and Stromness (Fig. 2). The former is important for its commuter traffic to and from Dunnville and the latter is important since it serves the fishing industry as well as the new fertilizer factory just established

in Port Maitland. Both have hard surfaces. These two roads also carry much traffic during the summer when city dwellers, especially Hamiltonians, drive back and forth between that city and Port Maitland.

The only Provincial highway through the area is Highway #3 which runs north-east from Dunnville to Forks Road in Rainfleet Township (Fig. 2). This in turn goes to Welland. The highway is much used by American cars and trucks, since it is the shortest and most efficient route between Buffalo and Detroit. During the summer thousands of tourists use the highway and there is much congestion of traffic, which is increased by the sale of fruit at stands along the way. The highway has many curves and follows an old overland route which ran along a ridge of high ground between the low, level poorly drained areas on either side. Because of the heavy traffic the Department is planning the construction of a new larger, faster highway between Buffalo and points west. Already buildings have been moved in Rainfleet Township, immediately to the east of Moulton, in preparation for this development. As a result, the many curves may be straightened and the driving hazards removed.

(ii) Rail

Considering their total area and also compared with neighbouring Townships, Moulton and Sherbrooke have a well developed system of railways. They are served by the Toronto, Hamilton, and Buffalo, and Canadian National Railways. The Michigan Central Railway also has a double track across the north of Moulton but these are through lines and the trains do not stop. The short distance between Buffalo and Detroit on the Canadian side of the border has resulted in the

placement of this railway through this area (Fig. 2).

The Canadian National Railways have two lines through the area. One roughly parallels the Michigan Central Railway in the north of Moulton and is, like the Michigan Central, a through line. The other, more important to the economy of the area, enters Moulton from the west at Dunnville. Here there are a few spur lines and a railway station. It leaves the Township in the extreme south-east on its way to Port Colborne.

By far the most important railway is the Toronto, Hamilton, and Buffalo Railway. The development of the two Townships and Dunnville is very closely connected with the development of the T. H. & B. The first line was built from Smithville between 1914 and 1916 and in 1916 a ferry from Port Maitland to Ashtabula, Ohio was opened. This has since been discontinued but railway yards have been built in Port Maitland and the harbour has been used by the railway's lessee, the Canada Coal Company, as a trans-shipment point for coal. The system of freight rates and handling charges make it cheaper to deliver coal from here to North York Township in Toronto rather than from Toronto's own harbour!

(iii) Water

Water transportation has little influence on the two Townships today. In days past the Grand River was a major waterway leading to the interior but now, owing to the building of a weir at Dunnville in 1825 and the silting up of the river bottom, because it is so close to its base level, the river is used only by small pleasure craft.

After 1827 the feeder canals to the new Welland Canal brought prosperity to the area but when the latter was enlarged and improved

they fell into disuse (Illus. 16 & 17). Barges constantly moved between the Grand River and Welland with cargoes of wheat and lumber.

Today the only use made of water transport is that by the Canada Coal Company and the fishermen in Port Maitland. In the future the water facilities between Dunnville and Port Maitland may be used more fully but this will not be for several years and will depend on rapidity with which industry will locate along the banks of the Grand River.

2. Rural non-agricultural land use

(i) The garbage dumps of all three municipalities are found in woodlots and are surrounded by trees. The placement of these dumps is important for they must be as remote from the population as possible and yet readily accessible. The Sherbrooke dump is on Rymer Road (Fig. 2 & 10) near Stromness. It is well kept, relatively remote and the road leading to it has just been paved. The Moulton dump is also remote from concentrations of people since it is surrounded by idle scrub-land. It is located on Bird Road just south of Highway 3. Though the Dunnville garbage dump is within the town limits, it is still remote from the people for it is located in the north-east and is surrounded by scrub and farm land. This is the largest dump of the three, yet has the poorest access.

(ii) A quarry and several sand pits occupy small acreages in the area of study. The only quarry is a quarter of a mile west of Stromness and to the north of the feeder canal in Sherbrooke Township (Illus. 18). The stone from this quarry was used as fill to build up the canal road at Port Maitland, which was often several feet under water at periods of high water. The sand pits in Moulton have

been used primarily by the Township (Illus. 19) as fill for the Township roads. All are found in the "undulating sand plain" of Figure #4 and are quite small except for the one shown in Illustration #19.

(iii) Some industries are also located in rural areas. Dominion Fertilizers Limited occupy 22 acres in Port Maitland and is presently producing superphosphates from phosphate rock imported from Florida and from Canadian sulphuric acid. Another potential industry is the Electric Reduction Co. of Canada which at the time of writing had halted the building of its factory. It will be located on land bought from the T. H. & B. railway with frontage on the Grand River. A very small industry is located in Lowbanks, where large cement sewer pipes are made by two or three men.

(iv) Natural gas is produced throughout the Niagara Peninsula and especially in Haldimand County. Moulton Township has been almost completely covered by gas exploration and only very small areas have been left untouched. The development is less intensive in Sherbrooke Township. Moulton and Sherbrooke both produce gas from the Clinton formation but the main production in Sherbrooke comes from the Whirlpool formation.

In 1940 Moulton had 151 producing wells, which had an average initial volume of 45,000 cubic feet and Sherbrooke had 12 producing wells having an average initial volume of 541,000 cubic feet. Since this time the number of wells has increased in both Townships and drilling is still being done. All the gas is of the "dry" and "sweet" type having no petroleum vapours or hydrogen sulphide (H_2S) contained in it (Illus. 20 & 21).

3. Small rural settlements (Fig. 2)

(i) Port Maitland

This settlement, being at the mouth of the longest river in Southern Ontario, has had a long and varied development. Today the main part of the village lies to the west of the Grand River in Dunn Township, the part in Sherbrooke having no stores and only three permanent homes, the vast majority of buildings being summer cottages. The settlement has no commercial function other than that of a fishing port; and even in this role is subordinate to the settlement on the other side of the river for only five out of a total of twenty four boats dock on the east bank (Illus. 22).

(ii) Lowbanks

The total length of the shore road in Moulton Township is occupied by a single row of houses, and their collective name is Lowbanks. Lowbanks has a long history and was once a small thriving centre. At one time in the past it had a tavern, a wagon factory, and a rope factory. Today only the ruins of the wagon factory (Illus. 23) remain and Lowbanks is now but a sleepy little cottage development and dormitory centre. It presently has two churches, one public school, a post office, three small grocery stores, and a filling station. Its service area appears large for its size and population though its importance is vastly increased during the summer months and the holiday season (Fig. 14).

(iii) Stromness

This is the largest of the small rural settlements in the area of study. It, like Lowbanks, has had a long history of commercial importance but has now declined into a small village. It is located

at the junction of the two feeder canals (Fig. 2 & Illus. 17) and in the days of this transportation route it flourished. Here were a grist mill (Illus. 24), an hotel (now a rest home), a saw mill and the home of Senator L. McCallum, who had considerable interests in shipbuilding and the manufacture of square timbers. Today it has but two very small grocery stores, one pair of gasoline pumps, and a public school. It is a place of retirement for old farmers and is ideally suited to their needs, being totally rural yet near to Dunnville. The present population is approximately seventy five persons.

(iv) Moulton Station

Unlike the other three centres, which lie to the south of the area of study, Moulton Station is located on Marshagan Road, near its northern end, where another road joins it to Diltz Road. It consists of but one public school, one church, one small general store, and a few houses. Of all four of the small settlements Moulton Station has, perhaps, the most active year-round commercial function, for its store is larger than those of the other centres and sells a greater variety of merchandise.

4. Recreation

Unlike much of the Lake Erie beach east of the Grand River, that of Moulton and Sherbrooke cannot be considered as being first class recreational land. In Moulton the only sand beach occurs near the eastern limit of the Township and this grades into a cobblestone beach to the west (Fig. 9). The latter is a relatively high beach, formed by stronger wave action than that apparent along most of the Erie shoreline (Illus. 25). This is due to the depth of

the bay, for unlike many of the bays which are shallow and have the Onandaga formation close to the surface, this bay is deep. The water deepens quickly offshore and as a result the bay is one of the safest for pleasure craft. Most of the cottages along the Moulton shore were built before 1955. The majority of them are small and of poor quality, though the new ones, often of the prefabricated type, are still in good condition (Illus. 26). The most recent development has been on Moulton side of the Town line with Sherbrooke.

The cobblestone beach grades into a rocky one having bedrock outcropping in several locations with a high shore cliff above them. Development of this beach strip (g - f) took place before 1955. Many of the owners here are Americans from Buffalo, unlike those on other stretches of this part of the shoreline who are mostly Canadians, and their cottages are summer homes rather than weekend cottages. The beach, however, is poor and is covered in parts with algae (Illus. 27), as are the other beaches along the shore. This algae floats onto the beach at high tide and is left there at the ebb after which it dries and gives forth a disgusting stench (Appendix D).

Between "f" and "e" the beach is made of coarse sand and large pebbles and has a thirty foot cliff behind it. Above this cliff several new cottages have been built since 195[illegible] and all enjoy a relative privacy.

No development took place between "e" and "d" before 195[illegible] since the cliff was so high, ninety feet in some places, and the farmers were unwilling to subdivide their land. Recently, however, two large cottage subdivisions have been built and more are being sur-

veyed (Illus. 28, 29, 30, 31).

Between "d" and "c" the Onandaga formation forms a level rocky shore (Illus. 2) left bare of sand. Behind this level rock area is a small beach ridge and behind this again large volumes of sand have been formed into dunes that are presently moving up and over the low cliff which is found between these points.

On the eastern half of the point is a three year old Provincial park, donated by Sherbrooke Township in 1955 for the use of the Province. It has picnic tables, a barbeque, toilet facilities, and a beach. Due to its remote position it functions as a place of destination rather than as a roadside park catering to transients.

On the western side of the point there is a large Jewish summer camp, Camp Kvutza. It has large playing fields and several cabins and can accommodate over one hundred campers and leaders. The swimming facilities are not of the best, due to the rocky shore and algae, and the swimming is mostly done on the Connor Bay side of the point.

Between "c" and "b" no use is made of the beach except for that by Camp Kvutza. The beach is stony and is dominated by a fifteen foot cliff. The latter feature gradually becomes lower to the west until at "b" it is hardly six feet high, whereas the beach below is sandy and about fifty feet wide (Illus. 15).

The earliest cottage settlement along the whole shoreline took place between "b" and "a". Here is the only commercially operated park, Kinsey Beach. This park has been in operation for several years and is well-known and popular. The beach in this section is sandy but contains cobblestones in its upper reaches. The shore cliff, prevalent along the rest of the Sherbrooke shoreline, disappears here

and through this low stretch of coast line the Grand River enters Lake Erie. The concrete breakwater built at the mouth of the river has protected this section of beach somewhat from the removal of the finer particles of sand.

The dense cottage settlement has a common beach, unlike many stretches of the beach to both east and west which are private and are fenced off. The cottages are in poor condition generally but some are well kept. The T. H. & B. railway owns the land and has recently given notice to the cottagers that they are under thirty day notice to vacate the land. This has already resulted in the removal of many cottages and a general lack of interest in the upkeep of the rest.

Between the cottage settlement and Kinsey Beach the Hamilton Y. W. C. A. has its summer camp. The area when compared to Camp Kvutza is much smaller but the area is pleasantly shaded by trees and has enough open space for outdoor activity. Also the beach is better and safer than that of Camp Kvutza having no cliff and being broad and sandy.

Another recreational feature is the small road-side park at the junction of Bird Road and Highway #3 (Fig. 2) in Moulton Township. Here the highway has been straightened and in the wooded area where it formerly curved several picnic tables and a barbecue have been added. Unfortunately, the highway has very few other such parks to ease the strain of long distance driving. As a result, it is well used by Americans driving between Buffalo and Detroit through Canada.

5. Agricultural land use

The land use of any region is the direct outward expression of

the condition of that region. The land use of Moulton and Sherbrooke Townships is a direct expression of the condition of the economy of the area. A systematic study of the land use map (Fig. 10), with reference to the 1951 and 1956 Census figures, follows. Constant reference should be made to Figures 7 and 10.

	Moulton*		Sherbrooke*	
	1951	1956	1951	1956
Land under crops	12,560	11,753	2,869	2,456
Summer fallow	1,048	1,801	489	1,000
Pasture	2,865	3,314	675	887
Other	1,162	2,459	128	166
Total improved land	17,635	19,327	4,161	4,509
Woods	2,182	1,956	392	897
Other	4,378	3,610	1,082	211
Total unimproved land	6,560	5,566	1,474	1,108

*All figures are in acres.

It can be seen from this table that both Townships showed an increase in the total area of improved land between 1951 and 1956. In the south-east area of Moulton, where the muck soils and extensive areas of woods appear, land is still being cleared and drained. Even though there was an increase in improved land there was a decrease in the acreage of land under crops. And there was a definite increase in the acreages of pasture and summer fallow. This discloses the important trend to part time farming and the resultant emphasis on beef cattle and pigs, animals which do not have to be milked. There was an increase of 437 cattle in Moulton and a decrease in Sherbrooke of sixteen between 1951 and 1956. The decrease in Sherbrooke continues a decrease that started about 1941.

The most important area concerned with milk production is the

area to the west and north of Moulton. This area includes the clay plain and the western part of the level sand plain. The soils included in this area are Haldimand clay, Caistor clay loam, Caistor loam, and Wauseon sandy loam (Illus. 32). The zone of greatest concentration is along Robinson and Dilts Roads. This area is favourable for milk cattle for several reasons: there are good roads for efficient pick-up and delivery; it is the closest area to Dunnville; the soils on the level sand plain are suitable for pasture and the growing of hay; and drainage is not so poor that grain cannot be grown.

The acreage of soybeans has increased in the last five years. It is a valuable cash and feed crop. A large area appears in the newly cleared land in the south-east of Moulton as is in small areas near Dunnville and throughout Sherbrooke Township. More farmers are now growing the crop in rotation since it has nitrogenous fixing qualities. No soybeans are grown on the northern clay plain or on the level sand plain north of highway #3.

Very large acreages of maize or corn are grown in the townships. Unlike other areas in Southern Ontario much corn is grown for seed which explains the exceptionally large acreage. This corn is of new hybrid varieties which give large yields per acre than previous types. Most of the corn production is centred on the undulating sand plain where drainage is poor and the great water need of maize during the hot summer months is readily satisfied. Some full time farmers rent extra land from those working in town and plant the whole with hybrid corn or grain.

The corn grown in the milk producing areas is mostly grown as

insilage for winter feed. In this area the fields are smaller and exhibit a lack of the specialization so evident on the undulating sand plain. Little corn is grown in Sherbrooke since there are few cattle and the clay soils are susceptible to hardening during the summer months. Sweet corn, grown for human consumption, is also one of the several types cultivated.

It is often difficult to determine the differences between fallow, permanent pasture, and hay since each has several characteristics common to the others. However, areas of fallow are widespread and some individual areas are quite large. The greatest concentration occurs on the undulating sand plain and the southeastern corner of the area of study. The use of fallow, it will be noticed, is more common in the area of extensive or part-time farming.

Grain has an extensive acreage, nearly 4,000 acres in 1956, the most important crop being wheat (2,634 acres). Oats are also important and represent the second major crop of small grains. The latter is grown primarily for feed purposes and as a result there is a concentration in the north and west since it is here the dairy farms are concentrated. Unfortunately the field survey was taken too late in the year to determine an accurate break-down of the small grains and since they are evenly distributed over both Townships, conclusions as to the distributions of wheat and oats cannot be made.

Hay, including buckwheat, is found in two major concentrations. The first is throughout Sherbrooke Township and along the shoreline of Moulton. This latter area may include areas of fallow or idle

land. The concentration of hay in this zone shows it to be better drained than most of the total area, since alfalfa cannot be grown in poorly drained locations. There is also a tendency to allow land to remain idle, waiting for cottage development and meanwhile taking off crops of hay. There is not too large an acreage of buckwheat included in the hay category, but most of the hay has been improved by the addition of alfalfa and clover and there is only a small acreage of pure timothy grass hay.

The second major concentration of hay is that in the northwestern corner, the milk producing area. Here large acreages of hay are necessary to provide fodder for the often large herds during the winter season. As mentioned before, much of the hay contains clover of alfalfa (Illus. 52).

The production of small fruits and vegetables is widespread in the area between the feeder canals and Highway #3. Most of this area is in the undulating sand plain, for it is here that the sandy loam soils provide an excellent base for this type of specialized agriculture. Tomatoes comprise the principal crop, but beans, sweet corn, onions, carrots, and peppers, are also grown in considerable quantities (Illus. 53). Fruit crops include raspberries, strawberries, and grapes. These however are grown only in small quantities for home consumption and for sale at the local market in Dunnville. A large number of immigrants from Europe is engaged in this occupation, their great interest in the land and their untiring industry having made the infertile, poorly drained soils produce abundant crops. There is a slight concentration of market gardening along Highway #3 and a definite lack of it in the clay soil areas of Sher-

brooke Township and the north-west part of Moulton.

Associated with market gardening, and included in the same category, are nurseries (Illus. 34 & 35). Both the nurseries in the Townships are located along Highway #3. One produces gladioli bulbs for production purposes while the other produces small shrubs and landscaping flowers and bushes. In association with this buckwheat is often grown and ploughed under to add organic material and minerals to the soil.

Orchards are also a common feature of the landscape though most are in a state of decadence and there is little commercial production except, as in the case of market garden produce, for the local market in Dunnville. All types of apple trees are found and apples go for the asking. Pears are another tree fruit though not as common as apples. The largest orchard is on Bird Road just north of Dunnville and consists of young pear and apple trees not yet ready for full production. However, many of the trees are already disease-ridden and it is doubtful whether the future crops will be abundant. Again there is a lack of any appreciable acreage in Sherbrooke Township and the north-west of Moulton Township including a large area of the level sand plain. No peach or plum orchards were observed on traverses through the area.

Rotation pasture is that pasture land which is used in other years for the production of row crops. It is common to find clovers and alfalfa present in this type of pasture, whereas they are never found in permanent pasture. Again it is difficult to differentiate between hay and improved pasture and indeed a field is usually used

as pasture after one or two harvests of hay have been taken (Illus 36). Thus the classification again depends upon the time of the survey. It can be seen from a comparison of Figures 4 and 10 that most of the rotation pasture is found on the level sand plain area around Dilts and Robinson Roads and on the clay plains of Cherbrooke and Moulton. Associated with this concentration of rotation pasture is a concentration of hay and grains, pointing to a general type farming with a slight emphasis in parts on milk and beef production. A few small areas of rotation pasture are found in the undulating sand plain area but most of the pasture in this district is permanent pasture, scrub, or woodland.

Permanent pasture is found distributed evenly over both Townships though little occurs between Dilts and Robinson Roads (Illus. 5). As may be judged from the illustration, such pasture often covers areas of swamp and poor drainage. Because of this the pasture provides very little food for the animals and they sometimes become undernourished. In this case the farmer throws corn stalks over the fence to supplement the diet. Often permanent pasture takes the form of open woodland and the pasturing of cattle in woodlots is a common practice unfortunately, since the cattle eat and trample the seedlings and destroy the lower branches of the larger trees (Illus. 37).

Scrub and idle land are most widespread on the poorly drained undulating sand plain (Illus. 38). This land, once cleared was found to entail too much labour for the return in profit. It therefore was left to return to its natural state and the scrub is presently covered with young hawthorn bushes and trees, the

quick-growing poplar, and often wild raspberry canes, forming a tangled mass of vegetation and creating an almost impenetrable undergrowth. This land is of little economic value and it is unfortunate that it was not reforested, for then it would have been of some value in the future. Besides the fact that there was too much labour involved in farming this land properly there were two other factors causing its present condition. The first, part-time farming, was probably a cause rather than a result of the abandonment of land. The second was poor drainage and infertility. A few other problems facing the farmer in this area of infertile soil and idle land are: lack of organic matter in the soil, either poor or excessive drainage or both, wind erosion of loose sandy soil (Illus. 39), and the inability to prepare the land early enough in the season due to the poor drainage. This last point may also be the reason why so much corn is grown on the undulating sand plain, since corn is not planted until late May or early June.

Though swamp land has little direct economic value to farmers and is not a form of agricultural land use in the strict sense of the phrase, it is placed here since it does have an influence on the areal relationships of other crops. The largest area of swamp in the two Townships is along the Grand River. The only use to which this area is put is duck hunting and in season the area attracts many men. These lands are owned by the T. H. & B. Railway and are waiting for future industrial development. There are several other areas of swamp, though all are of much lesser extent than the first. The feeder canals are both filled with swamp vegetation (Illus. 17) and Sweets Creek has a swampy bottomland in parts. In addition

large areas of woodland are poorly drained and swampy.

Woodland has a concentration on the sandy soils of the two Townships. The largest single area is in south-east Moulton, parts of which have been cleared in recent years and the muck soils, for much of this woodland is poorly drained, provide a fertile base for crop production when drained. The other large areas of woodland are primarily in the undulating sand plain and associated with large areas of scrub and idle land as well as with permanent pasture. These stands are mostly of young trees and represent second growth. At least two of these woodlots are being thinned and lumber is being removed, though it is doubtful that this has reached any great commercial proportions. Common species in the second growth include ash, red maple, chestnut, hawthorn, poplar, birch and oak. Few, if any, conifers are found in second growth.

Sherbrooke Township had a total of 897 acres of woodland in 1956. This included about 15 acres of reforestation of conifers, one of two such areas in the two townships, the other being in the west central part of Moulton. Today Moulton has less woodland because of clearing and the landscape is one of 'clean' looking farmland with well kept woodlots and few weeds. Sherbrooke and the level sand plain and undulating clay plain of Moulton can again be grouped together, this time in reference to the extent of the clearance of the land. For these are the two areas of maximum clearance of land and both show generally more intensive use of the land than other parts of the two Townships.

Specialized turkey raising is practiced on one farm on the undulating clay plain of Moulton (Illus. 40). Today, as is the present

custom, the farmer does not own the birds but just raises them for a large firm such as Swift's Meats or Canada Packers. The firm supplies the young chicks, the feed, and the transportation. The farmer supplies the buildings, heat, labour, some of the feed, and hay. When the birds are ready to be slaughtered the farmer is paid so much per pound weight of each bird. This type of business is run very efficiently by the firms concerned and is also advantageous to the farmer, who is relieved of the burden of making large capital investments in young chicks and in large quantities of feed, with the possibility of not being able to sell the birds at maturity. In this way a farmer can hope to make $7,000 per year for raising 10,000 birds per year. This same system is also prevalent in modern chicken production.

Another animal kept on many farms is the pig or hog. Presently, with good hog prices, there has been an increase in the number of hogs kept since they may be easily sold at any time and require little supervision. In the five years between 1951 and 1956 the number of hogs in Sherbrooke rose from 408 to 591, an increase of almost fifty percent. In Moulton the increase was not so great but the number rose from 1,698 in 1951 to 1,878 in 1956.

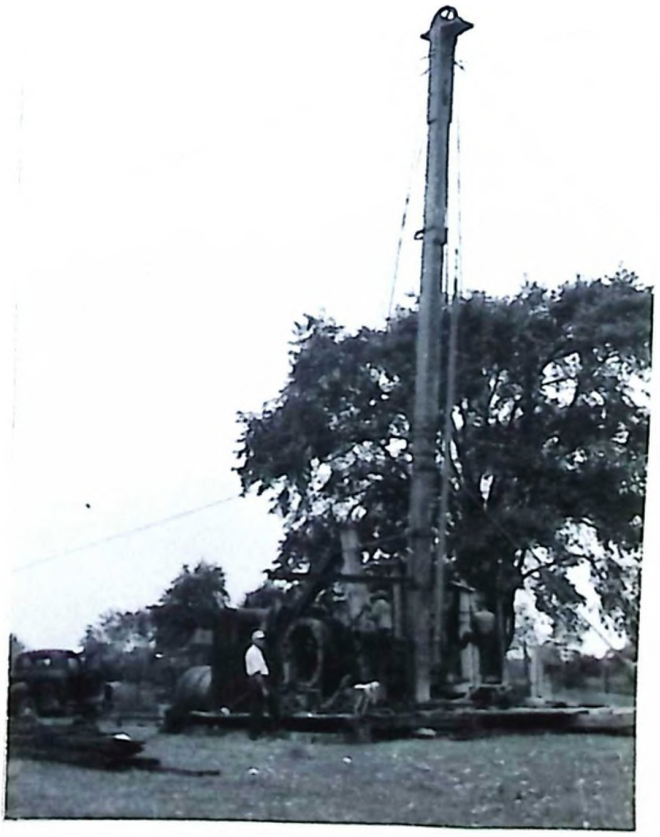
Illus. 16 Old canal lock at Port Maitland, showing solid stone construction and present condition of canal. In centre background is the new fertiliser plant being built and to the right of it the coal stock piles of the Canada Coal Co. beside the Grand River.

Illus. 17 The junction of the feeder canals at Stromness showing what was once a large area of water with ample depth for barges. Note its present swampy nature. In summer it is choked with rushes and water lilies.

Illus. 18 The only quarry in the area of study. It is found in the Bertie-Akron formation just north-west of Stromness. Note thin platy structure of strata. The material from this quarry was used in Port Maitland for road construction.

Illus. 19 A large sand pit in Moulton. Sand is excavated from sand hills to the level of the surrounding area. Township road runs right through the middle (between double fence). Size of pit is given by car. The material is used for road surfacing.

Illus. 20 A gas well on Mohawk Point. The machinery is used to pump water from the well. Behind is the chert ridge (the top is just visible through the trees) of one of the moraine hills.



Illus. 21 A gas drilling rig in operation, a common sight in Moulton. Many farmers own their own wells and thus have free fuel for heating and cooking as well as receiving a royalty from a gas company for gas production.

Illus. 22 A typical fishing boat returning through heavy swells between the concrete breakwaters at Port Maitland. The fishing industry employs several part-time farmers during the various seasons.

Illus. 23 Evidence of past industry is the wagon factory in Newbanks. Note wheel leaning against the rear wall of the building.

Illus. 24 The old grist mill at Stromness. It is located on the side of the canal (extreme left). Here it was strategically located to allow for loading and unloading grain directly and thus reduce costs.

THE SHORELINES OF MOULTON AND SHERBROOKE TOWNSHIPS

(showing associated road patterns, recreational facilities, and history of cottage development)

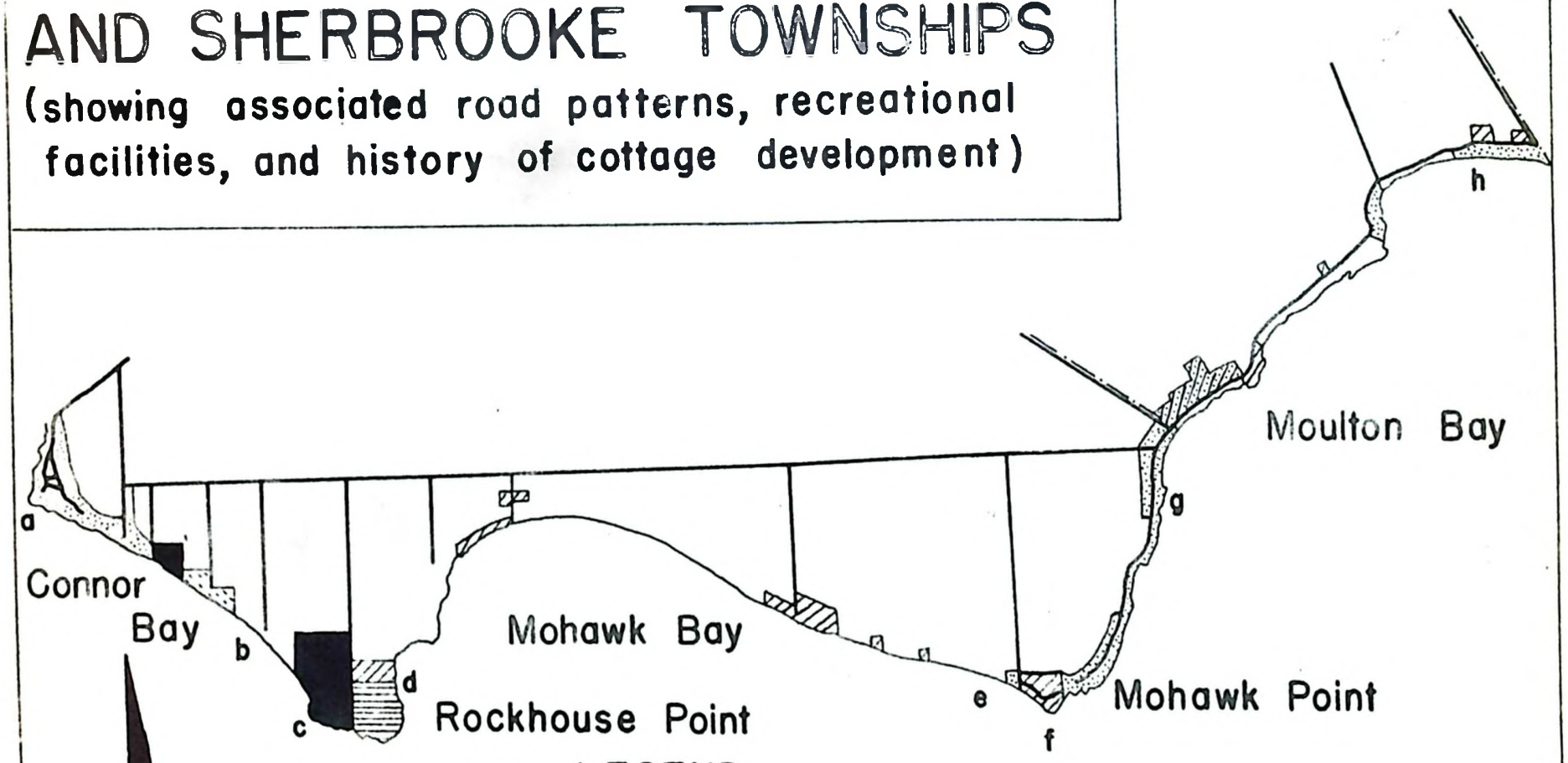


FIGURE 9

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Illus. 25 Pebble beach, looking east, built up several feet by wave action in the deep Moulton Bay. Also showing is the cottage development along the shore of both Townships and Mohawk Point (arrow).

Illus. 26 Two cottage types in Moulton. The one to the left is old and "patchy" looking while the one to the right is a new prefabricated type painted in bright colours. View is from the beach (south). Note road between cottages and beach.

Illus. 27 Algae, the scourge of Lake Erie, shown here on Mohawk Point below the high storm beach to left. The light grey algae are dry while the dark grey algae near the water's edge are wet. Swimming is made unbearable by the smell and feel of the algae.

Illus. 28 Seven new cottages above the cliff in Sherbrooke. As is evident from the sign these are 'Sunnibilt' prefabricated cottages.

Illus. 29 The same cottages as in Illustration 28, rear view. Note all cottages face towards lake. The cliff is slowly receding by slumping. Note width of beach below cliff and vegetation hanging down face of cliff. This was originally on level land above the receding cliff.

Illus. 30 The shore cliff between "c" and "d". This cliff stretches in a wide arc between Mohawk and Rockhouse Points. Note heavy clay constitution of the cliff with only a few small stones present. Height of cliff at this point is about thirty feet.

Illus. 31 Another view of the cliff, this time from the beach. Note narrow pebbly beach with large blocks of earth which have calved off from the almost vertical cliff face. Note fractures in the cliff itself. The steepness of cliff is due to the cohesive qualities of the small clay particles of the till.

Illus. 32 A view of the level sand plain on Caister loam soil showing wide expanses of hay and pasture. In right foreground is part of a deep drainage ditch. Note milk cows at arrow.

Illus. 33 Two major crops of the townships, corn and tomatoes growing on sandy soils.

Illus. 34 Gladioli being grown along highway #3. Note sand dune in background upon which an orchard has been planted. The gladioli are grown for their bulbs rather than for their flowers.

Illus. 35 Myers Rose Gardens on highway 15 showing types of cultivation carried on. In foreground are rose bushes and to left evergreen shrubs.

Illus. 36 Pasture on a well drained section of the undulating sand plain. Note sand dune and associated orchard in background.

Illus. 37 Pastured woodlot. Note lack of seedlings and even height of the bottom branches of the trees where cattle have been eating them.

Illus. 38 Shacks like this surrounded by idle land are a common sight in Moulton Township. This one has been closed by health authorities.

Illus. 39 A view on the undulating sand plain showing the infertile sand hills (light coloured areas) which should be left wooded.

Illus. 40 Some of the thousands of turkeys raised annually on the only large scale turkey farm in Houlton.

CHAPTER FOUR--DUNNVILLE

1. Historical Geography

Dunnville was not incorporated as a village until 1860, but its first building was constructed in 1825 by Salmon Diner, facing the Grand River on the east bank. After 1825, with the building of the Welland Canal feeder by W. H. Merritt, Dunnville slowly began to grow and by 1835 there were four hundred and five inhabitants. The feeder canal, which was to have a great influence on the economic life of Dunnville, was officially finished on September 28, 1829, when water was released from the river above the weir into the canal. Navigation was thus possible from the Grand River through the Welland Canal to Lake Ontario, a great engineering and economic achievement.

Dunnville was now strategically located at the point where the canal and its locks met the Grand River at a toll bridge. In order to encourage industry and thereby increase its own activity the builders of the Welland Canal, the Welland Canal Company, offered everlasting exemption from rent for water to the first mill built and ready to operate after the opening of the canal. As a result of this offer a grist mill was built in Dunnville by Oliver Phelps and soon after Andrew Thompson built a saw mill. The latter was well placed since it could cut the logs which were floated down the Grand River into lumber and then trans-ship them in their less bulky state onto the canal. Two other grist mills, a saw mill, and a carding mill, the beginnings of Dunnville's presently important textile industry, were established between the years 1839 and 1836.

By 1850 Dunnville was ".... a place of considerable business and

large quantities of produce coming down the Grand River are shipped from it. Goods intended for places on the upper river are generally re-shipped here into smaller vessels, or rather those drawing less water. Dunnville contains a population of about one thousand, three grist mills to one of which a plaster mill is attached. Four saw mills, a foundry, woollen factory, brewery, distillery, a tannery, two churches, Episcopal and Presbyterian, post office, collector of canal tolls and collector of customs."[1] This description shows how important a centre Dunnville was becoming due to its location on a transportation route at a point of trans-shipment. The following is the list of exports from the port of Dunnville for the year 1850 to both foreign and British ports:

Figure 11

Exports from the Port of Dunnville in the year 1850

Exports	Foreign Ports	British Ports
Flour	12,910 bbls.	17,620 bbls.
Wheat	51,948 bu.	176,268 bu.
Oats, Barley, etc.	10,960 bu.	176,268 bu.
Oatmeal	200 bbls.	70 bbls.
Cypsum, unground	1,915 tons	324 tons
Square timber, in vessels	--	8,000 cu. ft.
Square timber, in rafts	88,000 cu. ft.	469,000 cu. ft.
Platted and round timber	31,000 ft.	2,000 ft.
Pine lumber	13,955,000 ft.	2,805,000 ft.
Pine Staves	--	31,000
Pipe Staves	--	31,000
Barrel Staves	10,000	170,000

[1] From 1950 Centennial Brochure of Dunnville.

West India Staves	18,000	361,000
Shingles	1,340 M	178 M
Saw logs	1,340	2,845
Lath, Hoop, and Fence Pickets	1,400 cu. ft.	4,080 cu. ft.
Empty flour barrels	--	4,049
Cordwood	--	338 cords
Potash	39 tons	--
Limestone	70 tons	--

Certain contrasts and comparisons may be drawn from this list.[1] It will be noticed that all but three of the commodities were products of the soil and there was no export of finished goods; also, that thirteen of the items were different types of slightly processed lumber. These factors show that the economy was still one of the frontier type, exporting the lumber cleared from the land as well as mineral products required in more heavily populated areas. The large exports of wheat, a total of 228,216 bushels and 30,535 barrels, were characteristic of this pioneer farming period, and it will be noticed that approximately 4/5 of the wheat crop was sent to Britain. With the other grains the trend was similar, Britain taking 94%, 176, 268 bushels, of the exported crop.

The export of square timber to Britain also far exceeded that to foreign ports (mainly American). This was a period of intensive shipbuilding and maritime expansion in England: when her own forest resources began to dwindle due to increasing industrialization and shipbuilding, she placed great reliance on imports of Canadian timber.

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[1] Ibid.

These were prosperous days for Dunnville but the extravagant cutting of timber and the building of the Grand Trunk Railway spelled doom for the canal system, the centre of Dunnville's activity. Gradually it fell into disuse until, in 1881, it was abandoned since it was no longer required for its original purpose, that of supplying water to the Welland Canal which had just recently been enlarged.

After the end of this era Dunnville lost its importance as a commercial trading centre but still existed as a milling and marketing centre for the surrounding district. Small industries such as flour milling, fabric making and machine shop industries continued to provide employment for the population, which dwindled after the closing of the canal but which, in the last decade of the century, increased to 2,105 in 1901, which was the highest population to date, (Fig. 12) and in 1900 Dunnville was incorporated as a town.

The period between 1896 and 1903 saw the establishment of many of the industries and commercial enterprises so important to the present economy of Dunnville: The Dunnville Chronicle (1899), Shirton Lumber Supply (1896), Dominion Fabrics Limited (1899), Canadian Canners (1900), Monarch Knitting Company (1903), and the large Victoria Hotel (1903). These businesses were the first of major size to locate in Dunnville and have been of special significance ever since. For example, the early establishment of the knitting mills has induced other firms which require similar skills in their operations to locate here. These firms include John E. Frooks (1962), fish net manufacturers, and the National Weaving Company (1940), fibre glass weavers.

Dunnville is now a town of 5,000 people and is the commercial

and industrial centre of Haldimand, essentially an agricultural County. It shares the commerce of the region with Welland and Port Colborne to the east; with Grimsby and Hamilton to the north; and with several small centres, namely Caledonia, Cayuga, Hagersville, Jarvis, and Port Dover to the west.

2. Commerce

Dunnville, a town of 5,019 people, is essentially an industrial centre, the majority of whose workers, and therefore the majority of whose population, depends upon industry for its living. However, Dunnville is an important commercial centre for its agricultural umland and has most types of retail shops, some offering specialty wares such as jewellry, fabrics, and china. The town has three banks: the Royal Bank, the Bank of Commerce, and the Toronto-Dominion Bank. Little or no wholesale business is carried on. Considering these facts and using a classification of urban centres derived by Christaller, Dunnville would be classified as a Third Order Centre. It is between the Second Order Centre, which has some wholesale business, and the Fourth Order Centre, which has significant gaps in its retail trade and only one bank.

The commercial centre of Dunnville has moved since its founding. Originally, in the early days of the canal and river transport, the commercial area was near the locks and bridge and spread both East and West along the river bank on Main Street. With the degeneration of the river-canal system and the advent of the railway the main commercial district moved from the river toward the railway station. The present pattern is a direct result of this movement (Fig. 13) Chestnut and Queen Streets are presently the most prominent

business streets and the three banks in Dunnville are located at their intersection. In the last fifty years there has been a growth of this commercial centre along Broad Street, which is the route taken by highway #3 through the town, involving particularly such establishments as rest homes, gasoline stations, and restaurants. However, this growth is relatively minor and there is no continuity of commercial establishments (Fig. 13).

Dunnville offers most types of goods for sale. The only gap apparent in its retail trade is the lack of a camera store but the drug stores offer films and cameras as a sideline. There is an emphasis on hardware and souvenirs, catering to both the farmers and tourists. Many of the hardware stores have large assortments of chinaware. Once again the fact that Dunnville is situated on the fast route between Buffalo and Detroit and is about three hours drive from Buffalo, a point to be significant. After three hours driving the vactioner is ready to stop to eat and Dunnville caters to this need. It also offers fine quality English woollen blankets and clothing, eagerly sought after by Americans. Two large hotels and several over-night guest homes also do a good business during the summer months.

Another basic retail commercial item is food. Dunnville is the shopping centre for a relatively large area (Fig. 14), since there is no other major centre for a distance of twenty miles. Until recently food was bought in the several small grocery and meat stores, but presently much business is being done by a new supermarket. Another place where food is sold is the open air market. In Dunnville market days are Tuesdays and Saturdays when fresh

produce is brought in from the surrounding area to be sold by the farmer. The only food processing done in Dunnville is the making of milk products by the two dairies and the canning of fruits and vegetables by Grand Valley Canners.

Dunnville has all the facilities required by the farmers when they "go to town." There are several lawyers, doctors, and dentists. A brief survey of the commercial core discloses mail order offices for Eaton's of Canada and Simpson-Sears, three banks and a finance company, a sewing centre, and a fabric shop. There are also several small furniture, clothing, and department stores. As in most smaller centres, though, the choice of goods is limited by the buying power of the local population. And the wages of those employed in Dunnville are low (the highest is about $1.65 per hour) when compared to wage rates in larger centres such as Toronto or Hamilton. As a result there is a constant movement to and from Welland and Hamilton which offer a greater variety of goods which sometimes cost less than the lines offered by the small local businessman.

3. Industry

The industries of Dunnville are all light industries and there is an emphasis on the production of woven materials, be they cotton, wool, fibre glass or rope. The newest industry is Sylvania Electric which located in Dunnville in 1953. The oldest prominent industry is Dominion Fabrics which located here in 1899. A list of all the major industries, their major products, and date of establishment follows. There are several other minor industries in Dunnville but their small employment and production are relatively insignificant.

*Dominion Fabrics Ltd.	cotton goods	1899
*Monarch Knitting Company	woollen and cotton goods	1905
*Lundy Steel Products	fire escapes and fences	1919
*John S. Brooks Ltd.	fishing nets	1932
Grand Valley Canners	canned goods	1928
*Sylvania Electric Ltd.	electronic equipment	1953
National Weaving Co.	fibre glass materials	1940

*Industries interviewed, see Appendices

The concentration of industry lies along the tracks of the old Grand Trunk Railway, which was the only railway until 1916, when the Toronto, Hamilton and Buffalo railway became active in the area. Here are found Lundy Steel Products (Illus. 41), Dominion Fabrics Ltd., Shirton Lumber Supply (Illus. 42), oil tanks, a large dairy and the old Aylmer Canning Factory which is presently closing down. Farther east along the tracks is the Grand Valley Canners' factory. John S. Brooks and Sylvania Electric (Illus. 43, 44), both built beside highway 3, are within a few yards of the T. H. and B. line and Sylvania Electric hopes to be able to build a spur line to its factory in the future. The only industry completely isolated from the railway is the Monarch Knitting Mill, located near the river on Main Street.

According to its Board of Trade, Dunnville is located within 150 miles of one-half of the industries in Canada, though it is a little "off-centre." Also within this area is one-third of the nation's buying power. However, most of the industry in Dunnville was established by local financing and the only major company to locate in Dunnville from an outside source is Sylvania Electric Ltd. So the advantages of being so close to raw materials and mar-

kets cannot be too great when compared to the disadvantages previously noted above.

The labour supply in Dunnville is used almost to capacity. There are just as many, if not more, jobs for women as for men in the factories. The area of influence of Dunnville (Fig. 14) contains a population of some 20,000 people and many of these work in the town during the day and farm in the evening and on week ends. In April 1958 the average wage of a skilled male worker in the textile industry was $1.29 per hour, of an unskilled worker .85¢ per hour. Female skilled workers were paid $1.10 per hour and unskilled workers, .72¢ per hour. The wages of skilled tradesmen varied between $1.25 and $1.50 per hour.

The work in two of the larger factories is, to some extent, seasonal. Lundy Steel Products reduces its staff by one-third during the winter and Sylvania Electric reduces its staff by two-thirds. The chief reason for such seasonal variation is the time of sale of the products. Lundy Steel Products produce fire escapes, wire fencing and reinforcing for concrete. These are in greatest demand during the summer and therefore this is their busiest season. Sylvania Electric assembles television sets and some radios from parts made elsewhere, in Canada if possible. The period of greatest sales is in late summer and autumn and there is a very sharp decline near Christmas, and the busiest period of assemblage is therefore during the summer and early autumn. John G. Brooks, fish net manufacturers, have three peak periods, each at about the time of seasonal variation of catch in the Great Lakes and Prairie Lakes, which require different types of netting. These peak periods occur in January, June, and

September and there is therefore relatively steady employment, though some lay-offs do occur. Dominion Fabrics offers steady, year-round employment, since there is a constant demand for cotton goods, terry towels, facecloths, drapes, and bedspreads, though production has been seriously affected by Asiatic and American dumping on the market of cheap cotton products and competition is thus very great.

Nearly all the goods produced in Dunnville are sold in Canada, and a large percentage of them are sold in Ontario and Quebec, the two chief distribution points being Toronto and Montreal. For most points in Ontario truck transportation is used, but for Quebec, which means Montreal, goods are sent by rail. This city is the distribution centre for both Quebec and the Maritimes. A smaller percentage of goods, not at all a negligible one, is sent to the West. The cities of Winnipeg and Edmonton are the chief markets (7% of production) for John S. Brooks, for much fresh water fishing is carried on in this area. Smaller amounts of Dunnville's production between 5% and 25% by value, are sent West by the other firms.

4. Land Use and Functional Zones (Fig. 13)

(i) Commercial

The main commercial section in Dunnville is in the area surrounding the intersection of Chestnut Street with Broad and Queen Streets (Illus. 45). However, there are other smaller areas of commercial activity. One is at the western entrance to the town along Highway 3 and the other is where this highway leaves the town to the east. In the latter area, the commercial establishments are just across the road from the town limits but must be

considered in Dunnville's economy (Figs. 10 & 13). There are also numerous gasoline stations and small stores along this main road through the town proper.

The commercial district is presently expanding along Broad Street, highway #3, in an easterly direction. On the banks of the Grand River is another commercial centre mostly concerned with utilities and servicing. These include boat and auto repairing, grain milling, the water pumping station, and the hydro power station. Near the middle of the business district is a large municipal parking lot.

Above or behind many of the commercial establishments are apartments and living quarters. There has been no distinction made between this variant and a totally commercial property in figure 13 since only the principle land use was mapped.

(ii) Industrial

The location of industry has already been described in the previous section on the industry in Dunnville. However, it could be pointed out that there are two concentrations, one near the railway station, the other on highway #3 near the eastern town limit. They are located close to the railway and highway. The present location of industry developed after the coming of the railway but previous to this, the main industrial centre was along the canal where water power was available. Industries such as saw and grist mills were common.

(iii) Residential

This category is broken down into four major sub-divisions (Fig. 13): first class old homes, first class new homes, second

class homes, and third class homes. All but three of the first class old homes lie to the west of Chestnut Street and south of the Canadian National Railway tracks. The majority of these homes are well over forty years old, predating the railway and the resultant shift of the centre of the town further east. Several have very spacious grounds (Illus. 46). Of those close to the business section, several are being used by doctors and dentists as homes and offices.

The first class new homes are all found to the north of the railway tracks and most are in the form of new residential subdivisions (Illus. 47). They are mostly medium cost housing units of varying styles and pleasing external appearance. The values vary upwards of $12,500 for the ones which contain six or seven rooms apiece. They are built of either brick or clapboard and the greatest concentration of them is found in the Elizabeth Crescent area.

They have been developed on land close to the actual limit of building and not on land remote from other development, since an attempt has been made to "fill in the gaps" between small suburban developments. Other isolated new homes have been built north of the tracks but these, in classification, have been placed with the second class homes since they were not contiguous with other newly built houses.

The majority of Dunnville's houses fall into the second class category (Fig. 13). This includes newly built brick homes as described above, older frame houses in good repair, and brick houses of similar age but smaller than the first class old homes. There

is no special distribution of second class housing except for its absence to the south of the T. H. & B. Railway terminus in the south-east corner of the town. This category could again be subdivided upon the basis of the criteria given above and also upon quality of maintenance. However, a breakdown such as this would entail too detailed a survey and the general distribution of the overall housing type would also be lost (Illus. 48, 49).

The fourth category is the third class housing. This includes small frame buildings with only two or three rooms, shacks, and other small living quarters in a rundown condition. This type has, in general, a peripheral distribution but there are certain evident concentrations (Fig. 13). Firstly there is a concentration immediately south of the C. N. R. tracks in the west part of Dunnville. This is one of the poorest areas (Illus. 51), with junk piled around the homes, which themselves stand in an open field. From this western centre this poor type of housing extends north in spotty distribution along George Street. This is the only road in Dunnville along which homes are widely spaced. Slightly to the west of George Street is a small development of hovels. In all, there are five of these shacks, one of which measures no more than twelve feet by five feet, and beside which is a two car garage (Illus. 52).

The second concentration of third class homes is in the south-east, to the south of the feeder canal (Fig. 13). This is associated with the business centre dealing in services and repairs. These homes are often two storied, old, frame houses situated alongside the swamp of the Grand River.

Both of the other concentrations of third class housing occur

in proximity to industrial sites. One is near the Lundy Steel Products factory, north of the C. N. R. tracks, the other is in the extreme east of the town near John S. Brooks and Sylvania Electric. These are of better quality than those near the river, most of them being unpainted two-storey frame houses. In some areas of third class housing sidewalks are non-existent.

The town limits of Dunnville enclose large areas of open land. Much of this land is being used for agriculture but some remains unused pending urban expansion. Also included are many acres of useless swamp along most of the bank of the Grand River.

Other minor land uses shown on Figure 13 include: administration buildings, churches, cemeteries, and schools. The administration buildings include the Post Office and Town Hall which are located in the business district. The churches show a slight concentration in the west-south central area of the town, those located there representing the principal Christian sects. The older Public School in Dunnville is located near the railway station and a newer one has been built near the recent subdivisions around Elizabeth Crescent. The Dunnville high school is located beside the park on highway #5 near the western entrance. A hospital and the Haldimand County Home for the Aged are also located in the south-west. The concentration of these public and quasi-public buildings and also the majority of the first class old homes shows how the nucleus of the town still remains near the site of original settlement even though much new development has occured in the twentieth century.

5. <u>The future</u>

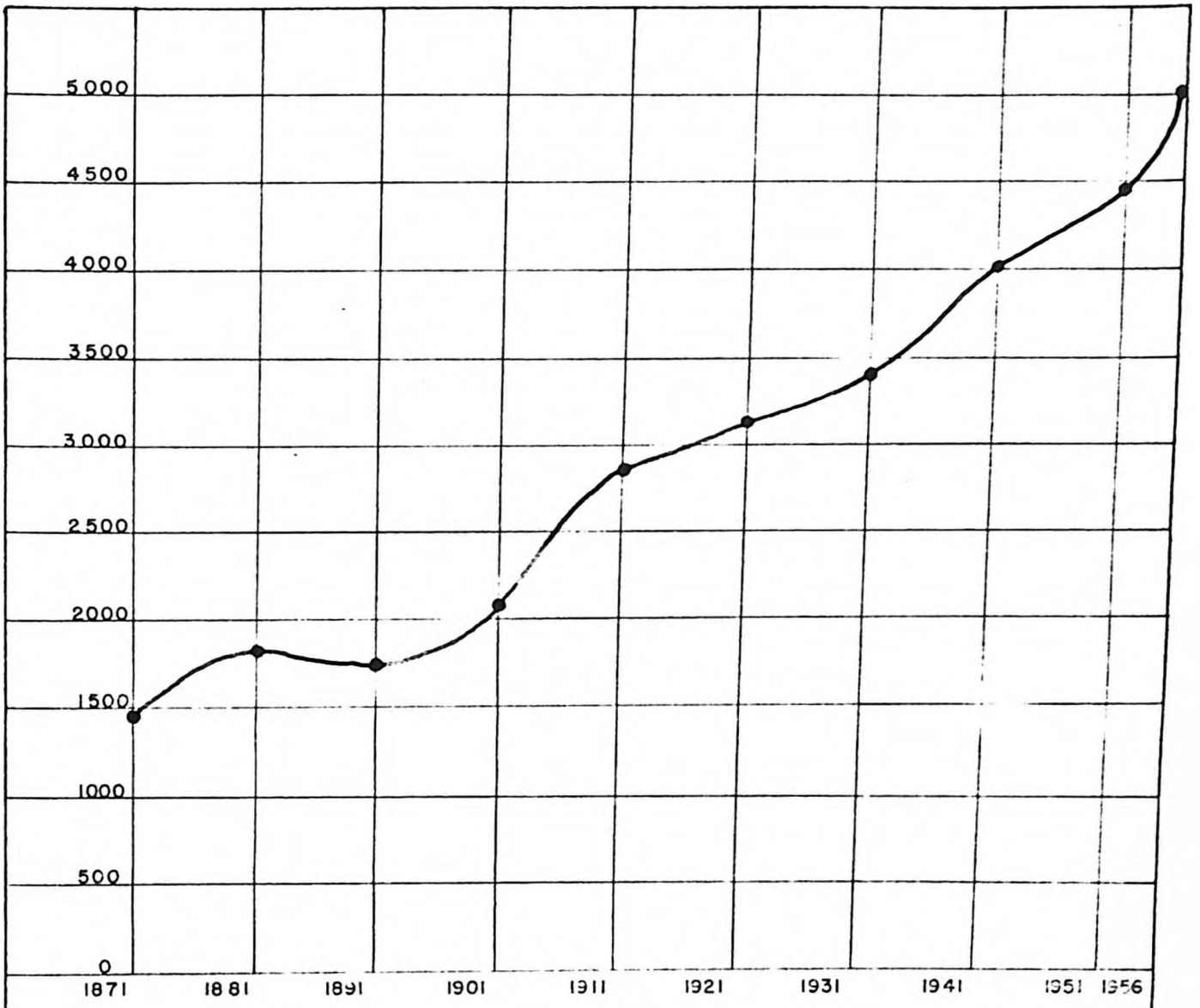
The future of Dunnville is dependent upon whether the possibili-

ties inherent in the mouth of the Grand River as a harbour are utilized by industries searching for new locations. In turn this is dependent on the aggressiveness of a few men, for today the cycle of industrial and commercial growth must be strenuously started. Once a few industries are willing to pioneer until ac vice facilities are improved then expansion will commence as more industries move in.

Already Dunnville is well supplied by rail transport though presently there is no passenger service offered. It is also strategically located along the shortest route between two major American cities, Buffalo and Detroit. To these advantages must be added the fact that Dunnville lies only five miles from one of the best harbours along the north shore of Lake Erie and has had for many years a labour supply, both male and female, skilled in the use of textile machines.

But if Dunnville has these advantages why has it not already developed into a large urban centre? There are certain disadvantages to the growth of Dunnville, which are common to many other small towns. These include: the lack of the true urban atmosphere required by many skilled workers and technicians (many skilled workers refuse to work in small towns because they prefer large centres.) The poor passenger service given by bus and rail companies (no passenger train ever stops in Dunnville and only two buses a day leave the town.) Higher railway freight rates from smaller centres (the greater volume of trade moving in and out of the larger centres allows the railways to reduce their freight rates from these centres but this does not apply to small centres such as Dunnville). And

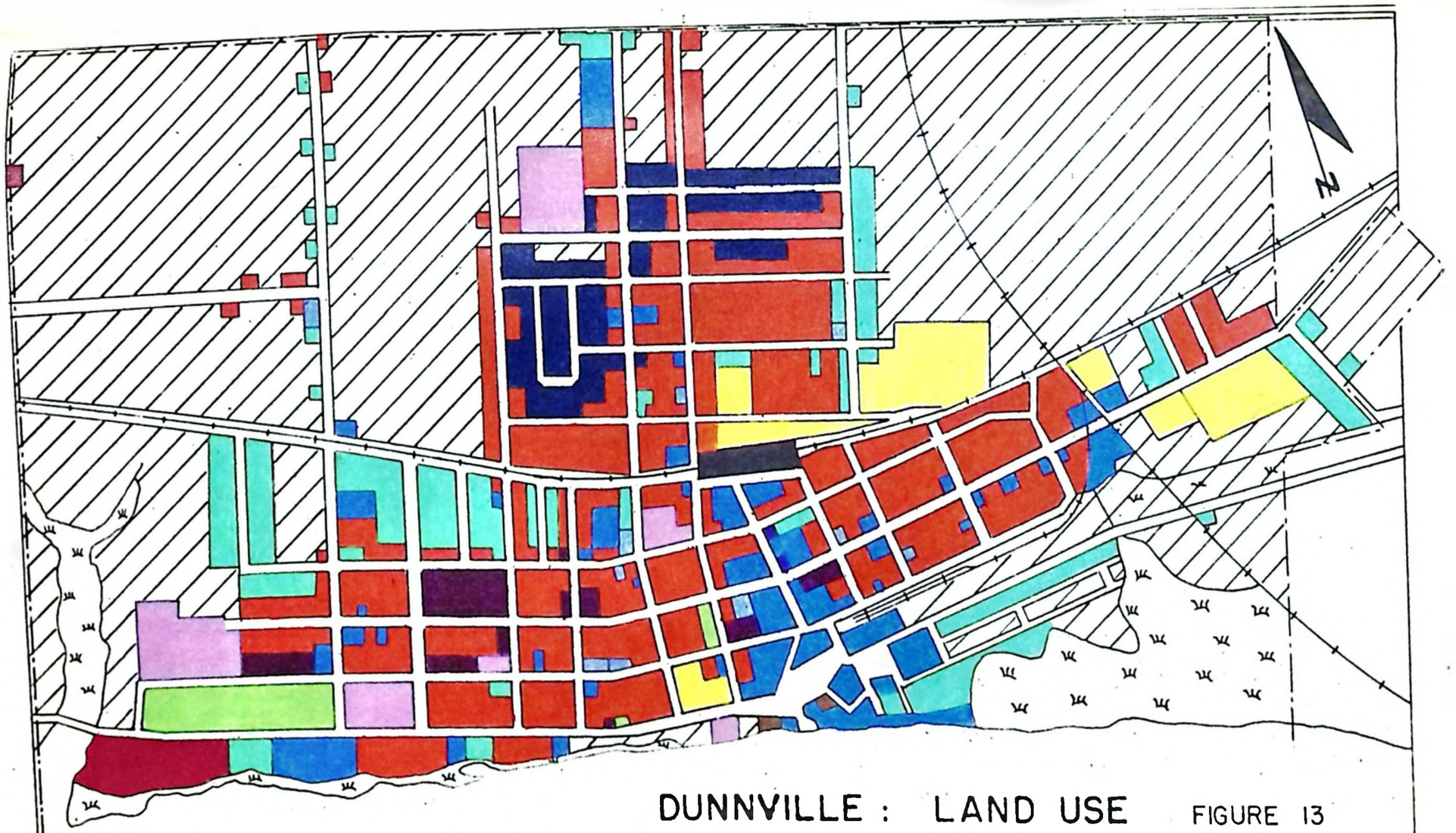
lastly, the lack of industrial momentum, a factor which has increased in importance in the last few years. If Dunnville can overcome these obstacles, some of which are beyond its control, it may become the large industrial city envisaged by its Industrial Commission.



POPULATION GRAPH FOR THE TOWN OF DUNNVILLE

FIGURE 12

PETER L. HILL 1959



DUNNVILLE : LAND USE FIGURE 13

LEGEND

SCALE:- approx. 1:1400

- first class residential
- second class residential
- third class residential
- new subdivisions
- open ground
- institutional (schools, hospitals, etc.)
- railway and station
- facilities (water, hydro, etc.)
- administration
- commercial
- industrial
- church
- cemetery
- park
- swamp

Peter L. Hill 1958

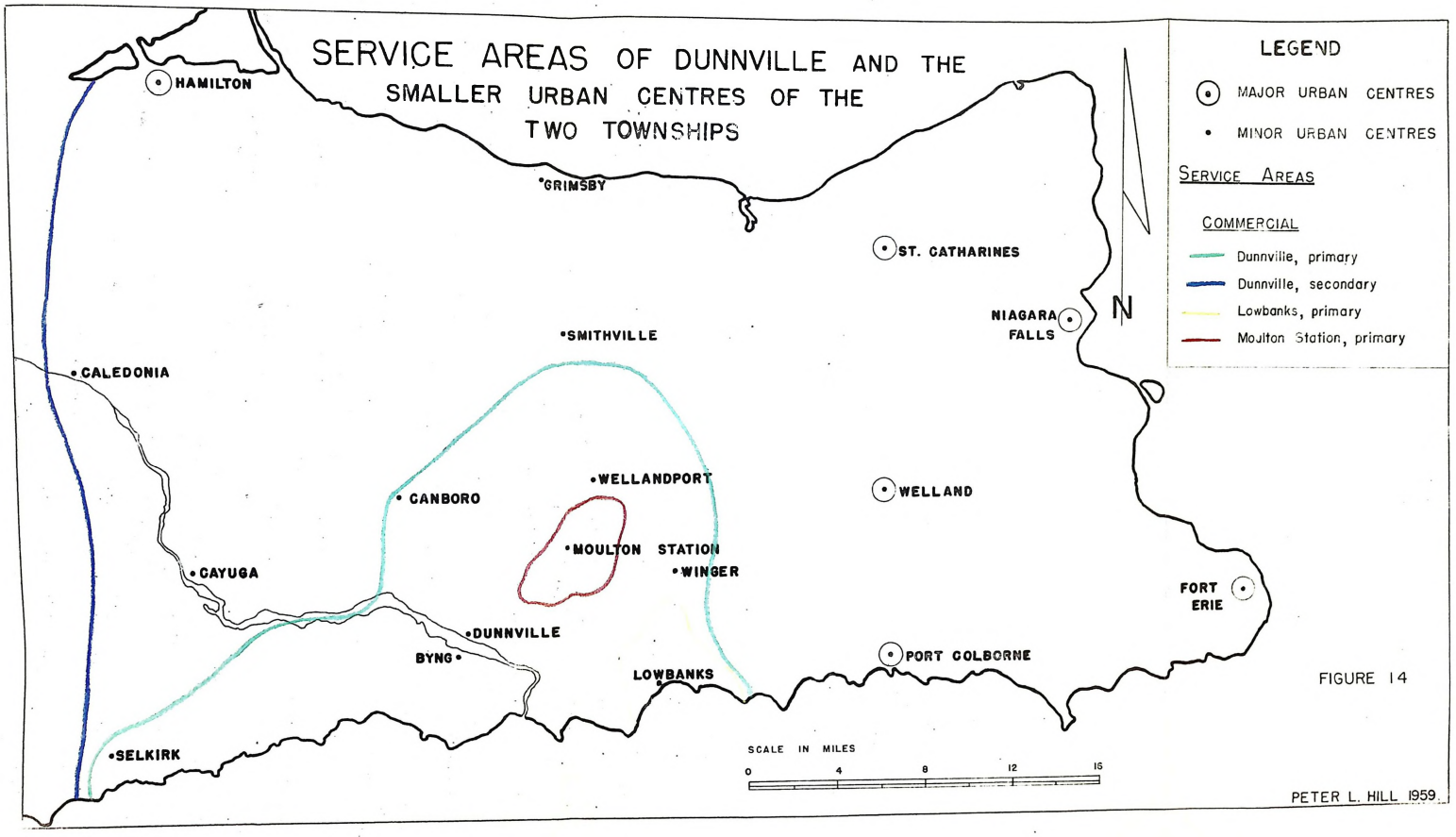
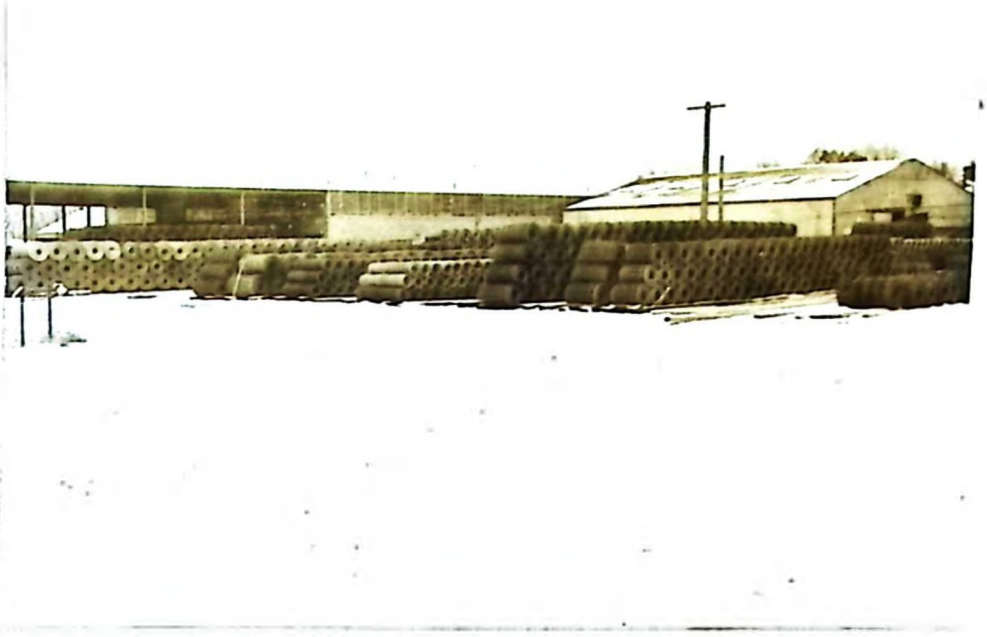

SERVICE AREAS OF DUNNVILLE AND THE SMALLER URBAN CENTRES OF THE TWO TOWNSHIPS
HAMILTON
GRIMSBY
ST. CATHARINES
NIAGARA FALLS
N
SMITHVILLE
CALEDONIA
WELLANDPORT
CANBORO
WELLAND
MOULTON STATION
WINGER
CAYUGA
FORT ERIE
DUNNVILLE
BYNG
PORT COLBORNE
LOWBANKS
SELKIRK
SCALE IN MILES
0 4 8 12 16
LEGEND
MAJOR URBAN CENTRES
MINOR URBAN CENTRES
SERVICE AREAS
COMMERCIAL
Dunnville, primary
Dunnville, secondary
Lowbanks, primary
Moulton Station, primary
PETER L. HILL 1959

FIGURE 14



Illus. 41 A rear view of Lundy Steel Products showing stock piles of fencing and reinforcing materials.

Illus. 42 The C. N. R. station and its environs. At left is a grain elevator, in left rear is water tank of Dominion Fabrics, in middle distance are oil storage tanks, and in far distance is Shirton Lumber Supplies.

Illus. 43 John S. Brooks, fish net manufacturer. The road in the foreground is highway #3 just before it leaves Dunnville on the east.

Illus. 44 Sylvania Electric, a large assembly plant for television and radio receivers. This is Dunnville's newest industry.

Illus. 45 The commercial core of Dunnville. View is looking south on Chestnut St. to its junction with Queen St. Note the large hotel, two variety stores, and the Toronto-Dominion Bank on the left.

Illus. 46 First class house. Old homes such as these, surrounded by spacious grounds, remain as symbols of Dunnville's past greatness.

Illus. 47 The new housing development around Elizabeth Crescent. Note the lack of overhead wires, giving the area an open appearance; the paved road and sidewalk on one side; and small, compact, mostly frame homes.

Illus. 48 A new first class brick home located in a second class area and therefore classified as such.

Illus. 49 Typical second class homes. Note new home being built to fill in empty lot on the extreme right.

Illus. 50 Small, compact, third class homes of better quality than that in illustration 51 and which are well cared for.

Illus. 51 The correct type of third class housing found in Dunnville. Note the trash scattered around the home: old tires, large tree trunks, and a car body; also the lack of a sidewalk and the attempt to grow corn in the foreground.

Illus. 52 A shack in "shack-town." Note the double garage, many times bigger than the shack and being in much better condition.

CHAPTER FIVE--SUMMARY AND CONCLUSIONS

In general, it can be said that Moulton Township is not too well favoured for agriculture. The soils are sandy for the most part and are underlain by impermeable clays. The latter factor impedes drainage and the sandy soil, poor in organic material, is further impoverished by slow drainage. The land on the clay plain to the north-west, however, is not like this and is the best agricultural land of the Township. There is a large amount of idle scrub land which may either increase or decrease in acreage depending on whether part-time farming continues or whether more interest in and care of the land are shown.

Some of the soils are excellent for certain crops if properly drained and fertilised. An expansion of market gardening may be foreseen, if further European immigration is forthcoming, for this would bring people who love and understand their land. Certain crops stand out as being important to the Township: corn, small grains, small fruits and vegetables, and hay. On the poorly drained areas pasture is the most common use and will probably remain so for some time in the future.

The main agricultural problem of the Township is drainage. Any type of drainage scheme would be prohibitive in cost, due to the soil conditions and because the level of the land is so close to that of the river and lake levels. Any ditching or tiling would likely be useless because of this. One has only to look at the drainage divide of the Holland and Grand rivers (Fig. 5) to see that it is very low in all places and one drainage channel even drains toward both rivers! Some clearing and drainage work, however,

taken place in the muck soils area just south of the feeder canal. This land is rich with organic material and, though still a little damp, produces high yields. On a large tract of land, somewhat better drained, which had been cleared from the bush in the south-east of Moulton, it was reported that the farmer had grown a crop of wheat which yielded seventy-five bushels an acre.

The shoreline of the Township is favourable as a resort area and many summer cottages have been built along it. The beach is largely cobblestones but there is some sandy beach in the extreme east. No rock outcrops occur along this shore and Moulton Bay is one of the deepest bays in the area.

There are two small urban centres in the Township, Lowbanks and Moulton Station. Neither of these is of too great importance except that during the summer Lowbanks has large numbers of vacationers using its Post Office and general store. Some urban expansion can be seen along Highway #3 just as it leaves Dunnville and there are many homes just outside the town boundary. Several of these are new homes.

A prosperous future for the Township depends on three factors: can the land be drained or will extensive farming methods to produce milk and beef be used; emphasis may be placed on the intensive cultivation of land for the production of high value crops such as fruits and vegetables; the opening of the swampy Grand River bottomland to provide an industrial base to the economy.

This last probability appears to be the most desirable, yet it would be the most difficult and costly to attain. If the proper methods are used to encourage industries to locate here and the

proper services are given to them, it may be possible to develop an industrial centre. There are many disadvantages to location here, though, the main one being the necessity of filling in the swamp-lands in order to erect a factory. Other factors, such as the ease of supplying rail transport and the possibility of having a waterfront location with a depth of a little more than thirty feet, are favourable. However, the silting up of the river may be a problem.

Sherbrooke Township is more favoured for agriculture than is Moulton. The majority of its soils are clays and clay loams, providing an excellent base for general and mixed farming. Drainage is poor in the northern part of the township where the clay plain is level and low. However, there is little idle land except perhaps where the T. H. and B. Railway is holding land for industrial purposes north of the feeder canal and also near Port Maitland. All crops grow well on the land and most general crops are grown. The raising of beef cattle and hogs is increasing in popularity among farmers.

In recent years there has been a large development of summer cottages along the shore line which has poor beaches and often a high, quickly eroding cliff. Early development took place in Port Maitland many years ago, but now most of the cottages are in relatively poor repair.

Though the Township has over one hundred cottages it has but one industry, the Dominion Fertiliser Company. This factory employs about thirty-five men and is the first of what is hoped to be several factories using the harbor facilities.

Stromness is the only urban centre in the Township and presently serves very little economic purpose. The height of its importance was in the days of the feeder canal when it was a bustling commercial and industrial centre.

Sherbrooke should be able to continue its record of achievement in agriculture and will always be a prosperous farming area if present methods of management are maintained. Unlike Moulton it has few problems in respect to agriculture and will be able to continue whether the industrial sites develop or not. However, Sherbrooke is an ambitious Township, with many young farmers, something uncommon in many areas of Southern Ontario, and is not averse to industry and even welcomes it, though perhaps too much manufacturing would place a great strain on the small population of the Township.

Appendix A.

Industrial Questionnaire

1. Name of firm
2. Location
3. No. of employees Male Female
   Full time
   Seasonal
4. Raw materials
   Source
   Transportation
5. Could any of these be supplied locally?
6. Finished products
   Transportation
7. To what points are they sent by percent value?
   (i) Local market
   (ii) Ontario , (iia) Quebec
   (iii) Canada
   (iv) U. S. A.
   (v) Other foreign countries
8. When did you locate in Dunnville?
9. What were the advantages then? disadvantages?
10. What are the present advantages? disadvantages?
    These include: Transport
    Raw material
    Proximity to market
    Power (price, reliability)
    Labour supply and type
    Water supply
    Sewage
11. Do you have any connections with other local industries regarding your products or raw materials or vice versa?
12. Are most of your employees living in Dunnville?
13. Are you recently hiring or laying off employees?
14. What is the average wage per worker?
15. What are your products?

Appendix B.

Answers to Industrial Questionnaire

I 1. Sandy Steel Products Ltd.

2. Dunnville

3. 60 male employees now

90 male employees in summer

4. Wire--Hamilton, Toronto, U. S. A., Europe (imports from Europe increasing due to lower prices)

Pipe--Welland, Hamilton

Castings--all over Ontario

Channels--Hamilton, Toronto

These all come to the factory by truck.

5. Perhaps a few castings, otherwise no.

6. Finished products go mostly by truck, but there is some rail transport.

7. (i) Very little

(ii) Ontario 85% to 90%

(iii) Canada 15 - 10%

8. 1924

9. The reasons for location were principally the characters of the personalities involved in the firm's founding. All were local men, ambitious and mechanically minded. Industry located in small towns then to avoid high costs but these advantages have disappeared.

10. Few advantages now

Disadvantages:

Transport costs more.

Power is expensive.

Taxes are high.

Labour wants wages equal to those of the city.

11. No

12. 60% live in Dunnville

95% live within five miles of Dunnville

13. Employment is steady at present

14. Average wage is $67.50 per week

15. Products: fire escapes, reinforcing iron and steel mesh, wire fencing, ornamental steel-ware

II 1. Dominion Fabrics Ltd.

2. Dunnville

3. 221 male employees No seasonal employment
146 female employees

4. Chemicals--Canada, U. S. A., Germany
Cotton--U. S. A., Mexico
Transported to factory by rail

5. No

6. Truck transported from factory

7. (i) Ontario 40%
(ii) Quebec 30%
(iii) Canada 30%

8. 1899

9. There was cheap natural gas which provided fuel, power, and light. Also, there was a good source of labour.

10.

Advantages	Disadvantages
Close to market	Power is expensive
	Poor water (have own softening system)
	High cost of labour
	No railway passenger service
	Poor bus transport facilities

11. No

12. Most live in Dunnville and within three or four miles.

13. Position is presently static.

14. Average wage is $53 per week approximately.

15. All types of cotton goods: towels, drapes, bedspreads, face cloths, etc.

III 1. Sylvania Electric (Canada) Ltd.

2. Dunnville

3. Presently 140 male and 90 female approximately
At low period in spring about 75 only

4. Parts 50%--U. S. A.
50%--Toronto, Hamilton, Kitchener, Welland, St. Catharines
Cabinets-- Woodstock
Paper Cartons--Toronto

There are many places where materials are bought in Ontario. An attempt is being made to reduce importation from the U. S. A. Mostly these materials come by truck but there is some rail transport.

5. Some small parts and rush jobs are handled locally by machine shops and Dundy Steel Products Ltd.

6. Goods to West and Montreal shipped by rail
Goods to Toronto by truck

7. (ii) Ontario 40%
(iia) Quebec 40%
(iii) Canada 20%

8. 1954

9.

Advantages	Disadvantages
Close to Buffalo and parent Company. Good location on a highway.	Young trained men are not willing to come to Dunnville. Poor rail passenger transportation. Freight costs are more expensive from a small town.

10. Same as above

11. None except that occasionally the machine shops do rush custom work.

12. Mostly in Dunnville and within five miles.

13. Will be laying off soon. The rush stops around the new year.

14. Average wage male--$1.14 per week
Average wage female--$55.60 per week

15. Television sets, radios, and some high fidelity sets. The plant is only an assembly point and hopes to build more "hi fi" so that the seasonal lay-off will not be so great since this is one thing which has no large seasonal fluctuation in sales.

IV 1. John M. Brooks Ltd.

2. Dunnville

3. 20 male 22 female, steady employment all year

4. Linen--from Ireland through Montreal

Cotton--U. S. A.

Nylon--bought in Kingston and processed in Sherbrooke P. Q.; Montreal; and Galt, Ontario.

Linen is brought by train, others by truck.

5. No

6. By truck in Ontario, by rail to east.

7. Locally (Port Maitland to Port Stanley) 15-20%

Edmonton and Winnipeg 75%

Rest in Ontario (Lake Huron, Georgian Bay, Lake Ontario)

8. 1931

9.

Advantages	Disadvantages
Central to area	None
Close to early market	
Good labour supply	

10. Same as above

11. No

12. Yes and within a radius of three miles.

13. Position is presently static.

14. $40 per week

15. Fish netting

V Monarch Knitting Mills were also visited but no satisfactory interview was forthcoming.

Aylmer's Cannery was visited but they are in the process of closing down. The parent firm is consolidating its factories and instead of having several small canneries in an area it will have one larger one.

Other Industries include:

Grand Valley Canners Ltd.

National Weaving Co.

Harmont Colour & Chemical Co.

La Croute Rubble Path Laboratories

Steve Lowell's Peat Works

Appendix C.

The Land Use Map

The field work for this map was done in late August and early September, 1958 while I was working for the Community Planning Branch of the Department of Planning and Development, doing similar surveys for other Townships in the Niagara Peninsula. Due to this period being late in the growing season, it was impossible to break down into its component parts the "small grains" category since it had been harvested and much of the stubble ploughed under. Similarly some land classed as fallow may have been used during the summer season as pasture or for hay.

Other difficulties in making a survey such as this arise from the fact that hay and improved pasture are often identical and the classification depends upon whether cattle are in the field at the time of the passing of the observer. The time necessary to arrive at complete accuracy in these categories is prohibitive since it would mean interviewing each farmer individually or walking across every suspect field.

An attempt has been made in the colouring of the map to keep each colour and category distinctive, so as that if one concentrates on any one colour he can see the overall distribution of that particular land use. All areas coloured in any shade of green are not under plough and have not been for several years, thus a brief look at the map will immediately show where the most intensive farming, that is, the areas with the least amount of green, is being carried on.

Combinations of different colours also point out areas of dif-

ferent types of farming. For example grey (hay, including alfalfa) and pink (rotation pasture) when combined in relatively large amounts may point to a mixed type of farming with emphasis on dairy or beef cattle. Areas coloured grey and blue often denote well drained areas, since neither grains nor alfalfa can grow in poorly drained areas.

The coloring was done with Prismacolor pencils made in Canada by the Eagle pencil Company and a list of the numbers with the representative category follows:

Soybean	930	Residential	933
Grain	922	Church	939
Fallow	921	School	942
Small grains	904	Firehall	937
Hay	907	Community hall	941
Small fruits & vegetables	916	Quarry, Gullpit	918
Orchard	915	Commercial	945
Rotation pasture	934	Cemetery	950
Permanent pasture	913	Recreation	945
Scrub	910	Recreation and Residential	906
Swamp	909	Industry	903
Woodland	907	Garbage Dump	918

Appendix D.

Problems along the Lake Erie shore

There is great confusion among the many property owners with frontages on the lakeshore regarding rights of way, property boundaries at the water line, and the problem of the public trespassing on private property. Each person interviewed during the summer of 1958 gave different answers, quoted different laws, and gave different examples of trial cases. Even the several lawyers visited did not offer similar answers.

The main problem is the trespassing by the public on the lake beaches. In most deeds the lower boundary is given as the high water mark of "the waters of Lake Erie." But since in recent years the Great Lakes' levels have been exceptionally low this leaves several feet of public land around the lake and it is in this strip of land which is causing most problems.

This has not been too obvious in Aberbrooke Township due to the general unsuitability of its shore line for recreation. However, around Lombardo in Moulton Township hundreds of automobiles are parked during summer weekends along the road which runs along parallel to the shore between the residents' homes or summer cottages and the lake.

Another problem in recent years has been the removal of beach material by farmers of the two townships for use on their farm lanes. The property owners of Aberbrooke have kept them off their property but the farmers gained access to the beach, below the property lines, to remove gravel. This procedure was found legal only if the beach gravel were used in the Township by the farmer

and not sold or used for profit by him.

A third problem, which is affecting the whole of the Lake Erie shoreline, especially east of the mouth of the Grand River, is that of floating algae. Only in recent years has it become serious and no way to overcome it has yet been found, though research is now being done by a Department of the Provincial Government. The thick green algae float along with the current and are thrown on to the beach by storm waves (Illus. 27). Here they dry and exude a most disagreeable, odious, and sickening smell. The popularity of the north shore as a summer recreation centre is waning due to this most unfortunate feature and business has declined somewhat. Though the fumes are extremely rotten and vile they do not appear to have any hazards to health, though this has not been definitely ascertained.

Appendix E.

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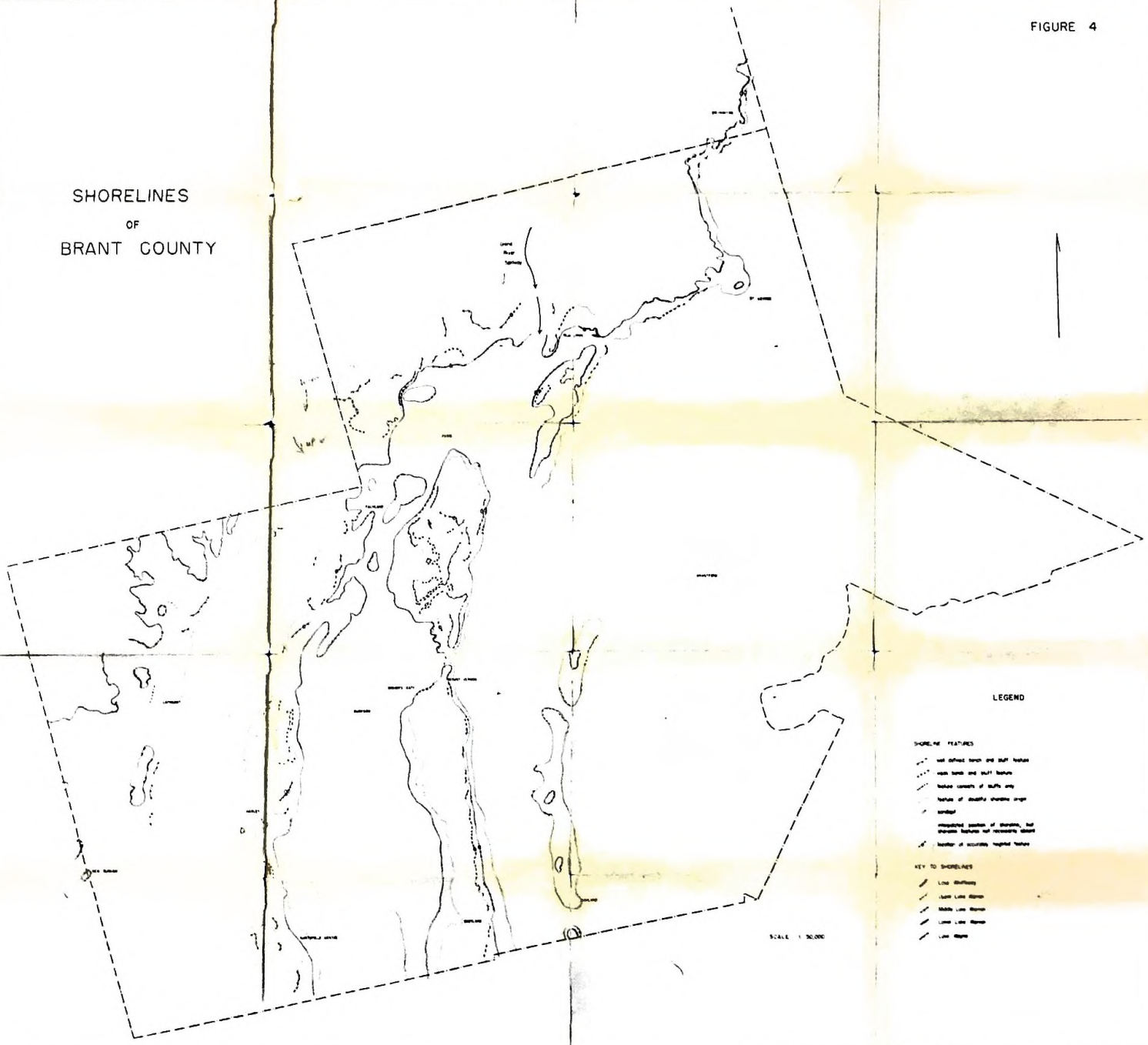
FIGURE 4

SHORELINES OF BRANT COUNTY




Gulf of St Lawrence
ÎLES DE LA MADELEINE
Legend
WASHOVER
MARSH
DUNE RIDGE
ACTIVE BEACH
BLOWOUTS
DUNE CLIFFS
DUNE MOUNDS
RELIC WASHOVER
STANDING WATER
SCALE
0 1 2 3 4 MILES

MOULTON AND SHERBROOKE TOWNSHIPS LAND USE

SCALE : 4" = 1 mile

AGRICULTURAL LAND USE

B	SOYBEAN	O	ORCHARD
G	MAIZE	P	ROTATION PASTURE
F	FALLOW	Pa	PASTURE, PERMANENT
S	SMALL GRAINS	L	SCRUB AND IDLE LAND
H	HAY (INCLUDES BUCKWHEAT)	S	SWAMP
M	SMALL FRUITS AND VEGETABLES	W	WOODLAND

NON-AGRICULTURAL LAND USE

R	RESIDENTIAL	D	COMMERCIAL
K	CHURCH	V	CEMETERY
E	SCHOOL	T	RECREATION
Y	FIREHALL	CR	RECREATION & RESIDENTIAL
N	COMMUNITY HALL	I	INDUSTRY
A	QUARRY, SANDPIT	U	GARBAGE DUMP

FIG. 10

PETER L. HILL AUGUST 1958