

BEVERLY TOWNSHIP
THE STUDY OF A RURAL AREA

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A Thesis
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McMaster University

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by
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INTRODUCTION

Geography is a scientific subject dealing with man and his physical environment. The task of the geographer is to determine what effect the physical environment has on man and how man is best able to adapt himself to his particular environment.

Man's environment is important in all of his activities. This is especially true in the case of the farmer. Geological and geomorphological forces sculpture the shape of his land, climatic and biological forces form the soil. Once man starts working the land these forces continue to influence him in various ways. How well he adapts himself and his farming methods to the physical factors helps to determine whether he will be a success or a failure. The farmer's human environment is as important as his physical one. He is dependent on others for supplies and for a market for his goods.

The agricultural region is a very significant field for the geographer to study for here he can see man in his environment without many of the technological devices of modern civilization that tend to remove or protect man from his natural setting. Thus the object of this thesis is to study a rural area, Beverly Township, and determine if man

has made a suitable adjustment with his environment, both physical and human.

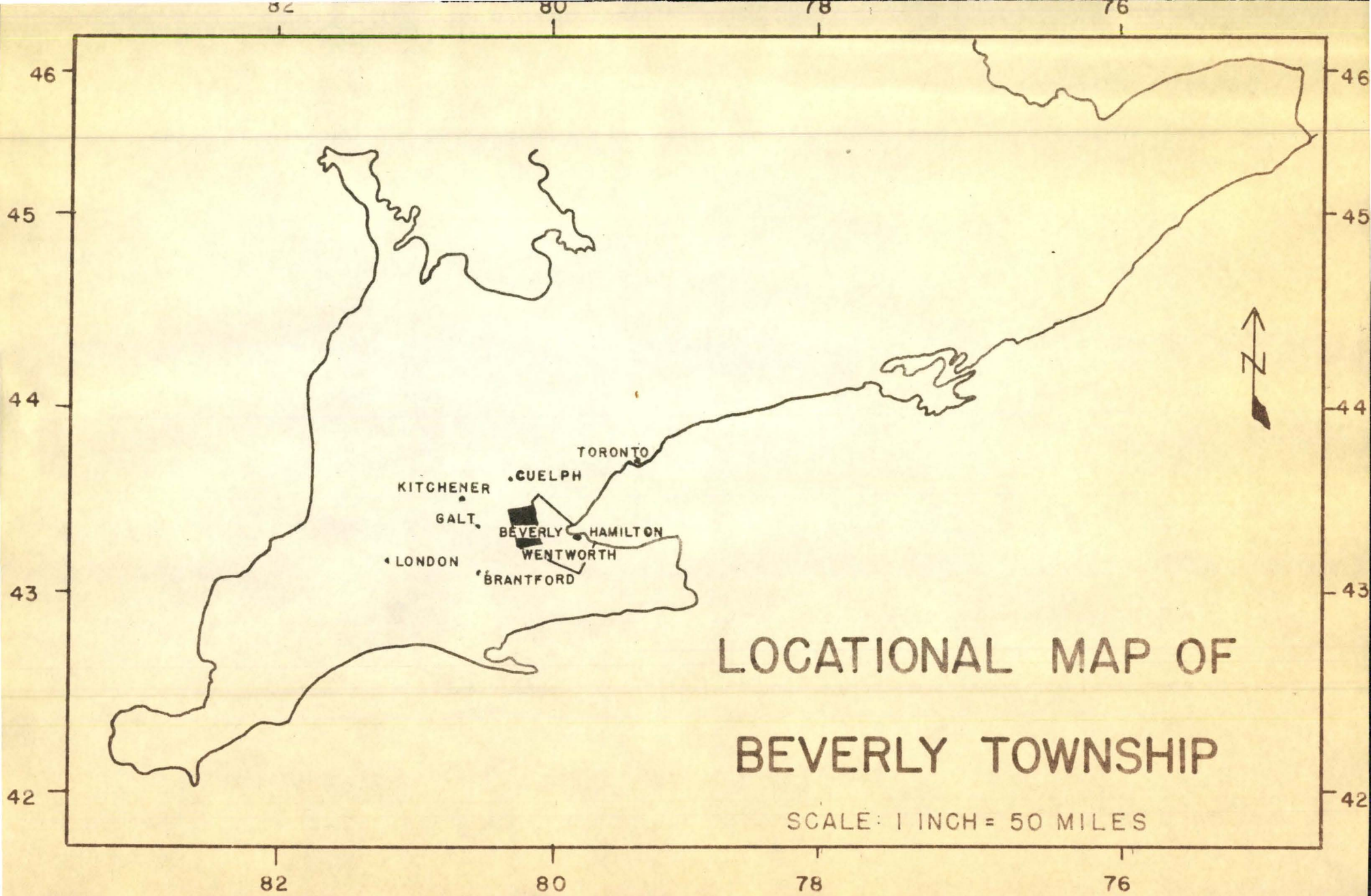
In a study of this type we must look at the physical nature of the region before we study man's activities. In chapter one we study the geomorphological history of the township that affects the present landscape. We do not delve too deeply into the subject for fear of getting lost in irrelevancies.

After the physical setting has been studied it is necessary to see how man has developed and used the land in the past. The often quoted phrase "the past is the key to the present" is a sound one in regards to this type of study. Chapter two studies the historical development of the township. Again, we try to select only the facts that will give us a better understanding of present conditions.

In chapter three we look at man and his agricultural endeavors. We see if and how he has adjusted to his environment. We look at the forces he has conquered and those with which he continues to struggle.

Although Beverly Township is basically an agricultural area, we must not forget the urban function of the small centers nor should we ignore any industries that have helped to develop the township and that might complement the agricultural function of the community. Chapter four studies the non-agricultural activities.

Chapter five is the most important chapter in the study. It is in this chapter that all our findings and conclusions are gathered together and given meaning.



LOCATIONAL MAP OF BEVERLY TOWNSHIP

SCALE: 1 INCH = 50 MILES

MAP ONE

CHAPTER I

THE PHYSICAL ASPECTS OF BEVERLY TOWNSHIP

Location

Beverly Township, a division of Wentworth County, is located near the intersection of the 80th meridian of west longitude and the 43rd parallel of north latitude.

It is located ten miles from Hamilton and sixty miles from London. It is bordered by the townships of Ancaster, North and South Dumfries, Puslinch and West Flamborough. The township is almost rectangular in shape, its sides being approximately nine miles and twelve miles. The total area is 70,200 acres of which 41,196 acres are cleared.

Physical Structure

The bedrock of Beverly Township is composed of Lockport and Guelph dolomites which rest upon ancient Precambrian bedrock. The Lockport and Guelph dolomites are commonly referred to as limestone, so this will be the term applied to them throughout the text.

The depth of the mantle above this bedrock varies greatly throughout the township. In many places there are actual outcrops, in other places there are over 100 feet of mantle on top of the bedrock. The depth of this layer



Picture 1. A typical drumlin ringed with coniferous and semi-swamp vegetation.



Picture 2. The agricultural use of a drumlin. There was evidence on the cultivated slope that the plough had turned up some of the B horizon.

of mantle is of great significance when the agricultural value of the land is discussed.

Glaciation

Beverly Township is a good example of a glaciated landscape. There are drumlins, drumlinoids, till and kame moraines, and the shoreline and bottom deposits of a glacial lake.

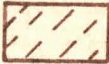

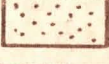

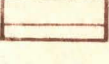
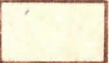
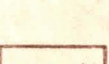
In the township itself there are about ten good sized drumlins or drumlinized ridges. Their axes have an approximate south-east north-west alignment and the stoss slope of the drumlins face the south-east. This coincides with the idea that the ice lobe which advanced over this area came from the Lake Ontario basin.

As this ice lobe retreated it left a moraine, this moraine is called the Galt moraine and cuts across the north-west corner of Beverly Township. (See map #2) The moraine area contrasts quite sharply with the limestone plain to the south-east. The moraine is quite hilly and on the average, about 50 feet higher than the plain. Well drilling records show the mantle is composed of blue, red, and brown clays, gravel sand, cobbles and in one instance cemented gravel.

As the ice retreated a glacial lake was ponded between the retreating ice and the Galt moraine. This lake was named Lake Warren; its waters covered most of Beverly



KEY

- KAME MORAINE 
- TILL MORAINE 
- DRUMLIN 
- MARSH 
- SAND PLAIN 
- LIMESTONE PLAIN 
- LAKE WARREN SHORE LINE 

PHYSIOGRAPHIC REGIONS

OF BEVERLY TOWNSHIP
AFTER PUTNAM AND CHAPMAN

SCALE: 1 INCH = 2 MILES



Picture 3. The slight ridge with the trees on it represents the Lake Warren shore line. In this instance it is located at the 875 foot level.



Picture 4. A profile of the Lake Warren shore line located the place picture 3 was taken.

Township. The sand plain in the south of the township was laid down ⁱⁿ by Lake Warren; it is part of the Norfolk sand plain.

There is evidence of shorelines of Lake Warren around the 850 ft. contour, along the 875 ft. contour, and possibly at the 925 ft. contour (See pictures #3 and #4). In the sides of the drumlins one can often see evidence of shorelines (See pictures #5, #6, #7). For the most part the shorelines appear as ridges running across the country and are composed of rounded gravel and cobble sized stones with some cementing.

A kame moraine appears in the south-east corner of the township. Here the land is quite hilly and there is dissection.

The Physical Landscape

The landscape of Beverly Township is quite diversified. The largest part of it is composed of a flat limestone plain (see picture #9). This flatness is broken by the two moraines, the drumlins, and the valley of the Fairchild Creek in the south-west corner. The highest elevation, which is 1,025 feet occurs in the north-west corner. As one proceeds to the south the elevation gradually decreases to the lowest elevation, 625 feet, which is located in the extreme south-eastern corner.



Picture 5. Bedded shore deposits at the 875 foot level. They are found in a drumlin north of Westover.



Pictures 6 and 7. Closer views of the shore deposits seen in Picture 5.



Chapman and Putnam in their book, The Physiographic Regions of Southern Ontario, divide Beverly Township into till and kame moraines, limestone and sand plains, marsh and drumlins (see map #2).

The moraines resemble each other quite closely, they are both quite hilly and dissected by streams passing through them. Well drilling records show that they both contain a good deal of clay, sand, and gravel, as well as many cobbles and larger rocks (see picture #8). The chief difference between the two moraines is that material in the kame moraine has been laid down by water and is roughly sorted while the material in the till moraine is not sorted and has been laid down by ice. The most noticeable difference is their elevation in relation to the limestone plain. The high points of the kame moraine are at about the same level as the sand plain which borders it, the lower elevations are about 50 to 100 feet below the plain. In the north the till moraine is about 50 feet above the plain.

The limestone plain is the flattest and largest area in the township (see picture #9). This area is poorly drained due to its flatness and to the shallow overburden. The depth of the mantle varies from rock outcrops to over forty feet. The section around Rockton and to the north has the shallowest mantle.



Picture 8. A profile showing till in the Galt moraine.



Picture 9. This is a view of the better farming land on the flat limestone plain.

In the north-eastern part of the township we find the drumlins and the swamp. The highest drumlins are over 100 feet higher than the local topography, some are over a mile in length and half a mile wide. In places it seems that one drumlin has partly overridden another to produce a drumlinized ridge.

Closely related with the drumlins is the swamp, which is also a direct result of glaciation. It is the remains of Lake Warren. The southern drumlins have acted as a dam, preventing the water from flowing to the south. The shallow mantle and the bedrock prevent the water from percolating downwards so there is little internal drainage.

The sand plain, which is part of the Norfolk Sand Plain, resembles the limestone plain quite closely, except for the fact land is a little less flat and there are no outcrops. The bedrock lies fifty feet or more below the surface.

The drainage pattern of the township is dendritic and mature. An almost imperceptible ridge of land extends down the approximate center of the township. This marks the drainage divide between Lake Ontario and Lake Erie. The western half of the township is drained by Fairchild Creek, which flows southward and empties into the Grand River. The eastern section is drained by Spencer Creek, which eventually empties into Coote's Paradise.



Picture 10. Striations on an outcrop in the limestone plain. They indicate that the ice moved in a south-east north-west direction.



Picture 11. Fairchild Creek as it passes through the limestone plain. Note that no appreciable valley has been carved and that the bedrock is laid bare.



Picture 12. The Fairchild Creek just before it leaves the township.



Picture 13. The valley of the Fairchild Creek. Compare its size to the width of the creek.



Pictures 14 and 15. Two dried-up stream valleys.
These could possibly have been carved by streams fed
by Lake Warren, or by receding glaciers.



As the various streams run across the limestone plain they have very shallow gradients and almost no valleys at all. This is due to the shallow overburden: (see picture #11) When the streams enter the sand plain they are able to carve more definite valleys into the overburden. The valley that the Fairchild Creek flows through in the southwest corner seems much too deep for the present stream to have carved. In the area there are also several dry stream beds (see pictures #12 to #15). These valleys could have been carved by larger streams fed by Lake Warren.

Climate

Of all the forces of nature climate is the one that man is most subservient to. In no field of endeavor is this more apparent than in agriculture. Therefore it is of the utmost importance in any regional study to have a sound knowledge of the climate.

Beverly Township lies in the zone of westerly winds and cyclonic storms. In the winter the area is under the influence of polar continental air masses from the northwest and modified polar continental air masses from the south. In the summer modified polar continental and tropical maritime are the dominant air masses. It is the clashing of these masses that give the area the cyclonic storms and changeable climate.

The greatest climatic difficulty in this area is that of early spring rain. This can keep cattle out of the pasture and thus increase the winter feed bill. Also it tends to wash young corn shoots away, sometimes the wheat is affected this way also.

Chapman and Putnam in their paper on the climate of southern Ontario (Scientific Agriculture, 1938) class Beverly Township in the South Slopes area of southern Ontario. They state that the area has a milder climate than the northern parts of Ontario, because of the exposure to the modifying influences of Lake Ontario and Lake Erie. However the climate is not as mild as the districts that lie beside the lakes. Koppen would classify the area as humid continental with mild summers.

Since there is less than 400 feet difference in local relief throughout, the change of elevation factor will be of little importance. However, the land dips to the south, which will increase the angle of the sun's rays and the sunshine will be generally more effective than if the land were horizontal or sloping in another direction. Figure 1 gives a summary of the weather data for the township. Figures were obtained from the Hamilton weather office and checked against the climatological Atlas of Canada and other climatic maps to see if they would apply to Beverly Township. Figures were also obtained from the Guelph and London weather

FIGURE 1

CLIMATE DATA

Mean annual temperature	44°
Mean winter temperature	21°
Mean spring temperature	41°
Mean summer temperature	66°
Mean fall temperature	47°
Extreme low temperature	-20°
Extreme high temperature	105°
Daily temperature range	19°
Average date of last frost	May 15th
Average date of first frost	Sept. 28th
Average frost free period	195 days
Average beginning of growing season	April 15th
Average end of growing season	Oct. 28th
Average length of growing season	195 days
Average annual precipitation	32"
Average annual snowfall	60"
Average number of rainy days	110
Average number of thunderstorms	27
Average percentage of possible sunshine in growing season	52%

stations and compared with the Hamilton data. As a result of these comparisons some of the figures in the Hamilton data were changed so that they would comply with the conditions in Beverly Township.

After we have considered these figures we must consider the question posed by Thornthwaite in his paper in the Geographical Review, 1948. Is the moisture supply sufficient to allow plants to grow at their optimum speed to their maximum size? To answer this question we must go through the steps he has outlined in his paper to find such figures as the potential evapotranspiration, water storage, storage change, mean monthly temperature, heat index, and actual evapotranspiration. With these figures we can find out the monthly moisture surplus or deficiency. Perhaps before we do this we should define the term evapotranspiration. This is the process by which water is taken out of the soil by the plant and returned to the atmosphere. Potential evapotranspiration is the amount of water that can be taken from the soil (provided the water is there) and returned to the atmosphere under the existing climatic conditions. The reason why this process is so important is that the more water that is taken out of the soil the faster the plant will grow. So if there is a water deficiency in the soil the rate of growth will be slowed down.

Figure #2 gives the data on water surplus and deficiency.

These are some of the more significant figures that were used to determine the moisture balance of the area by the Thornwaite system.

	Jan.	Feb.	Mar.	Apr.	May	J.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly Total
Potential Evaptranspiration				3.0	7.5	11.4	13.9	11.9	7.6	4.5	1.0		60.8
Precipitation in Centimeters	6.8	6.1	7.0	5.6	5.9	6.7	7.9	5.9	7.3	6.6	6.5	6.3	78.6
Storage Change					1.6	4.7	3.7			2.1	5.5	2.4	
Storage	10	10	10	10	8.4	3.7	0	0	0	2.1	7.6	10	
Actual Evapo-transpiration				3.0	7.5	11.4	11.6	5.9	7.6	4.5	1.0		52.2
Surplus	26.8	6.1	7.0	2.6									3.9
Deficiency							2.3	6.0	.3				8.6

MOISTURE SURPLUS AND DEFICIENCY COMPUTED BY THE 1948 THORNWAITE SYSTEM.

FIGURE TWO

There is probably more of a deficiency than these figures suggest because of runoff, especially in the early spring when the ground is frozen except for the top inch or so and the meltwater is unable to percolate down into the ground and be stored.

From the table we can see there is a definite moisture deficiency in July, August and September. This proves the idea false that this area is in a humid region without any moisture deficiency. It also supports the argument for irrigation of specialized crops for maximum growth and best utilization of land. Work like this shows that although man has not conquered climate he is learning to understand it more and to use his knowledge to overcome its limitations on his endeavors.

Vegetation

Beverly Township lies in what is called the Niagara Forest Region (Halliday 1937). This classification is based upon forest growth that results from a uniform climate, a similar soil type and a general topographical conformity.

The most common conifers in the virgin forest were red and white pine on the sand plain, and hemlock, white cedar, spruce and tamarack in the more poorly drained areas. The dominant hardwoods were sugar maple, beech, yellow birch, red oak, white oak, and bur oak on the uplands. On the lowlands there were red maple, silver maple, white elm, white



Pictures 16 and 17. Two aerial views showing the type and extent of vegetation in the swamp. Note the road pattern is not interrupted.



and black ash. There were also several trees that were growing at their northern limit: it would be unusual if they were found twenty miles further north. These trees were the chestnut, black walnut, mockernut hickory, tulip tree, sycamore, sassafras and the Kentucky coffee tree. We cannot be certain if all of these trees were found in Beverly Township but the physical factors found in the township would allow them to grow there.

The hardwood trees would have been found on the moraines, on the tops of the drumlins and on the limestone plain, wherever there was sufficient soil. Unlike the rest of the region, hardwoods were outnumbered by coniferous trees in Beverly Township. This was due to the sand plain and the swamp, areas where conifers grew the best.

The growth of the vegetation was especially dense in the swamp, for many years it was the most feared swamp in Upper Canada, even now one hears tales of Beverly Swamp.

To-day the vegetation has changed, lumbering followed by intense agriculture has removed most of the forest growth. Outside of the swamp we only find cut-over wood lots with few trees of commercial size. The rest of the wood lots are filled with second growth poplar or birch. There was not much lumbering carried out in the swamp because not many large trees of commercial size actually grew there, chiefly smaller trees. It was also hard to cut and remove the trees from the swamp. As a result the vegeta-



Picture 18. A close-up of swamp vegetation. The majority of the trees are black elm.



Picture 19. One of the few remaining areas of open water in the swamp.

tion in the swamp has not changed a great deal since the first settlers viewed it.

Wild Life

Beverly Township has always been noted for its abundance of wild life. Before the land was cleared, there was a great deal more open water than there is to-day (see picture #19). On this open water lived a large beaver population, and it is from these beavers that the area got its early name of Beverly Meadows. To-day the name has been shortened to Beverly.

Wolves, deer, bob-cats, and even bear also dwelt in the swamp. The drier ground was a home for squirrels, rabbits, woodchucks, and foxes. The rock outcrops made excellent lairs for rattlesnakes. Many birds, especially waterfowl, found the swamp a haven. To-day while their numbers have been depleted many animals still inhabit the area, only the bears, bob-cats, wolves, rattlesnakes and beavers have disappeared. Wolves, driven south by hard winters in the north, often use Beverly Swamp as a winter refuge, but they tend to move north in the spring, and seldom spend the summer there. The last wolf was shot about three years ago.

Soils

Soil is the end product of climate, vegetation, and biological forces working on bedrock. The important con-

trol of this labour is time. Recently, another factor has appeared on the scene. This factor is agricultural man. He has changed dramatically a system that has been operating for millenniums. Very seldom has he improved upon what he found, sometimes he has maintained it the way he found it, usually he has destroyed it.

The soil in Beverly Township has been classified by the Ontario soil survey. Some of the categories are quite similar and they are used for the same purpose. Therefore in a study such as this similar categories can be grouped together. After this has been done we arrive at the soil types found on the map enclosed in the folder attached to the back cover, (Map # 7). A brief summary of these soil types will enable us to obtain a more complete picture of the physical geography of Beverly Township.

Soil Types

Bottom land

This is a low lying alluvial soil that is found in stream valleys and other low lying places. It is an immature soil type as the profile has not developed. The drainage is poor, and there is occasional flooding. This land is usually used for pasture.

Muck

The muck soils are found for the most part in the swamp itself. The water table is located at the surface or



Picture 20. A soil profile in the swamp. Water was trickling out about four inches below the surface.

31

just below it, water often lies on the surface (see picture #18).

The soil profile (see picture #20) consists of nine inches of partly decomposed plant material often called duff. It is saturated with water which hinders the decomposition of this material. The next layer is a sticky grey clay which extends down to the bedrock which is usually located at the five foot level.

This land is usually left in forest although the edges of it make good cropland or pasture (see picture #22).

Limestone Plain

The Ontario Soils Report calls this land Farmington loam or clay loam. This type is part of the Brown Forest soil group.

A horizon - 0"-6", dark brown, friable calcareous loam of platy structure

B horizon - 6"-12", lighter brown with a blocky structure

C horizon - pale brown, very calcareous, it continues to the bedrock

The profile above is merely an average for the area, sometimes it is much shallower. This land is generally rated as poor cropland. The main fertility needs are organic matter, phosphate and potash.

Sandy Loams

This group of soils includes the Fox, Brady and Granby sandy loam series of the Ontario Soil Survey. They are part of the Grey-Brown Podzolic soil group, originating from outwash.

A horizon - 0" -18", brown sandy loam, very friable with a crumb structure

B horizon -18"-30", dark brown, of uniform consistency with a crumb structure

C horizon - a pale brown sand with some gravel

This land is rated by the Ontario Soil Survey as fair to poor farmland that can be used for general crops (see picture #21). The fertility needs are organic matter, phosphate and potash.

Areas of Poor Drainage

Included in this category are several different soil types. Their profiles and origins vary according to their individual series. However, they all have impaired drainage and this limits their agricultural use (see picture #22). In the drier months they are used for pasture.

Loams

This group includes the Dumfries and Kilean loams of the Ontario Soil Survey. It is coarse stoney till of the grey-brown podzolic soil group.

A horizon - 0"-18", dark to yellowish brown, with a friable consistency and a crumb



Picture 21. A profile on the sand plain. This sand was very fine and free of stones.



Picture 22. A field restricted to pasture land due to its poor drainage. Heavy equipment could not be used on this land in the spring or fall.

37
or platy structure, stones are present

B horizon - 18"-30", lighter brown, medium, uniform, structure, it is quite stoney

C horizon - pale brown, stoney, sandy, till

This land is classed as fair cropland for general crops. The fertility needs are organic matter, phosphate and some potash.

Silty Loams

This soil type is composed of the Brantford and Beverly series of the Ontario Soil Survey. The soils are lacustrine in origin and of medium lime content. The drainage varies from good to imperfect. It is the best soil for general farming in the area. The main fertility needs are organic matter and potassium.

The soils of Beverly Township cannot be regarded as good. Poor drainage has hindered large areas from developing mature soils. However, the greatest damage has been done by man. Ruthless exploitation of forest resources has laid the thin cover of topsoil bare to the ravages of erosion. Farmers, instead of planting a protective grass covering over the steep slopes, planted row crops on them. This caused the remainder of the topsoil to be eroded.

In areas where the topsoil was plentiful crops were grown on it without trying to return anything to the soil.



Picture 23. Stones that have been gathered from the side of a drumlin. The slope is still covered with stones. This illustrates the fact the slopes should be used for pasture or reforestation.



Picture 24. A view of the swamp and drumlin field.

This was especially true in the latter half of the 19th century when wheat was grown year after year. The end result is the rather poor soil we have in Beverly Township.

CHAPTER II

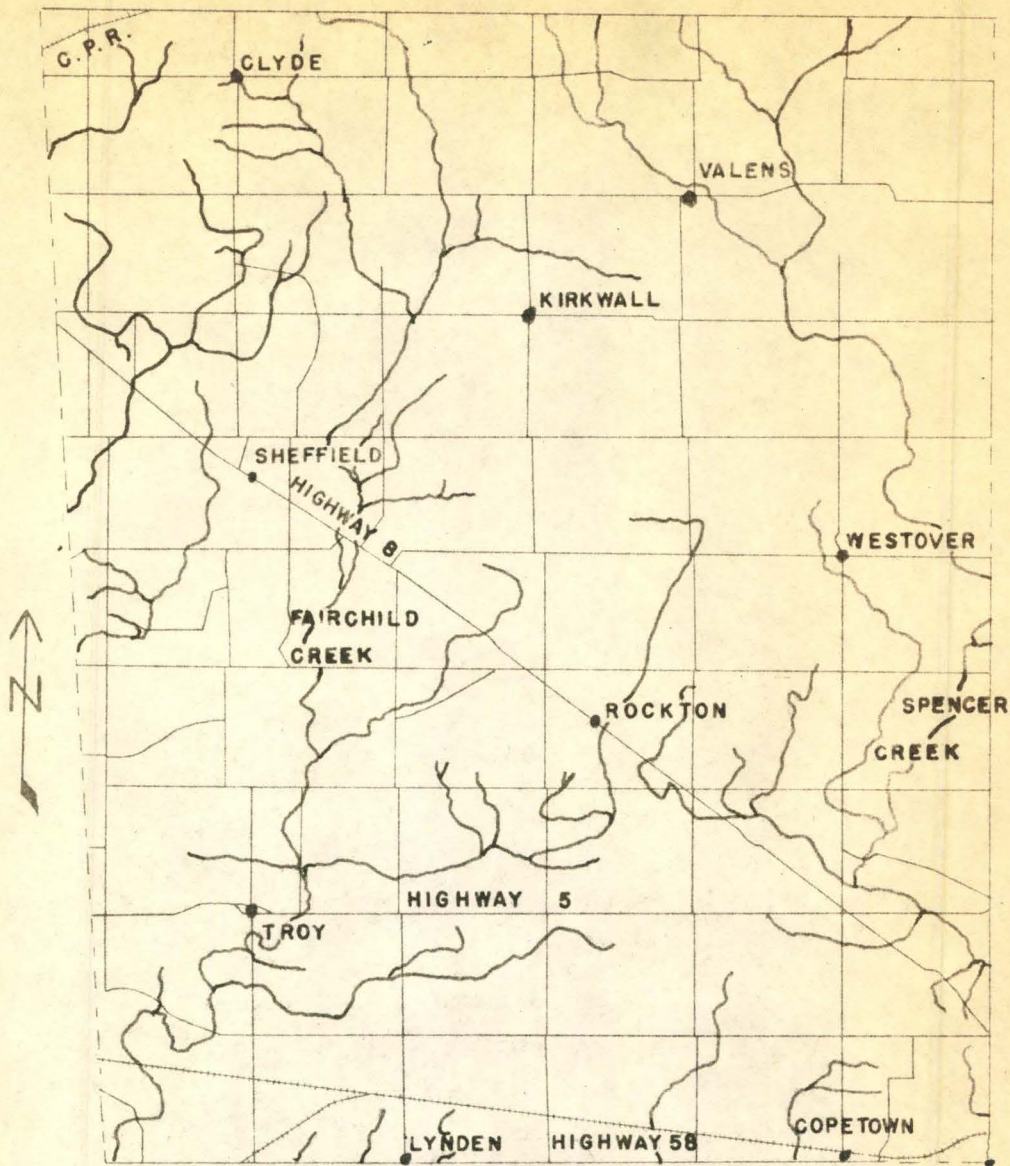
HISTORY OF DEVELOPMENT

The first time the area that to-day is known as Beverly Township appears in history is in 1669. In this year the explorer La Salle met two Sulpician fathers, de Crasson and de Gallinee in the Indian Village of Tinawatawa which was located several miles west of the present site of Westover.

After this early beginning white men seemed to ignore the area. The dense swamp and rocky outcrops seemed to offer little encouragement to settlers. Also the feared Beverly Swamp was the home of several packs of wolves which made it difficult to keep stock in the area even up to 1830. The Niagara escarpment was another barrier to early settlement. However, the township was on the route the settlers around Kitchener and Waterloo used to get to Hamilton, and it was inevitable that it would be settled. In 1792 Jephth Skinner cleared land for a farm at the present site of Orkney, to become the first settler.

In 1794 the survey of the southern part of the township was made, in 1797 the northern half was surveyed. The completion of the survey was the signal for more in-

MAP THREE



BEVERLY TOWNSHIP

SCALE: 1 INCH = 2 MILES

tensive agricultural settlement. At the turn of the century there were settlers around Troy, Lynden and Copetown. These men were mostly farmers, as lumbering had not yet become important. By 1820 there were 81 ratepayers who held 9,953 acres, of which 1883 were cultivated. There were 69 horses, 51 oxen, 180 milk cows and 64 horned or beef cattle. There were no hogs or sheep because of the wolves. By 1830 there were 3,633 acres under cultivation, 97 horses, 197 oxen, 338 milk cows and 109 beef cattle. Nine years later in 1839 there were 335 horses, 363 oxen, 803 milk cows, and 295 beef cattle.

Most of this growth and expansion was taking place in the southern half of the township. Settlement here was retarded by the dense swamp until the 1830's. In this decade settlements were established at Westover, Kirkwall, and Valens. By the year 1834 a gristmill and lumber mill had been established at Westover.

During this period lumbering became quite important in the township. In the Lynden area there were 13 sawmills. The lumbering industry started in the pine stand on the sand plain and slowly moved northwards. Farmers who owned woodlots either cut the trees and hauled them to the sawmills, or allowed the lumbermen to come and cut the trees themselves. The lumbering interests bought any unsettled land that had commercial stands of timber on it. By 1850 most of the commercial sized trees had been removed from

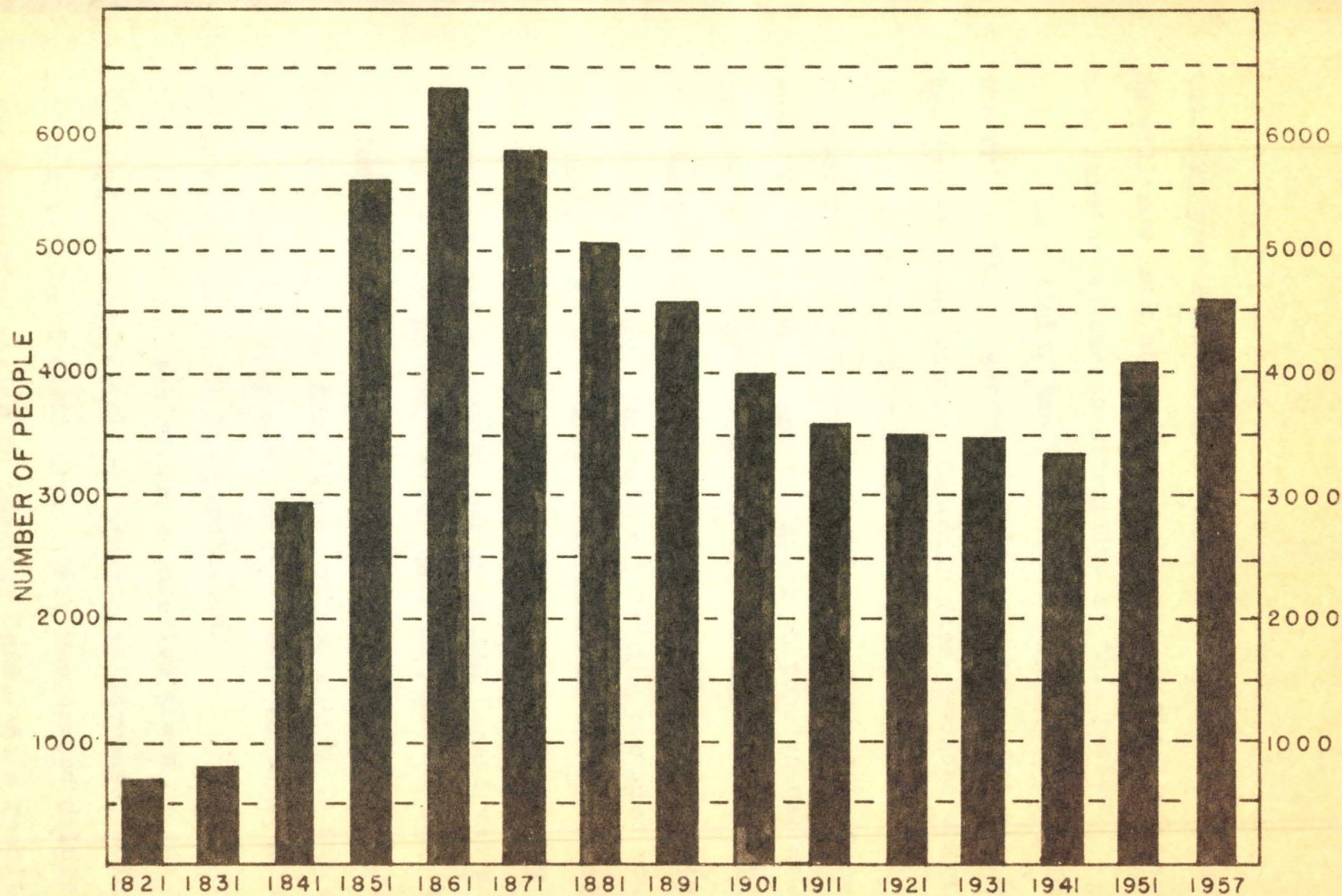
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the township. The lumber industry waned rapidly until there were only a few sawmills left which cut small quantities of logs from farmer's woodlots. The lumber interests owned a great deal of property that was no longer useful to them. This land was put up for sale at a very reasonable price, as they did not want to continue to pay taxes on it.

Population Growth

If we look at the population graph (figure 3) we see there is a rapid growth from 1831 to 1851. There are several reasons for this rapid rise. The most important one was that the land below the escarpment was settled and the new settlers from Europe particularly from Scotland were forced to seek land above the escarpment. Also the lumbering industry was becoming active and the land it vacated the farmers bought up because of the reduced price.

In the year 1861 Beverly Township had its largest population, 6,339 people. This large population at this particular period was due to several causes. Perhaps the chief reason was the shortage of unclaimed agricultural land both in Canada and in the United States. There were no railways to the west to provide an easy way for settlers to get to the prairies. So anyone who wanted to start farming had to look to the less desirable land in the east that had not been settled. Beverly Township had a great deal of land to offer. We have noted how the lumbering



POPULATION GRAPH

FIGURE THREE

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industry provided attractive land for the new settlers.

We will now look at the economic and political reasons that made farming appear so attractive at this period.

Lord Elgin, the Governor of Canada had finally got the United States government to agree to a reciprocity treaty, in 1854, whereby Canadian farm products could enter the United States duty free. The American Civil War had started and there was a good demand for Canadian farm products to feed troops and the American population, as many of the farmers had joined the army. This gave settlers the necessary impetus to fill up even the least desirable land.

During this period wheat farming occupied most of the land. Land was farmed regardless of its fertility or slope. As a result of the intensive farming much of the poorer land was exhausted and erosional damage was severe on the steeper slopes. After several years of this type of farming, yields on the poorer soils began to decrease rapidly. Also the farms were not mechanized to any extent and as a result they were small or they employed hired men. This helped to swell the population.

When we look at the population graph we see that by 1871 the population had started to decrease, a decline that was to last until 1941. This was caused mainly by the decreasing yields on the poor land. As a result of this many farmers became discouraged and left for the

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American West which opened up soon after the civil war was over. By the time the American West started to fill up, the Canadian West was opened up by the Canadian Pacific Railway. By 1901 the population of Beverly had dropped to 3,999. Also by this time mechanization was advancing and this caused a decrease in the farm population as one man could farm more land.

By 1921 the population seemed to have reached a leveling off stage. The poorer land was either abandoned or amalgamated into larger farms, and the villages had found their optimum size. The sharp population rise that is shown by the 1951 census is due to the fact that the automobile has enabled people who like country life, but who are employed in the city, to live in the country and to work in the city. This factor will cause the population of Beverly Township to rise steadily to a new optimum level. This level will depend upon the urban growth of the Hamilton district and the demand of the residents for country homes. Most of these residences appear in the south-eastern section due to the fact that it is the closest to Hamilton and Dundas.

Changes in Farming

The actual type of farming in Beverly Township has undergone a great deal of change. The first settlers were faced with many hardships and actually carried on a subsis-

tence type of agriculture, producing most of their own goods. The farms were merely clearings in the bush connected by trails to other clearings. Each farmer grew his own vegetables and other foodstuffs. Soap was made from potash obtained from wood ashes and from animal fat, lead for rifle shot was poured at home, and many of the cloths were woven at home. The cash crop was wheat or else whiskey made from corn, wheat or rye.

By 1850 this subsistence stage of agriculture and home industry had passed, wheat had now become the important cash crop and would remain so for the next twenty years. However, after twenty years, large scale wheat farming in the Canadian West caused a decline in wheat growing in Beverly Township. Oats continued to be important as well as hay for the many horses in the city of Hamilton and other centres. Crops such as potatoes, tomatoes, beans, and peas, as well as apples and pears were still of minor importance but these crops slowly declined until to-day when we have just kitchen gardens or the odd small field planted as a cash crop.

When wheat growing began to decline in Beverly Township livestock raising, supplemented later by dairying, took its place. With livestock raising and dairying came field corn to feed the animals in the winter. These types of farming have continued until the present day.

Communications

The development of roads has played an important part in the development of Beverly Township. If it had not been for the fact that the route from the head of the lake to the German settlement in the Kitchener area passed through Beverly the area would have been left unsettled for many years. This old trail was straightened out and made into a corduroy road by 1825. To-day it is highway number 8.

Another important route in early times was highway 58 which is still called the Governor's Road. It was built by Governor Simcoe in 1794. Highway 5 was the last major road to be built in the area. An old trail that was said to have followed the divide between Lake Ontario and Lake Erie led through Beverly Swamp. Highway 52 passes through the same area that was once served by this trail.

While the Canadian Pacific Line passes through the north-west corner, the Canadian National Line to the south is the important rail line. Freight trains stop at Lynden and Copetown for the feed mills. The line was built in 1871 by interests led by Sir Allan Napier McNab and was called The Grand Trunk Western. This line was used for shipping quarried limestone, lumber and farm products from the township. To-day, trucks carry most of the goods, no passenger trains actually stop in the township as there is no station, the nearest one being Dundas.



Pictures 25 and 26. Two pictures showing that the road pattern is not usually hampered by the drumlins.



Early road building was hampered by the swamp and the drumlins, even to-day the road pattern is not complete in the north-eastern section. Pictures 25 and 26 show how the roads continue over the smaller drumlins.

CHAPTER III

AGRICULTURE

Man's chief activity in Beverly Township is obtaining a living through farming. Farming is restricted in Beverly Township by several factors. These restraints are the depth of overburden, poor drainage, excessive slope and exhausted soil. Of the 70,200 acres in Beverly Township, 28,820 are not being farmed because of these physical factors, and due to economic reasons based on these physical restraints. This leaves 41,370 acres for actual agriculture.

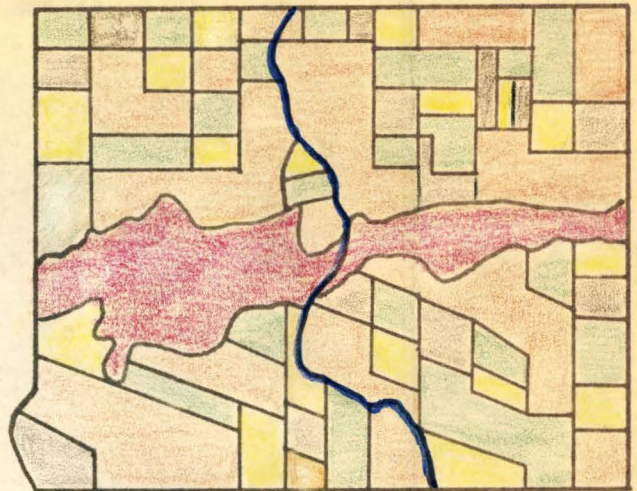
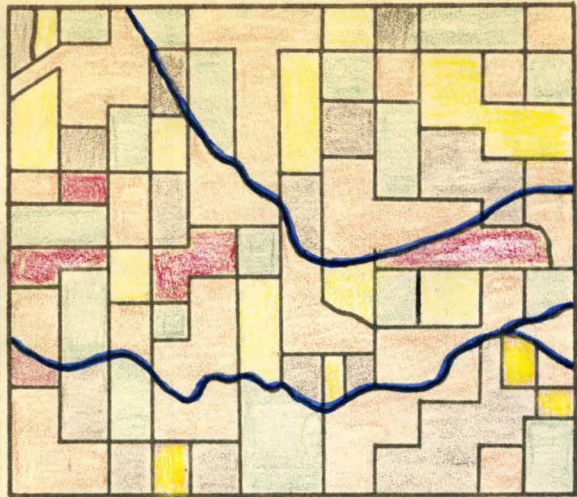
Land Use

A land use survey was made of the township, a preliminary survey was made by air, this was followed by an intensive survey by automobile and by foot. The results of this survey were plotted on a map of the township. When this map was studied it was found that the only factor that differed throughout the township was the amount of woodland slash and swamp. The farmer's use of the land except for three or four instances was generally the same.

FIGURE FOUR

CON. III LOTS 13 TO 18

CON. VI LOTS 31 TO 36


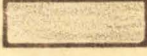





BLOCK 1

BLOCK 2

SCALE: TWO INCHES=1 MILE

KEY

HAY		CORN	
GRAIN		WASTE LAND	
PASTURE			

TWO REPRESENTATIVE BLOCKS THAT ILLUSTRATE

LAND USE

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This is not surprising as the two major types of farming carried out in the area are dairying and the raising of meat animals, mainly cattle and hogs and the odd time chickens. The land use for these two types of farming is similar. This can be seen in figure four. Block one represents a dairy farming area and block two shows a livestock raising area. We can see there is little difference except for the amount of uncleared land.

The average farm has 140 acres, and grows about 15 acres of corn, 15 acres of wheat, 30 acres of oats and 25 acres of hay. The remaining 55 acres are taken up by pasture and wasteland. The assessed value of the average farm is between \$3,500.00 and \$4,500.00.

The first question that arises when we study land use in Beverly Township is what factors determine whether a farmer will raise livestock or dairy cattle. In a few cases this matter is decided by the individual farmer. However, in the majority of cases the physical environment decides whether the land will be used for dairying or for livestock raising. By observations made in the field concerning which type of farming was done where, and by consulting map 5, the land values map, it was obvious that the most valuable land was being used for dairying. As the land got poorer more farms carrying out a mixture of livestock raising and dairying appeared. Finally on the poorest land livestock

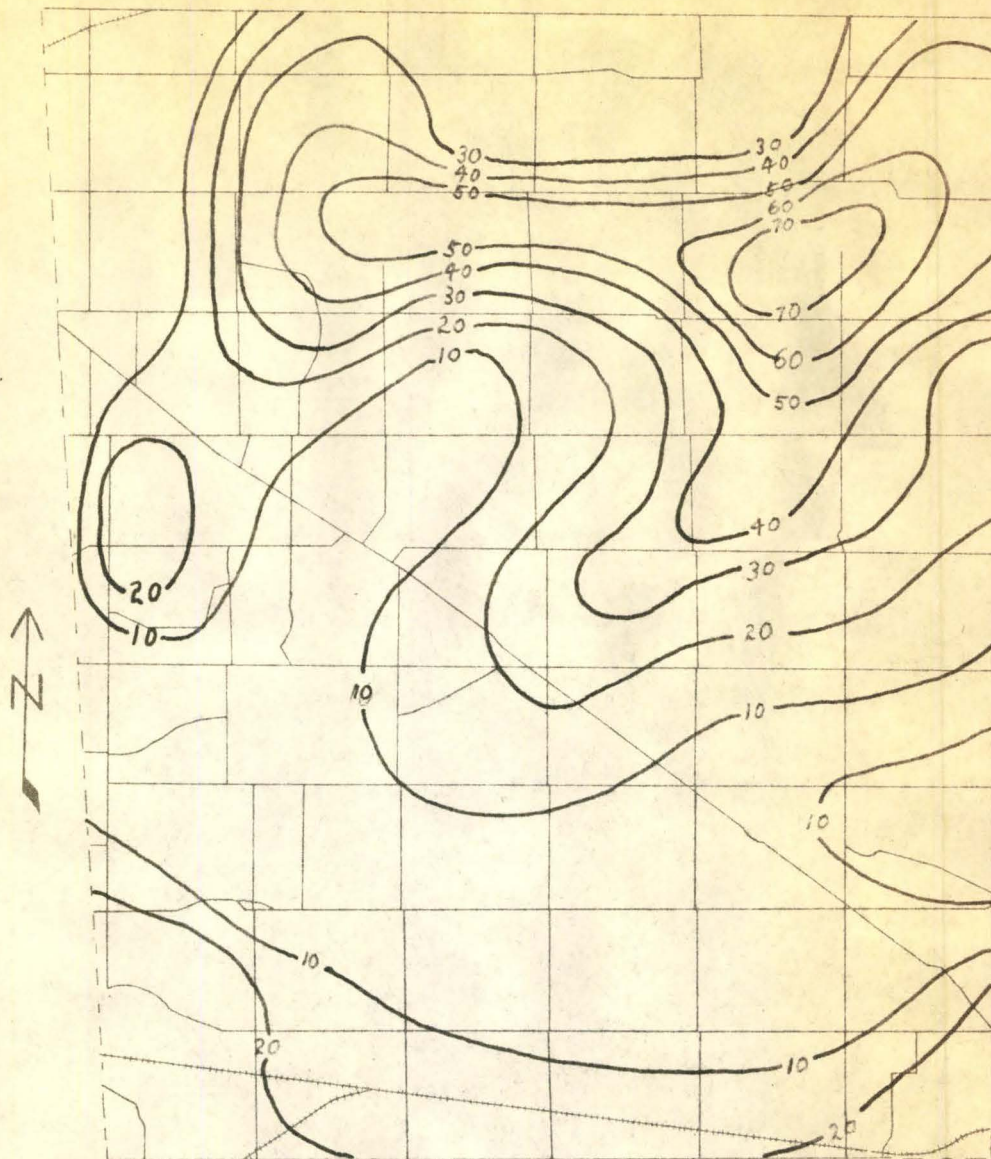


Picture 27. One of the many herds of Holstein cattle.



Picture 28. One of the few Jersey herds of the township.

MAP FOUR



**PERCENTAGE OF
WASTE LAND TO
CLEARED LAND**

SCALE: 1 INCH = 2 MILES



Picture 29. Ears of corn being stored in an outdoor corn crib. The corn field is to the left.



Picture 30. Shows the typical drumlin and swamp association. Note how the fields close to the swamp are used for pasture because of their poor drainage.

raising predominated.

The reason why dairying is found only on the better land is quite apparent. When we compare the land values map with map 7, the soils map, we see that the valuable land has the better soils. This means that the yield per acre will be higher as well as the carrying capacity of the pasture land.

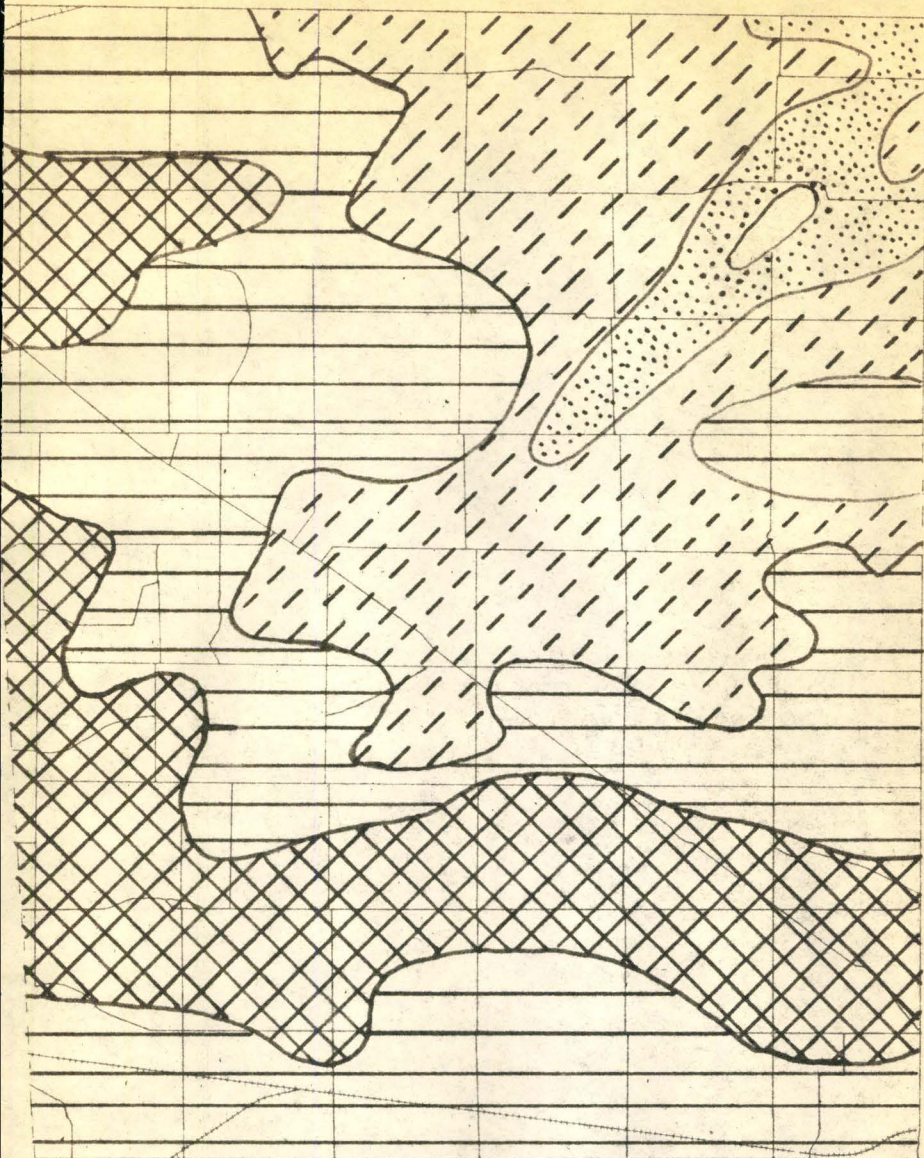
The farmer with poorer land cannot plant extra corn, wheat, or oats, to make up for this reduced yield because there is only so much that one man can plant and harvest. If he plants extra, he has to hire another man and this cuts down his profits. So we see that the fertility of the soil is a definite restriction on the amount of fodder crops that the farmer raises. In order to keep up their milk production over the winter months dairy cattle must be fed a larger amount of rich feed than livestock. As a result the farmer whose land is too poor to supply this large amount of rich feed must raise meat animals instead of dairy cattle. The farmer on the better land will keep dairy cattle instead of livestock because the profits are higher and the income is steadier.

Dairying is usually located on silty loam soils where the assessed value of the farm is over \$4,500.00. Another feature that tends to indicate the location of dairy farms is the amount of cleared land in relation to the

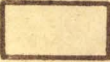

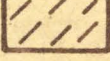
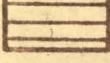



Picture 31. A field almost surrounded by swamp. The parallel lines show where the farmer has ploughed ditches for the water to run off. The land has now been abandoned.

MAP FIVE



KEY

LESS THAN \$1200	
\$1200-\$2500	
\$2500-\$3500	
\$3500-\$4500	
\$4500 AND OVER	



LAND VALUES IN
BEVERLY TOWNSHIP
(ASSESSED)

SCALE: 1 INCH = 2 MILES

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amount of wasteland.

The percentage of waste land to cleared land is plotted on map 4. This map is very significant when one realizes that as the land gets poorer larger amounts of it are going to be unprofitable to farm, as a result the land is left uncleared; if it is already cleared it is often left to grow into slash land. Therefore, from this map we can see where the land that is too poor to farm profitably is located. The assessed farm value map shows a striking similarity to the waste land map and this correlation substantiates the idea that the amount of waste land is a key to the quality of the land. By field observation it was generally found that if the area had less than 20% waste land, dairying would predominate. If the area had 20% or over in waste land, then livestock raising would be most important.

In looking for a physical reason for the poor land we only have to look at the soil map and see how most of the farms assessed at less than \$3,500.00 are found on the limestone plain or in the swamp. It is quite interesting to see how the physiographic map, the soil map, the waste land map and the land value map are quite similar. This is a good example of how the land he lives on influences man.

Another restriction to farming is slope. The main section where slope restricts the land use is in the drumlin area and in the moraines. Here in many cases the steeper slopes should be reforested. By checking at the fence lines

on the tops and sides of hills it was found that as much as 8 to 12 inches of soil has been eroded away from the tops and sides of the hills. In early days these hills were actually used for crops. To-day in many cases the slope is too steep for modern machinery to operate on so they are only used for pasture. Actually many of the slopes that are used should be reforested.

We may say that the major restriction to agriculture is the shallow mantle. Lesser restrictions are poor drainage and slope. An overall restriction is the poor types of soil that are found in the township.

Let us now look more closely at the problems of the two major types of farmers, the dairyman and the livestock farmer. In recent years a common problem has been the early spring rain. This tends to wash the young corn sprouts away. This reduces yields as much as 20% and forces the farmer to buy more feed in the winter. When a farmer is forced to do this, his profits are drastically reduced especially in the dairy industry. The livestock farmer sells much of his stock in the fall. The animals that are kept do not have to be fed expensive feed to keep up milk production. His stock merely gets thinner than usual in the winter but they are soon fattened up on the spring pasture. So we see that early spring rain harms the dairyman most.

Fluctuating prices are more of a problem for the

livestock farmer, as one year pigs will be profitable and perhaps the next year they will not. Also he has to make a decision when to sell them. The dairy business is more stable, the milk cheques representing a steady income.

An interesting question is why the farmers concentrate on dairying or beef and hog raising instead of growing cash crops. Actually there is other types of farming carried on in the township but only in the odd instance. These will be discussed later.

The reason for the predominance of livestock raising and dairying is simple: the land is too poor to be farmed in any other way. If a farmer grew sugar beets, potatoes, turnips, or exclusively wheat and corn, the yields would soon decrease and the land would become exhausted. We must remember that the land of Beverly Township was not the best to begin with and that it has been farmed in some cases for over 150 years. Only livestock raising will give the land the sufficient rest and the natural fertilizer that it needs to remain productive. Even under these conditions it is found that for best results with corn it is necessary to put 200-400 pounds of commercial fertilizer on every acre.

The geographical location also favours diaring and livestock raising. The township is close to the Hamilton-Toronto milk market and the slaughter houses in Hamilton and Toronto are nearby markets for pigs and beef cattle.

As was stated before, there are other types of agriculture found in Beverly Township. The dairy or livestock farmer may grow an acre of potatoes, or some cabbage or tomatoes, also there is the odd apple or pear orchard consisting of ten or twelve trees. On the extremely poor land one can find sheep.

These cash crops are an extra source of income for the dairy or livestock farmer. There are only three types of farming carried on that are entirely divorced from dairying and livestock raising. Two farms grow flowers to be sold at the Hamilton market and for seed purposes. Their location seems to have little geographical significance and the most important factor in their location is where the individual farmer has his farm.

The second type of specialized agriculture, other than dairying or livestock raising, is that of raising broilers. This type of farming will be outlined in Chapter IV. The farmer who is engaged in this type of farming concentrates exclusively on raising the birds. The feed used is specially prepared and enriched so it would not be profitable to grow his own.

The third exception to the rule of dairy and livestock farming is the part-time farmer. This man works in the city, often at a factory where shift work is done. He farms in his spare time or if he is laid off. He usually

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has the minimum of equipment or often rents it or borrows it. He grows whatever crop he thinks will get the highest price, often wheat, oats or corn. This type of farmer is usually found on poorer land, upon which it is often impossible to derive a living solely through agriculture.

Geographical Regions

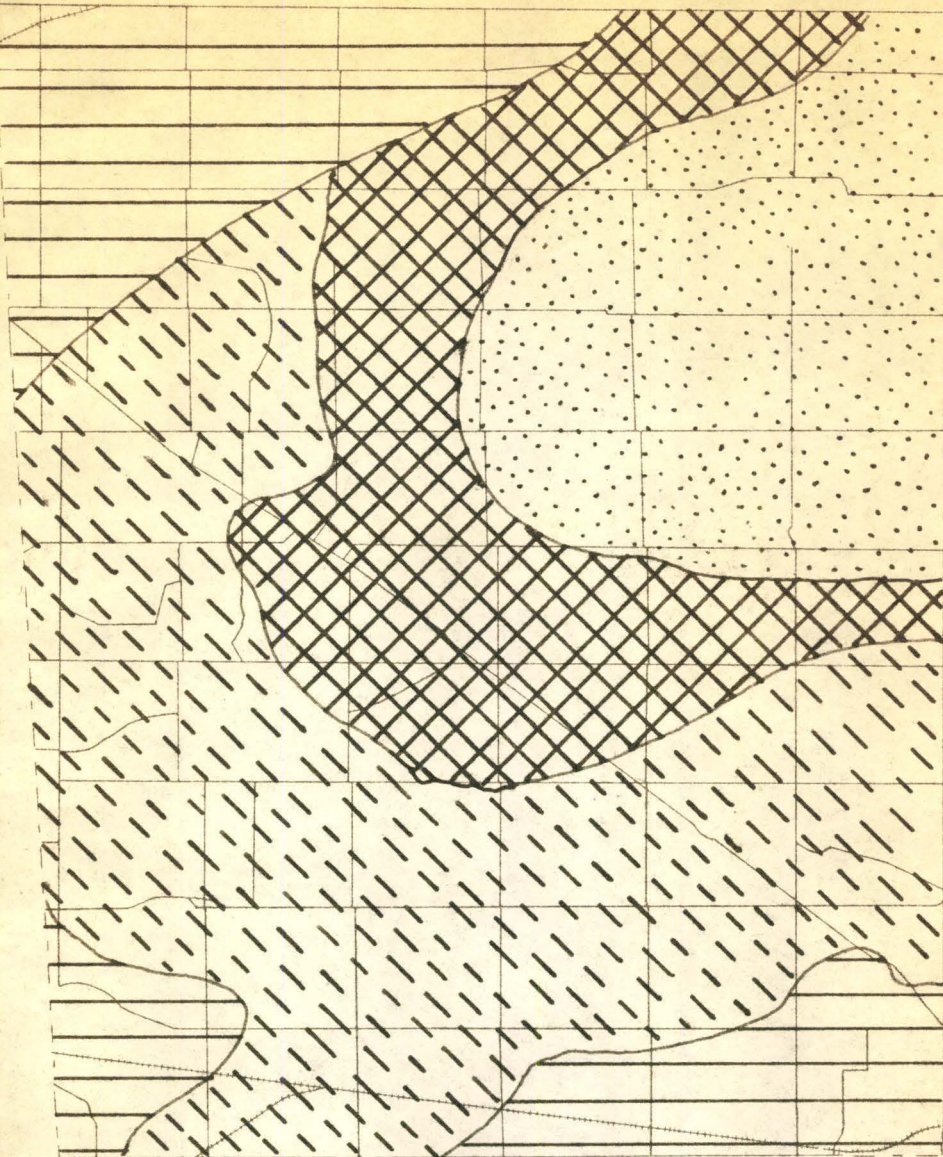
Beverly Township may be divided into four geographical regions. Since there are only two major types of farming carried out in the township the division into regions will rest largely on physical factors and land values. As a result map six, which shows the geographical regions or land types, will be quite similar to the other maps. Each region is named after its chief hamlet.

Farming and land use will vary only slightly in the four regions. The chief difference between one region and another will be the different problems the farmer will have to face. These problems will be caused by the different physical elements in the landscape.


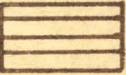

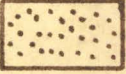
Westover Region

This is the drumlin and swamp area where livestock raising is most important. In this area the farmer is faced with the extreme slope of the drumlins and the poor drainage in the swamp. The best land lies just at the base of the drumlins, and at the edge of the swamp (see Picture #32). In many cases the tapered end of the drumlin is also cul-

MAP SIX



KEY

- | | |
|----------|--|
| TROY |  |
| CLYDE |  |
| ROCKTON |  |
| WESTOVER |  |

LAND TYPES IN
BEVERLY TOWNSHIP

SCALE: 1 INCH = 2 MILES



PICTURE 32.

The Westover land type showing a drumlin, the swamp associated with it and the use of the land. The cattle in the foreground are beef cattle grazing on a corn field that had been harvested. To the right a livestock farm is seen.



Pictures 33 and 34. Two farms in the Westover region.
Part-time farming is carried out on both of the farms.



tivated. The steeper slopes are used for pasture as well as the more poorly drained land adjacent to the swamp. This land type has the most amount of waste area in it, in some spots over 70% and in no place less than 20%. Nearly all the farms raise livestock. Some of them may have a few dairy cattle. Part-time farmers are found here, especially in the swamp area. The field pattern in this region is not as regular as in the rest of the township. This is caused by the slopes of the drumlins. An example of this is found in the south-west corner of block 2 in figure four.

Rockton Region

This land almost rings the Westover region and is found on the limestone plain where the regolith is the thinnest. This land is distinguished by its flatness and its poor drainage. The area is dotted with abandoned fields that support wild thorn bushes. This land has a shallow overburden and was farmed too intensively at one time. Now only large amounts of fertilizers and organic material will restore the soil. Even then many regions are suitable only for reforestation (see Picture #36). Again livestock raising is the chief farming activity. Sheep are common here and we also find many part-time farmers. This perhaps is the poorest land in the township.

Clyde Region

This land is composed of the till and kame moraines



Picture 35. Rough boulder strewn pasture of the limestone plain, Westover region. Sheep are often found on poor land like this.



Picture 36. Thorn bushes growing on an abandoned pasture in the limestone plain. This land is poor because of the thin mantle.

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plus some dissected land in the south-west corner. These three areas are classed as one region type because the land is quite hilly and it is used in the same way. The soils are different but they are all of glacial origin and are all composed of till, except for the kame moraine.

In this area the steeper slopes cannot be farmed nor can the bottomlands, However, the gentler slopes make good farmland. In this land type dairy farming predominates, with some livestock raising.

Troy Region

This region includes the sand plain and the parts of the limestone plain where the bedrock does not hinder farming. This flat to gently rolling land is the best for dairy farming and it is here that we find the farms with the highest values. Almost all of the land is used for dairying.

The Future of Agriculture

The biggest change in the immediate future of agriculture is likely to be the introduction of bulk milk shipping.

This means that the farmer, instead of placing his milk in cans and having the milk truck pick up the cans, installs a bulk milk cooler, costing around \$2,400 and has a tank truck come and pump the milk out of his cooler. The advantages of this system are obvious. There is not the



Picture 37. A prosperous dairy farm on the sand plain. The twin silos and large barn denote a very large farm.



Picture 38. A less prosperous livestock farm on the sand plain.



Picture 39. The hills of the kame moraine restrict farming, as a result much of the land is left in pasture.



Picture 40. A dairy and livestock farm on the limestone plain assessed at \$3,800.00

problem of keeping the separate cans clean, the tank truck can carry much more milk, it is easier and faster to load and unload the bulk milk, and it is easier to keep sanitary. It is rumored that many of the dairies, due to pressure from city health departments and economic savings, are going to accept milk only in the bulk form. The large milk producer is very happy with the bulk tank system; however, the small producer who specializes in, say, livestock raising as well as dairying will have to spend a large amount of capital to buy a bulk freezer. With his limited production it will take him a long time to get his profits out of the system. Also many of the smaller producers simply cannot afford the equipment. As a result many of the farmers who raise both dairy cattle and livestock will raise strictly livestock or strictly dairy cattle unless they can find a market that does not require bulk coolers.

As the mechanization of farming increases one man will be able to farm more land. Farm amalgamation and the renting of extra acres will increase. This will result in fewer but larger farms as the less efficient farmers will be forced to sell out.

This will add to the already mounting costs necessary to equip and stock a modern farm. Unless government aid is given it will become increasingly impossible for a man to buy a farm unless he has a large amount of capital.



Picture 41. A farm on the limestone plain assessed at \$4,200.00. Dairying and livestock raising is carried out. The bedrock is 8 feet below the surface.



Picture 42. A dairy farm assessed at \$5,200.00 on the limestone plain.

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Farming will probably tend to become even more of a father-son proposition than it already is.

The future of farming in Beverly Township is secure. The type of farming carried on is not noticeably exhausting the soil and as the demand for fresh milk by the large American and Canadian cities expands a continuing market for milk products and livestock is foreseen.

CHAPTER IV

NON-AGRICULTURAL ACTIVITIES

Beverly Township is a good example of a rural agricultural community. To-day the only activity that is carried on that could be called industrial is the preparation of farm products and the extraction of resources.

Extraction of Resources:

In the past the extraction of resources was quite important. Lumbering and quarrying were the two main activities. At one time there were thirteen or fourteen saw mills within the township. Now there is only one, which hardly does any cutting at all. To-day we find lumbering is largely restricted to cutting fence poles and Christmas trees.

Before the turn of the century, the quarrying of limestone for building purposes and for lime-making was common. Recently, gravel has been removed from the sides of drumlins. Some of this gravel at one time formed the shoreline of Lake Warren.

Beverly Swamp, up until two years ago, provided the Humar Corporation with a source of humus for greenhouses. The rich humus was taken out of the swamp, then



Picture 43. This is a view of one of the early limestone quarries. It is located near the edge of the swamp. The land above was farmed at one time but no longer is.



Picture 44. This is a photo of a gravel pit located in the side of a drumlin. It is still used occasionally.

dried, roots, twigs, and other foreign bodies were removed, after which the soil was sold. The company held 400 acres.

It is doubtful that any of these extraction industries will start again on a large scale. Beverly Township, however, will continue to provide local needs with fence posts, gravel, and Christmas trees.

The Processing of Farm Products:

This industry has become quite important and future industrial growth will be in this line. The four companies engaged in processing farm products are the Ella Riva Apple Company, Dundas Producers, the C. L. Harris Feed Mill, and the Co-Operatives Grain and Feed Mill.

The Ella Riva Apple Company, located in Lynden, buys the apples from surrounding farms, some of which are located in Beverly, but most of which are located to the south. The apples are then inspected and graded according to size, packed in boxes or baskets, then shipped to wholesalers or chain stores in Hamilton, Brantford, and Galt. Apples are also kept in storage for part of the winter. During the height of the season, thirty-five persons are employed.

The two grain and feed mills carry on similar operations. They are both located on the Canadian National Railway line. While they do process some of the local grain, they are largely concerned with the importing and



Pictures 45 and 46. This is all that remains of an old lime kiln and its quarry. They are located on a small stream just north of Troy.



preparing of western grain for livestock feed. The wheat, or whatever grain is used, is chopped, ground, and mixed; vitamins, minerals, or other grains are often added. It is then sold to local farmers who could not produce enough of their own feed during the preceding summer. The largest customers are dairymen who need an enriched feed to keep the milk production of their herds up, and farmers engaged in raising broilers. Local wheat is also processed for feed. The farmers who have surplus wheat to sell are usually those who have little or no livestock. These men usually have a job in the city and farming merely supplements their income.

The drying of corn is another important aspect of the feed business. Ensilage corn is chopped up and stored in a silo. With hybrid picking or husking corn the ears are picked separately and made into concentrated feed. In order to store kernels or ears of husking corn it is necessary to dry them in an outdoor corn crib or bring it to the mill to be dried. Mill-dried corn will keep longer and there is no chance of it rotting, while the outdoor crib-dried corn can and will often rot. Many of the farmers, therefore, have their corn dried at the mill.

The Co-Operatives Mill employs four men. C. L. Harris employs ten. Both sell farm hardware and other goods that the farmer needs. Both the mills appear to be prospering but neither plans any expansion.



Picture 47. The C. L. Harris feed mill located in Copetown.



Picture 48. The Dundas Producer's plant on highway 6.

Dundas Producers is a viscerating plant for broilers. It kills and prepares the chickens for market, then ships them to chain stores and a few wholesalers in the Hamilton-Toronto district. The plant presently employs forty persons and processes about one million birds a year. A new addition is underway that will double production and employment.

The company usually supplies the birds and the feed, the farmer raises and cares for the birds and obtains a previously set price per bird when he returns them in about ten weeks. The problems the industry faces are disease and a fluctuating market. The broiler farms are located within a 20 mile radius of the plant, three being located in Beverly Township.

Recreational Land Use:

Since man first settled the area, he has hunted the abundant wild life. At first it was to supplement his food supply or to protect his stock from predators. To-day, Beverly Township, with its many woods or semi-wooded areas, is an excellent region for hunters from the surrounding urban areas to pursue their sport.

In the future a new recreational site will be established. A group of Hamilton men decided that the rolling sand plain at the edge of the kame moraine near Orkney would make an excellent golf course. The course should cover around 300 acres and employ about fifty men.

So we see that recreation in the township is based directly on environmental factors.

URBAN DEVELOPMENT

Beverly has one village with a population over 500 people. The rest are much smaller and fulfill relatively the same function only to a lesser degree.

Lynden:

Lynden is situated on highway 58, the southern boundary of Beverly Township (see map 3). With a population of about 521, it is the largest village in the township.

Intensive settlement started there about 1856, and by 1905 it was incorporated as a police village. The early settlers were mostly engaged in the lumber industry, in the 1850's there were about thirteen saw mills in the area. The fact that the Grand Trunk Railway ran through the village made Lynden the rail shipping centre for the district.

At present, Lynden is a commercial centre for an area within a five mile radius. The commercial section consists of a bank, a beauty parlor, five grocery stores, a barber shop, a cleaning establishment, three garages, a hardware-shoe repair store, a bakery, an appliance store, and a paint store. The last two are run on a part-time basis.



Picture 49. Looking west on highway 58 in Lynden. Several of the better class homes are seen as well as the church.



Picture 50. A view looking north on the main street of Lynden. Most of the newer buildings are located on this street.

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Local industry consists of a wholesale turnip business, an apple packing industry, a saw mill, and a feed mill. It is obvious that this limited commercial and industrial activity is not enough to employ all the workers at Lynden. A large percentage of them work in surrounding communities such as Hamilton, Dundas, or Brantford. There are also many retired farmers who live in the village who sometimes do the odd bit of carpentry or assist in the apple packing plant during the fall season.

The growth of Lynden has occurred mainly as a ribbon development on either side of the Lynden Road south of the Canadian National Railway line. A secondary development has occurred along Howard Street which lies to the east of the main street. It is along this street that most of the new building is being carried on.

Several streets running east tend to disrupt this ribbon development. They are; Highway 58, Liberty, Union, Mill, and Barnabas Streets.

One of the problems that will hold back any future growth of Lynden is that on the west side of Lynden Road there are no entrances to the interior part of lot 12. If this area were to be developed a street would have to be laid out from the C.N.R. track down to Highway 58. There would be no space for it to break through the line of houses, nor would there be any room for side streets



Picture 51. One of the better homes on highway 58 (also known as the Governor's Road or highway 99).



Picture 52. Some of the poorer type of new homes being built on highway 58. This type of housing lowers the value of the better homes along the road.

connecting it to Lynden Road. This problem does not exist on the east side of Lynden Road as eight streets branch off to the east and provide good access to the interior of lot 13.

Another problem that has to be met before Lynden can expand is the water and sewage disposal problem. The town water supply comes from four drilled wells. This is rather an inadequate arrangement because the pressure is low and sulphur is often present in the water. Often the wells become dry. To combat this there are two reservoirs located in the town. The inadequate water supply, as well as being an inconvenience to the villagers, is also a serious problem in fire protection. Sewage disposal is looked after by septic tanks but these do not appear to be sufficient and pollution is a constant danger. The flooding of basements by runoffs is a problem in the spring. So far, nothing seems to have been done to alleviate these problems.

The housing in Lynden generally speaking is poor. The Wentworth Planning Board classes the houses as follows: 52% are in fair to poor condition and deteriorating. They are thought to be good for less than 25 years. Thirty-five percent are in moderate condition and only slightly deteriorating. The remainder, or 13%, are in good to excellent condition and are good for over fifty years.



Pictures 53 and 54. Two homes located in Lynden that may be classified as good to excellent. These homes are good for at least another 25 years to 50 years.



There seems to be little hope or reason for the expansion of Lynden. It will probably grow slightly as the surrounding area develops. It will probably remain as a small service center for an agricultural community.

Many of the new houses are small, cheaply built and only partly furnished. They appear destined to remain that way. A few of the newer houses are of a better quality (see picture #53).

Rockton:

Rockton is located on Highway 8 in lots 20 and 21 of concession four. It is the administrative head of the township. Here the township clerk has his office along with a yard for the township trucks and other equipment and a township hall. The population is under 200 and it has never been incorporated into a village. As well as being the administrative center of the township, it has the Rockton Fair Grounds and acts as a farm service center for the surrounding area.

The commercial services offered are: a Health Center with steam baths using mineral water, a garage, two general stores, and a hardware store. The hardware store serves an area with a five mile radius.

The development is of the ribbon type broken by a few side streets. Most of the houses of Rockton are quite old, 45% are in fair condition and 35% are in poor condi-



Picture 55. The main street of Rockton looking west. Two stores and the Township Hall may be seen on the left.



Picture 56. An aerial view of Rockton looking east. The fairgrounds are seen in the left centre.

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tion. Many residents work in Hamilton, Dundas or Galt, and many are retired farmers. There is less building going on in Rockton than in Lynden. Here the water supply is good but the shallow bed rock makes it necessary for the septic tanks to be cleaned out every eight months.

Rockton will remain a rural center and the area it serves will be more likely to decrease than to increase as modern transportation allows people to go to Galt or Dundas to do their shopping.

Copetown:

Copetown is situated at the junction of Highway 52 and Highway 99. Part of it is located in Ancaster Township but most of it is in Beverly Township.

Its only function is that of a service center for the surrounding area. The facilities consist of a general store and post office, a gas station-garage, and a feed mill employing about ten men. The store serves an area of about 10 miles. The feed mill is also a hardware store.

Most of the residents are retired farmers or people who commute to Hamilton or Dundas. The houses for the most part are over fifty years old. On the outskirts of town there has been some post-war building. The water supply is fairly good. The bed rock is at least 30 feet below the surface so there is no septic tank problem.

The future of this village appears to be the same as that of the rest of the villages in the township. They will probably remain at the same population level. Any large scale future growth will be restricted to subdivisions or new surveys such as has occurred around the villages of Ancaster, Stoney Creek and other centers around Hamilton. The possibility of this type of growth is quite remote in the immediate future because there is still a great deal of land that is closer and more accessible to Hamilton than the land in Beverly Township. However, as this land becomes used up the possibilities of Beverly Township being used for subdivision will increase.

The remaining centers of the township, Troy, Sheffield, Kirkwall, Orkney, Valens, Clyde, and Westover, are much smaller. Of these, Sheffield and Troy are the largest. They each have more than one church, two general stores, and also their schools are a little larger. To study these centers as we have treated the three previous ones would be repetitious as the basic facts are the same as regards to the occupations of the people. Therefore, we will merely state that they are similar in function to Lynden, Copetown, and Rockton but smaller and therefore less important.

The remaining centers, Orkney, Westover, Valens and Clyde, are merely crossroad hamlets, sometimes with a store or a gas station and maybe a church. They serve only



Picture 57. The church at Kirkwall. This church was built in 1848 of limestone quarried in the township.



Picture 58. The hamlet of Clyde looking west along the main road. Notice the poorer quality and the age of the homes. These factors are noticeable in the hamlets.

the immediate area and there is little or no change foreseeable for the future.

At one time the villages were all much larger than they are now. Even when we consider the overall population decline of the township (fig. 3) the decline in the villages and hamlets is relatively greater. Also there has been no large upward trend in the last fifteen years.

This general decline is due to the fact that improved transportation facilities have meant that the farmers and residents could go to the larger centers and take advantage of the larger range of services offered. This will be an important factor in the future decline of the smaller hamlets.

A relatively new form of urban land use may be observed in the township. This is the gas station corner. These corners usually appear wherever two main highways intersect. This is their chief locational factor.

In Beverly Township we only find one of these areas, Peter's Corners, located at the junction of highways 8 and 5. There are three gas stations and a restaurant catering exclusively to the passing automobile traffic. It is likely that in the future a motel or two will also be located here. As with the majority of these centres there is no housing associated with Peter's Corners.



Picture 59. All that remains of the once prosperous settlement of Westover. Note the drumlin in the background and how the road swerves to avoid it.



Picture 60. An aerial view of Sheffield from the south.

Services

The chief service that Beverly Township provides its residents with is that of education. Beverly Township has fourteen schools. Many of the children come from homes where the father works outside of the township in some industry. The taxes collected from this man would just be the taxes on his land, unlike the city where he works the township cannot tax the industry and get additional revenue to make up for the small land tax that the man pays. Some townships (for example Ancaster) find that they must increase land taxes in general to overcome this problem. Fortunately Beverly Township is located in the path of several pipelines. This land is taxed heavily as industrial land and as a result Beverly Township is able to maintain her education and roads system without heavily taxing the residents of the township.

CHAPTER V

SYNTHESIS

In Beverly Township we have studied man in a rural environment. We have seen how early settlers have come to the land and found that it held little promise for agriculture. In the nineteenth century man, for the most part, was not adjusted to his environment. He pursued a type of farming that was ruining the soil and giving him a poor return for his labours.

Though the soil was of low fertility he grew crops that would tend to exhaust it. He cleared land with a shallow mantle over the bedrock and tried to farm it. Steep slopes were used for crops and the topsoil was eroded away.

Finally in the twentieth century man began to adjust his farming methods to the environment he found in the township. The exhaustive cash crop type of farming was changed to dairying and livestock raising. This allowed organic matter to be returned to the soil in larger amounts and the production of exhausting crops to decrease.

Today man in Beverly Township has adjusted himself to his environment. He is carrying out a type of farming that is maintaining the fertility of the soil and still

giving him a profitable return for his labour.

Let us now consider more specifically the relationships we have found between man's activities and his environment. By studying the maps of pysiographic regions, soil types, and land values we have been able to see that the most successful farmers are located on the better lands. There are some exceptions, but this is too general a rule to ignore. The farmer achieves this success because he is able to engage in the more profitable dairy industry. Those on the poor land must content themselves with raising meat animals, a type of farming where the profits are not as high. We may say then that the quality of the land decides whether a farmer can engage in dairying or whether he has to content himself with raising meat animals and a lower standard of living.

The close correlation between the Land Value Map and the map showing the percentage of woodland and waste land to cleared land gives another criterion by which to judge the quality of land.

We may say that Beverly Township is a rural area in which the agricultural value of the land is definitely dependent on the physical factors. In dairy farming and livestock raising man has found a way of living harmoniously in his physical economic and cultural environment.

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KEY	
POORLY DRAINED	SANDY LOAM
MUCK	SILTY LOAM
LOAM	LIMESTONE
BOTTOM LAND	PLAIN

SOIL MAP OF BEVERLY TOWNSHIP

AFTER O.A.C. SOIL SURVEY

SCALE: 2 INCHS = 1 MILE