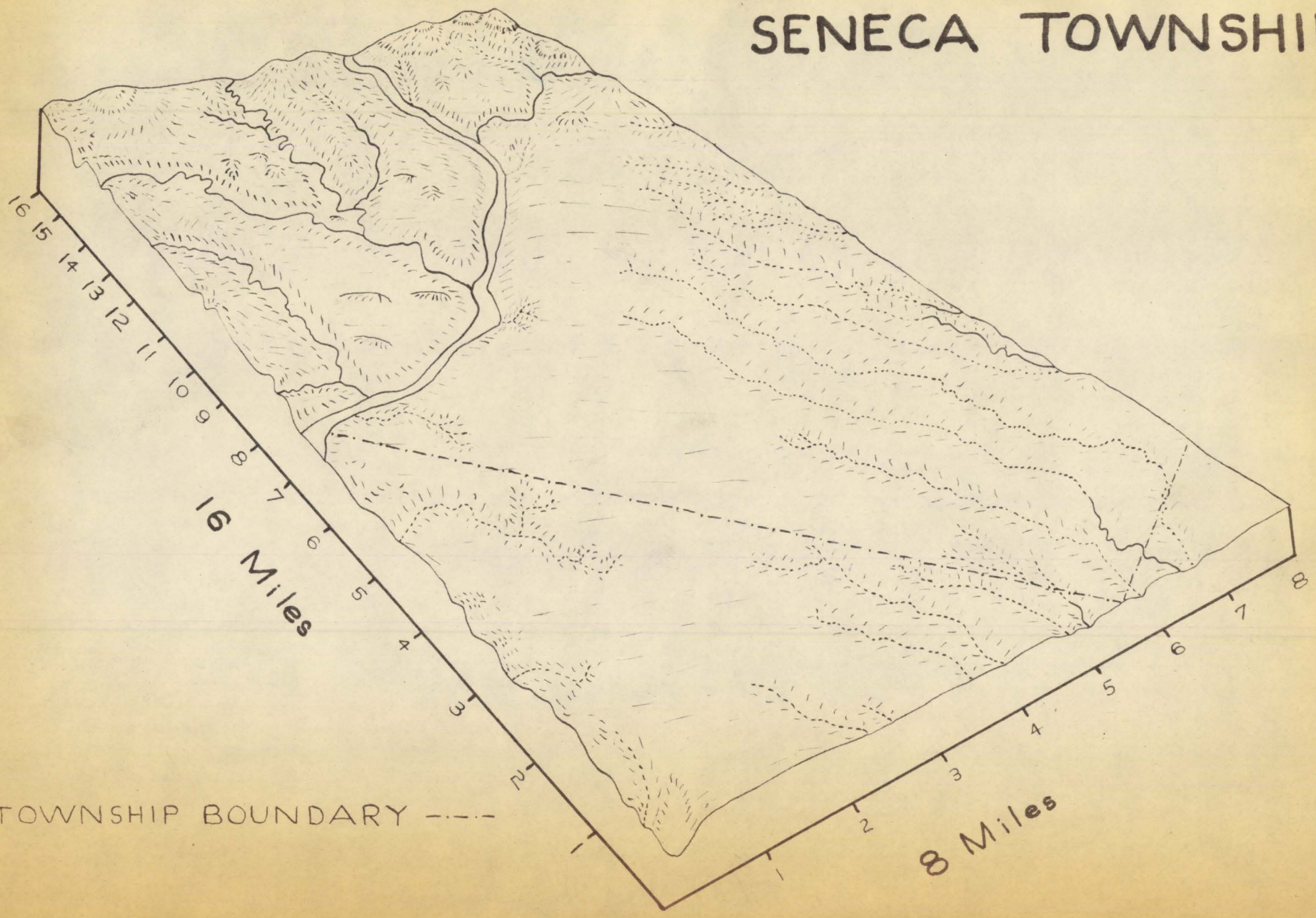
BLOCK DIAGRAM
of
SENECA TOWNSHIP



S E N E C A T O W N S H I P

A Study in Settlement and Land Utilization

by

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Presented to
The Department of Geography
in partial fulfilment
of the requirements
for the degree
Bachelor of Arts

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L. S. Reeds.

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ACKNOWLEDGEMENTS

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Special appreciation is also due to the Librarian at Caledonia, the Agricultural Representatives at Cayuga, and the many farmers and business men who so patiently attempted to answer my many questions.

INTRODUCTION

Since "Geography studies the areal differentiation of the earth's surface- the differences found in different continents, lands, districts and localities"[1], it has been my purpose to study differentiation in Seneca Township. This makes a particularly interesting study in this locality as not only physical factors effect it but also human and economic.

For this purpose a preliminary study of the physical background and history of settlement has been made. This is an important part of the study as it is upon these that the present land use has developed, and it is present land use which shows differentiation.

It is immediately apparent, even before the study is commenced, that there is a great difference between town and country. Therefore these have been treated as seperate entities and their interrelationships have been studied. It is not sufficient to simply study the differentiation but it is also desirable to include, where possible some of the causes of it. For this reason an explanation has been given for aerial differentiation as observed and described.

The study has been divided into four parts for convenience of study. PartI is the study of the phisical environment; Part II the study of the historical geography; Part III the present land use; and Part IV the summary and conclusion.

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1. Hartshorne R. The Nature of Geography, page, 237

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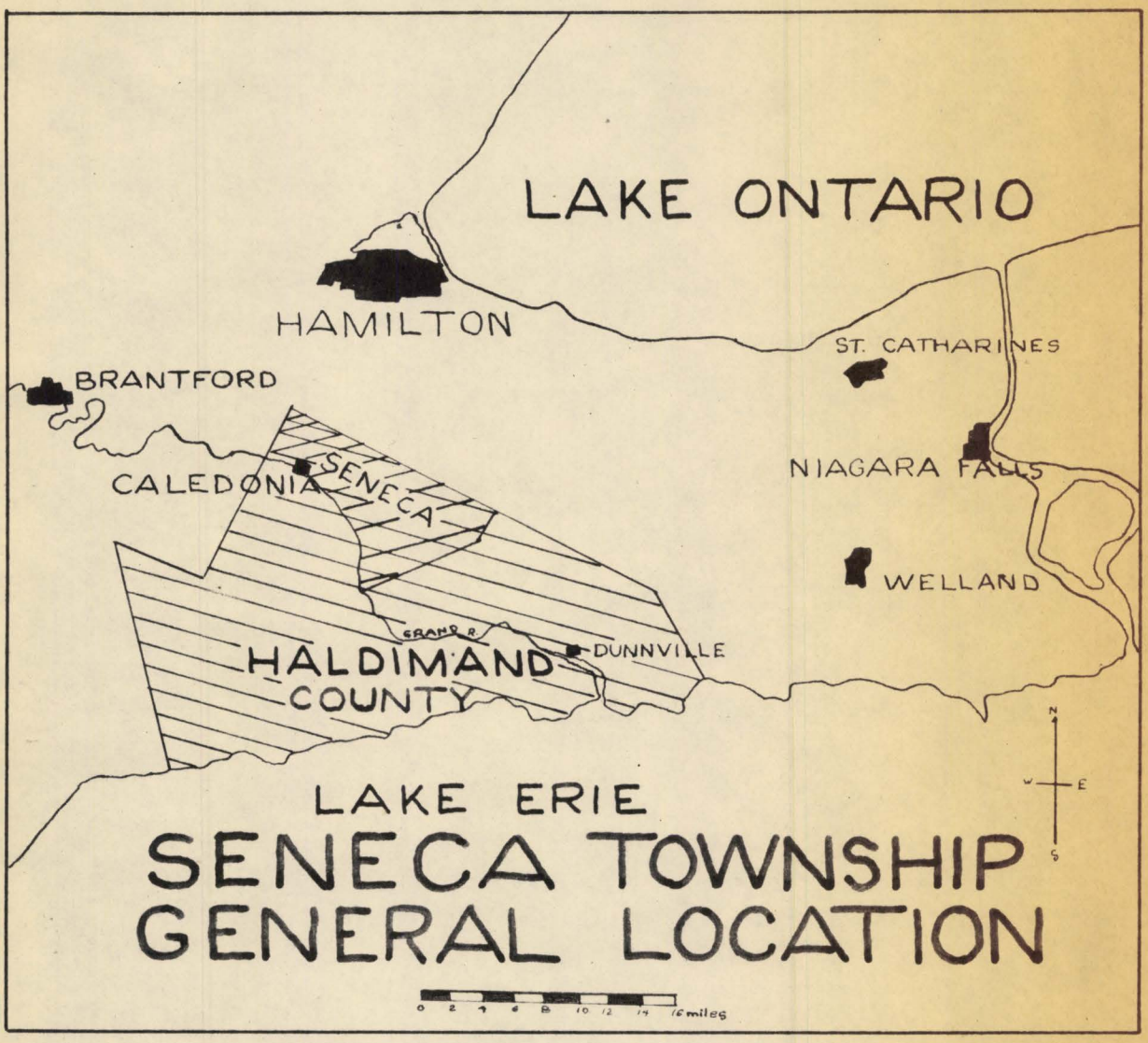

LAKE ONTARIO
HAMILTON
ST. CATHARINES
BRANTFORD
NIAGARA FALLS
CALEDONIA
SENECA
WELLAND
GRAND R.
DUNNVILLE
HALDIMAND
COUNTY
N
W
E
S
LAKE ERIE
SENECA TOWNSHIP
GENERAL LOCATION
0 2 4 6 8 10 12 14 16 miles

T. LOWDEN

LOCATION

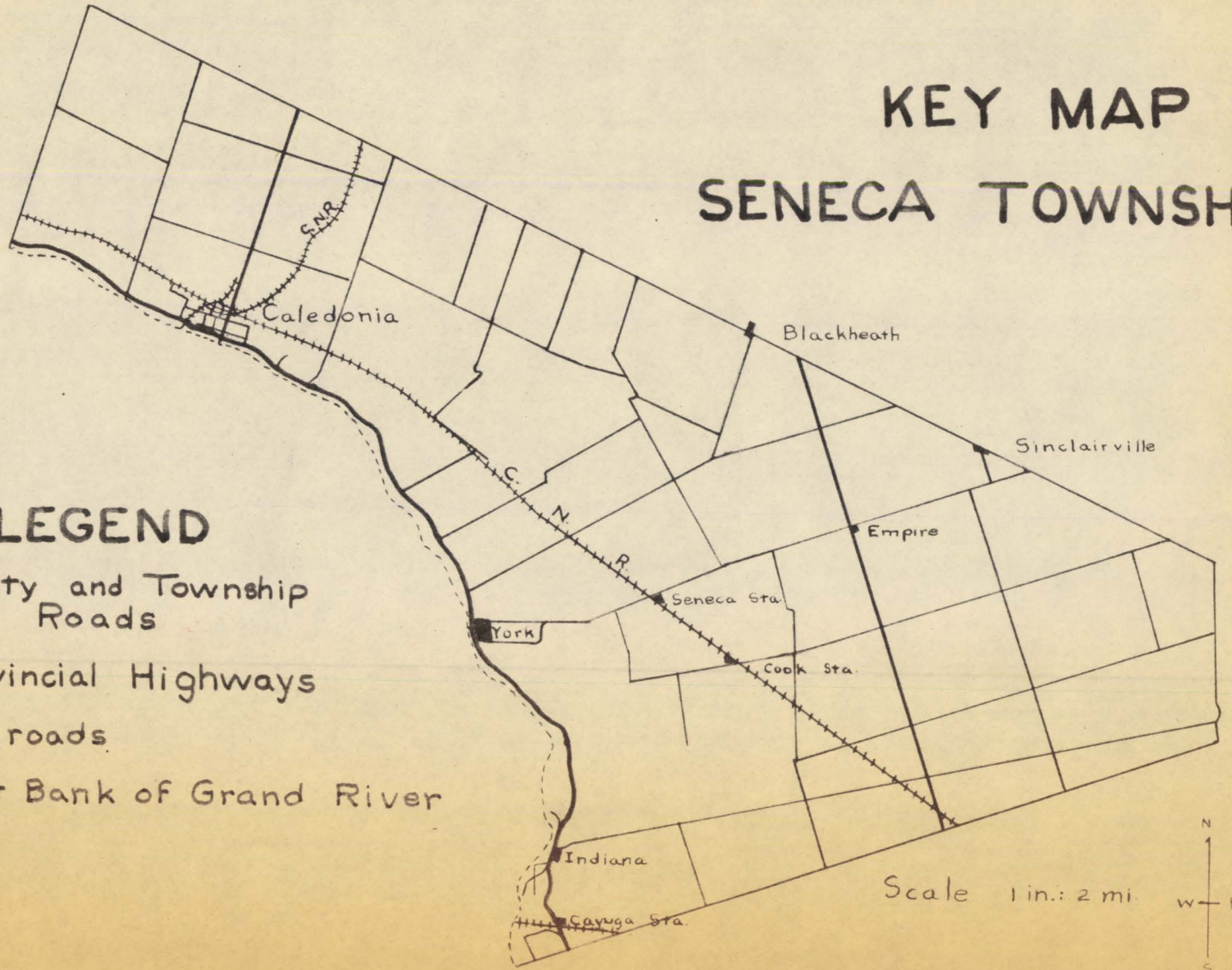
Seneca Township, one of ten townships in Haldimand County, is located on the north-eastern bank of the Grand River at the western extremity of the Niagara Peninsula. Its position in relation to south-eastern Ontario is shown in Map II.

In shape, the township is an irregular five-sided figure. Its northern boundary is a straight fifteen and a half mile stretch along the "Old Indian Line" which was once the northern limit of the Six Nations Indian reserve. The western boundary, bordering on Onandaga Township, is only three and one quarter miles long. The south-western margin of the Township is along the Grand River, which in this section, describes an arc as it changes its direction of flow from east to south. This boundary is fourteen miles long. The south-eastern boundary is nine miles in length; the eastern boundary, two and a quarter. These two boundaries separate Seneca from Cayuga and Canborough Townships respectively. The entire area enclosed by these five boundaries is 66.74 square miles or 42,717 acres.

The road pattern and urban centers within the Township may be seen in Map III. The roads follow a fairly regular grid system near Caledonia and in the extreme eastern part of the Township, but in the areas around York and Blackheath the pattern is quite irregular. Two factors are responsible for this: the late date of survey and the poor drainage of the land.

The area north of York and that between York and Blackheath had already been settled when the road surveys were made. The area north of Indiana was so swampy that the surveyors left it without roads.

KEY MAP
SENECA TOWNSHIP



LEGEND

- County and Township Roads
- Provincial Highways
- Railroads
- East Bank of Grand River

Scale 1 in.: 2 mi.

T. LOWDEN

XIII

PART I

PHYSICAL GEOGRAPHY

Chapter One

GEOLOGY

(a) Bedrock geology

Seneca Township is in the Niagara peninsula which forms part of the great series of limestone cuestas and shale depressions that dip southward from the Precambrian Shield, westward from the Appalachians and eastward from the Superior Uplands. During Paleozoic times, this area was generally submerged beneath the ocean, and received deposits of sand and silt from the edges of the shield and later from the rising crests of the Appalachian folds. The sea floor sank about as quickly as the load increased. Consequently the younger sedimentary rocks buried the older ones with few major unconformities developing. As the sea did not remain a constant depth, sedimentary rocks of different types were formed. Calcareous dolomitic limestones were laid down while the sea was deep, and shales while the sea was shallow.

The oldest formation with which we are concerned is the Queenston formation of the Upper Ordovician Era. It consists of readily eroded shales.

Above the Queenston shales are the harder rocks of the Silurian Era. The oldest of these is the hard sandstone Medina formation which is the reservoir rock for important gas supplies in Seneca Township. It also comprises the first of a series of capping rocks which have formed the Niagara Escarpment.

Above the Medina formation is a series of alternating calcareous and clastic sediments which were laid down in fluctuating seas. While the sea was deep, the Clinton limestone was formed; then when the sea became shallow, Rochester shale was deposited, followed by more limestones as the sea once again became deep.

Towards the later part of the Silurian Era the seas in which the calcareous dolomites were laid down, again showed signs of fluctuation. At times they retreated towards the south-west, leaving shallow basins, in which were deposited saline beds. Coarse alluvial fans spread out from the margins of the basins over the salt beds and helped to compress them into large beds of anhydrite and gypsum which are today commercially valuable. This is the Salina formation which forms the upper layer of bedrock in Seneca Township. There were additional dolomitic strata formed as deeper seas subsequently covered the area; but these have been eroded away.

Movements of the earth's crust resulted in the flat lying sedimentary rocks' being tilted about thirty feet per mile to the south. The result of this was that differential erosion occurred, the softer shales eroding more quickly than the hard limestones. As the Salina was softer than the underlying rocks it eroded more rapidly, forming what Watson calls the "Salina Vale".[1] Seneca Township lies within this vale which has subsequently been filled with glacial drift, and has been buried under lacustrine sediments.

Watson, J. W. The Geography of the Niagara Peninsula, p. 20

(b) Glacial geology

During the Pleistocene Epoch four great ice sheets advanced and retreated over Seneca Township. These continental ice sheets completely altered the landscape by dumping great quantities of glacial drift or till in the Salina Vale. The last ice sheet of the Wisconsin glacier is responsible in a large measure for the present physiography of the Township.

The effects of the ice are, however, relatively obscure throughout Seneca Township because the land forms are modified as a result of their mode of formation and their subsequent alteration through lake and river action.

As the ice sheet retreated to the north it acted as a dam forming a glacial lake - termed Lake Warren. This lake covered a large part of the Niagara peninsula. In its waters the moraines in Seneca Township were laid down. They are much smoother than moraine laid down on dry land and the material in them is partially sorted by the action of the water. The land in Seneca Township is not hummocky. The relief is not greatly different from that of the surrounding territory as the physiography in the immediate vicinity was formed under the same conditions. The surface layers of soil within the Township do not vary greatly because the glacial features were laid down in very deep water and were subsequently covered with a thick layer of clay which was uniform over the area.

Despite the near uniformity of the surface materials throughout Seneca Township, the materials below the surface and the landforms differ from place to place. For this

reason, Seneca Township has been divided into a number of physiographic divisions. As post-glacial dissection and deposition have considerably affected the land forms, the discussion of physiographic divisions will be left until after the section on drainage.

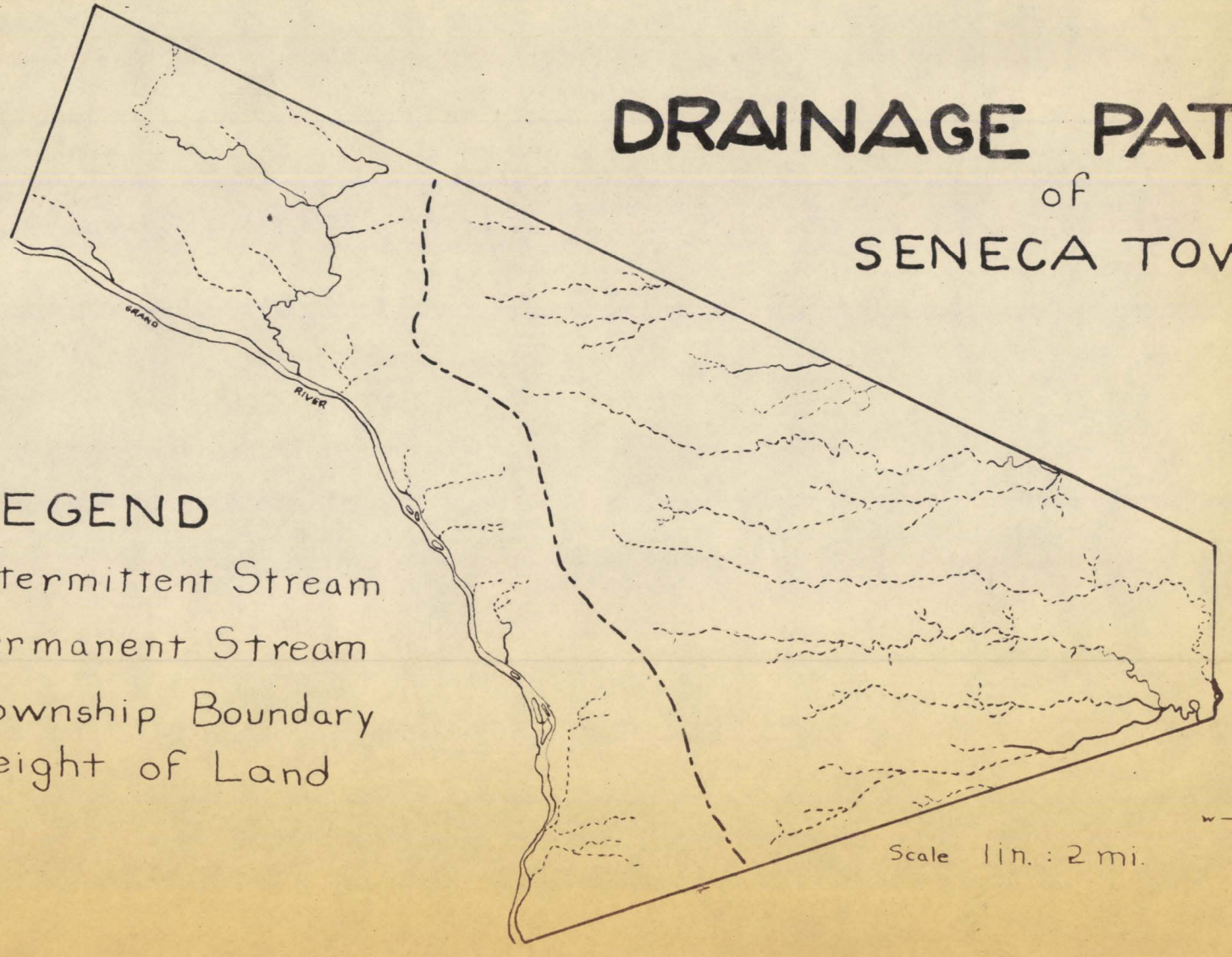
(c) Drainage

Drainage in Seneca Township is handled by the tributary systems and trunks of the Grand and Welland Rivers. The divide between these two systems is formed by a ridge of moraine, which will be described later as the Seneca modified moraine. The area west of this divide drains into the Grand River: that east of it flows into the Welland.

The Grand River itself has had a long history which has been the subject of much controversy. Some geologists present data to show that it flowed from east to west: others try to prove the opposite. The important fact is that the pre-glacial Grand River flowed within the Salina vale, and indeed carved a wide valley within the vale. The post-glacial River flows within this same vale, but its course is restricted by glacial land forms. The Grand River just below Brantford flows in a south-eastern direction, but it is soon forced to the east by the Caledonia Drumlin field.[1] The River is forced to take a southerly direction again near Caledonia where the drumlin field which diverts the river eastward meets what Watson calls the

1. Chapman and Putnam, Physiography of Southern Ontario, p. 57

DRAINAGE PATTERN
of
SENECA TOWNSHIP



LEGEND

- Intermittent Stream
- Permanent Stream
- Township Boundary
- Height of Land

Scale 1 in. : 2 mi.

N
W E
S

T. Lowden

Cayuga moraine which deflects the river to the south. The river is here compressed between the two glacial landforms in such a way that it has no opportunity to meander as it does upstream towards Brantford. Just below York the river finally cuts down to bedrock, exposing it for a short distance. Below Cayuga, the Onandaga escarpment which lies to the south of the river, forces it to flow to the east once more.

The collecting area of the Grand River is very large, so that from time to time floods occur spreading out on the narrow flood plain. The flood plains are covered with rich alluvial material with a high organic content. These are the only alluvial materials in the Township on which soils have been able to develop.

Because of a small catchment area between the Seneca modified moraine and the Grand River, the streams are small and intermittent in the eastern part of the township. Since the gradient of streams flowing into the Grand River is quite steep, erosion is encouraged. One larger permanent stream near Caledonia has captured one of the tributaries of the Welland River by rapid headward erosion.

The Welland River drainage in Seneca Township consists of intermittent streams of low gradient flowing between slight undulations in the topography. In the extreme east end of the Township the streams become permanent because they are farther from the source area. The streams here have a steeper gradient and are therefore actively downcutting with more pronounced banks.

Although the drainage system in the Township is quite extensive, it is not yet mature enough to drain all area. The catchment area of the watershed and the interfleuves of the Welland River drainage system, are as yet poorly drained.

The map on page shows that drainage tends to follow an east-west direction in both the Grand River and the streams draining into the Welland River. This is not merely a local phenomena, for most of the drainage in the Niagara peninsula is from west to east, in spite of the southward slope of the bedrock. There are several possible explanations for this phenomenon. The one presented by Putnam and Chapman in their discussion of the Haldimand clay plain is that "the drainafe of this belt is controled by the modest ridges which directed it eastward in several parallel streams".[1] Another explanation is that the eastern end of the peninsula has a lower elevation, perhaps due to a dip in rock in that direction. This is not indicated in reference material available at present. The low base level of the Niagara River means that headward erosion and down cutting have been rapid on the Welland River giving the tributaries to develop a long east west axis. Yet another suggestion is that raised beaches of glacial Lake Warren, although small, may assist in controling the drainage.

The true cause will likely be determined in the future when geomorphologists have had a greater opportunity to work in this part of the country.

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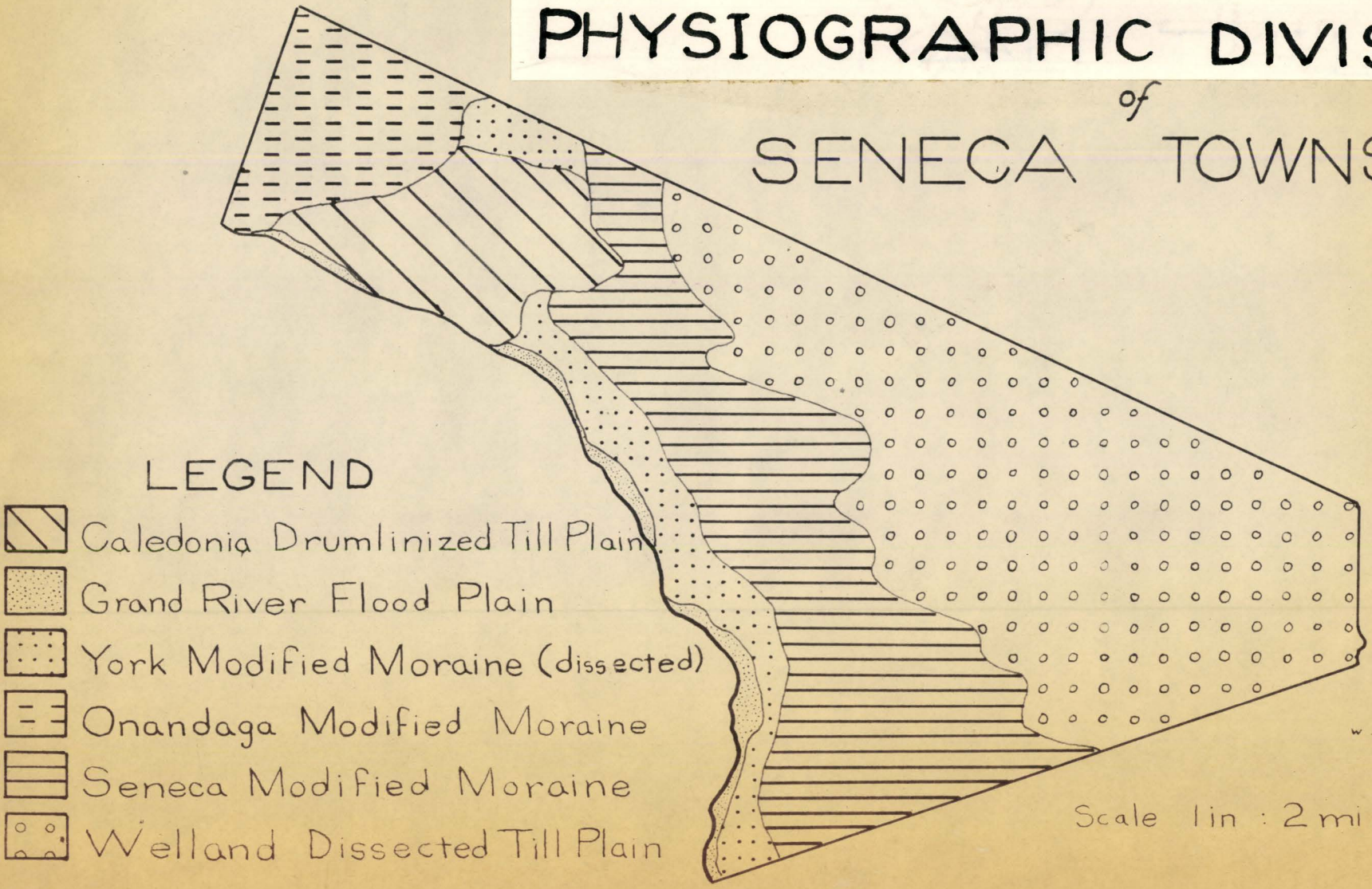
1. Ibid, p. 57

PHYSIOGRAPHIC DIVISIONS of SENECA TOWNSHIP



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Wooded meander cut, typical of the drumlinized till plain north of Caledonia.

Typical landscape of the Onandaga modified moraine.

(d) Physiographic divisions

Seneca Township has been divided into six physiographic divisions, based upon differences in the physical features which have developed through the years.

1. Caledonia Drumlinized Till Plain:

This area is located near Caledonia, adjacent to the Grand River. It consists of five distinct drumlins protruding through clay deposits. The axes of these drumlins are oriented in a north-east south-west direction. After the period of glaciation these drumlins were submerged by the glacial waters of Lake Warren, with the result that they were wholly covered with a thick layer of lacustrine clay, leaving the typical drumlin relief to reveal their position. These drumlins rise between twenty-five and fifty feet above the surrounding land, giving this area a bold relief which contrasts with other areas of the Township. In some places erosion has exposed boulders, giving additional proof of the existence of the drumlins. The land between the drumlins is better drained than is usual in drumlinized areas because these drumlins are all very close to the Grand River.

2. Seneca Modified Moraine:

The Seneca modified moraine is very level, since it has not yet been dissected by stream erosion. This feature is located in the central part of the Township, and has its long axis in a north-west south-east direction. This area also was under glacial Lake Warren; so it was covered by a layer of

Seneca modified moraine

Welland dissected till plain

clay which has masked the boulder clay which had been deposited previously by ice. Since this physiographic division is very level, the total relief in the area is less than twenty-five feet. Any areas where the elevations vary more than this have been included in the York modified moraine or the Welland dissected till plain.

3. York Modified Moraine (dissected):

This physiographic division slopes steeply up from the Grand River and is quite deeply dissected in some places. A small area north of Caledonia has also been included in this physiographic division because of its similar dissected appearance. The area is part of a moraine which was modified by glacial Lake Warren and then dissected by headward erosion of the Grand River drainage system. The erosion has left exposed a large number of erratics and pebbles indicative of existing moraine.

4. Onandaga Modified Moraine:

This area, located in the western part of the Township, is about 675 feet above sea level which is about twenty-five feet above the high points in the nearby drumlin field. This area has been greatly modified by the waters of Lake Warren and by subsequent stream erosion. Apparently rougher in nature than was the Seneca modified moraine, the area was covered with a very thick layer of lacustrine material covering the stony surface of the moraine. The tops of the hills in this area are various heights, indicating that a moraine

exists. If the tops of the hills were all at the same level there would be reason to believe that this was a dissected till plain rather than an area of modified moraine. This division differs from the adjacent drumlin area in land form, and from the dissected area in the varying heights of the hills.

5. Welland Dissected Till Plain:

This area is similar to the Seneca modified moraine, except that it is lower and has been dissected by stream erosion. The small streams in this area have gently sloping banks. The interfluves in this area are flat and poorly drained. The area has the typical hilly topography of a young dissected region. In this case the dissection is the result of the rapid headward erosion of the Welland River tributaries. The greater erosion in this part of the Township has removed more of the lacustrine deposits and exposed more rocks than elsewhere.

6. Grand River Flood Plain:

The flood plain of the Grand River is very narrow in Seneca Township. Above Caledonia it is only about 200 feet wide. It disappears altogether in the drumlinized area, broadens to about 600 feet between Caledonia and York, disappears again at York and subsequently widens to 600 or 700 feet between York and Indiana. The flood plain is very level and, as indicated by the name, is subject to flooding by the Grand River, for a few days in eight out of ten years.

Chapter Two

CLIMATE

Situated as it is in the path of the westerlies, Seneca Township has quite variable weather, with changes occurring about three times every ten days. The conflict between polar and equatorial air masses assures a reliable rainfall throughout the year. Although most of the rainfall is cyclonic, the heavy convectional rainstorms which occur during the early summer contribute to the total precipitation of 30.75 inches. Their efficiency is lessened greatly, however, by the rapid run off of the fast falling rain. They affect the crops adversely by breaking the stems and by packing the soils. Even with rainfall evenly distributed throughout the year, increased evaporation during the late summer often leaves the pastures dried out and brown.

Lying midway between Lake Ontario and Lake Erie, Seneca Township has a climate which is quite moderate, although the townships closer to the lakes have climates which are even more moderate. The moderate climate in Seneca is seen particularly in the maximum and minimum temperatures, the long growing season and the frost free period.

The following data, obtained from the Department of Transport, will give a good indication of climatic conditions in Seneca Township.

Climate in Seneca Township

Mean annual temperature	46.7° F.
Mean winter temperature	23.7° F.
Mean spring temperature	42.1° F.
Mean summer temperature	67.5° F.
Mean fall temperature	47.3° F.
Extreme low temperature	-34.0° F.
Extreme high temperature	105° F.
Daily range of temperatures	18 degrees
Average date of last frost in spring	May 14th
Average date of first frost in fall	Oct. 3rd
Length of growing season	195 days
Average annual precipitation	30.75 inches
Average summer rainfall	7.92 inches
Possible sunshine in growing season	50%

Thornthwaite maps the Niagara peninsula as belonging to the BC'r or humid microthermal climate with precipitation spread more or less evenly throughout the year. Köppen gives a fuller picture of the climate by designating as a Dfb climate. This type represents a humid microthermal climate in which there are cold winters and warm summers with sufficient precipitation throughout the year for general farming. Within this broad climatic zone, as determined by Köeppen and Thornthwaite, there are more detailed variations caused by local conditions. But because Seneca Township is a comparativelysmall area with no

great differences in elevation, it has a uniform climate throughout which is similar to the broader region in which it lies.

Chapter Three

VEGETATION

In the more sheltered, better drained areas of Seneca Township southern flora predominate, while on the less protected, poorly drained areas the northern flora persist. W. E. Halliday classifies this as the Niagaran type of forest, a section of the Deciduous Forest Region.[1]

Old records of natural vegetation are to be found in letters and surveyors' reports; so that the natural conditions may be reconstructed.

The tree associations were predominantly composed of the broad-leafed varieties. Several species, such as chestnut, tulip tree, hickory, and rock elm find their northern limit in this area. The characteristic associations which occurred within the thesis area all included some broad-leafed trees. Found along the Grand River on the well drained slopes, were associations of hardwoods - white oaks and pine predominating - along with some beech and sugar maple. Around Caledonia there was an oak-beach association with hickory in frequent occurrence, along

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Halliday, W. E. A Forest Classification for Canada

with a few clumps of white pine. Throughout the rest of the Township, especially where drainage was poor, were found basswood, red maple and red, white, and bur oak.

Seneca Township has been quite closely settled, so that, at one time or another, nearly all of the original forest cover has been cleared leaving only small farm woodlots in the better drained area. In the poorly drained area, however, the trees have been permitted to grow and some of them are now reaching a size where they are commercially valuable as lumber. Some of the areas which were brought under the plough for some years are now reverting to woodlot and unless demand for agricultural land increases these will become forest once again.

Chapter Four

SOILS

Seneca Township lies within the grey-brown podzolic soil zone, which has developed under mixed forest vegetation and a cool moist climate. The rainfall is sufficient to create a pronounced leaching effect, which is a characteristic process in the development of these soils. While passing through the leaf mat, the water becomes sufficiently acid to be able to remove iron and aluminum oxides in solution. This leaves a lot of silica in the upper part of the sil, giving it a characteristic ash grey colour a few inches from the surface. When the water stops moving downward a layer of accumulation occurrs containing

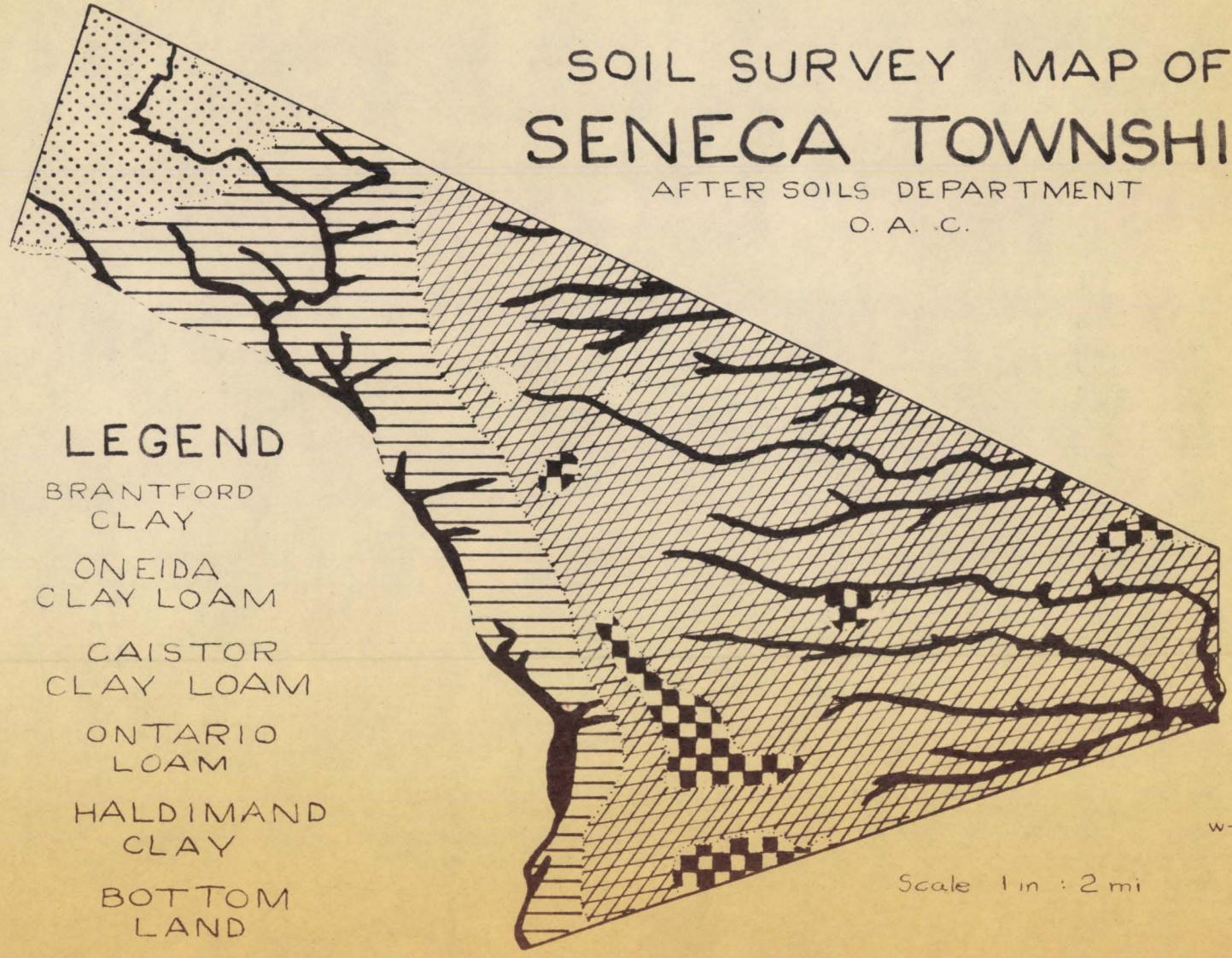
iron, aluminum and clay particles, together with organic matter decomposed and mixed with the minerals of the soils. This is perhaps the most important factor in making these soils suitable for agriculture.

Although all the soils in Seneca Township are placed within this one major classification, differences in parent material drainage and relief have resulted in the development of several different soil types, with varying textures and soil profiles.

Parent materials in Seneca Township are essentially transported rather than residual: i.e. they were not weathered from the local bedrock but were brought by ice and water from another region. Most of the material here is composed of red shale and sandstone from the Queenston and Medina formations, brought from below the Niagara escarpment mixed with a small amount of limestone from the escarpment brow. As most of the parent material comes from the Queenston and Medina formations the soils are low in lime content, even though the local bedrock is limestone. The soils are, however relatively rich in magnesium from the small deposits of dolomitic limestones carried to this area by the ice. The flood plain has a different parent material because it has been transported at a later date, it is a mixture of a great many kinds of parent material washed down from upstream.

SOIL SURVEY MAP OF
SENECA TOWNSHIP

AFTER SOILS DEPARTMENT
O. A. C.



LEGEND

- BRANTFORD CLAY
- ONEIDA CLAY LOAM
- CAISTOR CLAY LOAM
- ONTARIO LOAM
- HALDIMAND CLAY
- BOTTOM LAND

N
W E
S

Scale 1 in : 2 mi

T. LOWDEN

Soil Types

(a) Oneida Clay Loam

In Seneca Township this soil is found in the drumlinized area around Caledonia and on the well drained slopes of the York modified moraine. Surface drainage of these soils is good and sometimes excessive, leading to erosion on the steeper slopes.

Oneida soils have a light brown surface layer in which organic matter is comparatively deficient. This is followed by 5 to 6 inches of melanized material then by a greyish A_2 horizon between 6 and 12 inches in depth. Under this is the B horizon which is also less than a foot thick. The parent C horizon is unweathered clayey till. The A_1 and A_2 horizons are acidic because they lack lime. The B horizon is low in phosphorous but contains and average amount of potash and calcium and has a high magnesium content.

The potential fertility is high but the rolling nature of the land makes it difficult to cultivate. The chief needs of the soil are lime and phophorous. When these are added the land is excellent for wheat, as other nutrients are readily available.

(b) Ontario Loam

These soils occurr in Seneca only in a few very small spots where the material is slightly courser and better drained. The top soil is of a light brown colour and a light loamy texture. The A_o layer is shallow with a low organic content.

content. It is followed by an A_1 horizon which is about six inches of mineral soil. The A_2 layer is nearly a foot thick, and is a pale greyish loam. Below this the B horizon is a dark reddish-brown clay loam with a medium content of organic matter carried down from the upper layers. The parent material consists of stony clay which has been partially sorted by wave action.

The upper layers are acid but the parent material is alkaline and has a good supply of free carbonates. Liming is necessay if the soils are to be used for the intensive cultivation for which they are otherwise well suited. In Seneca, these soils are not intensively used, but they are kept almost continually cropped with wheat, oats, and hay. The areas of Oneida clay loam are, however, so small that their effect upon the farm economy of the Township is scarcely noticeable.

(c) Brantford Clay

The distribution of Brantford clay very nearly coincides with that area designated as Onandaga modified moraine. The post-glacial modification of the moraine has permitted this series to develop here, in stonefree lacustrine materials.

Brantford Clay soils are fairly heavy textured, but the external and internal drainage are good because the surface is strongly undulating to rolling especially close to stream courses.

There is a thin layer of partially decomposed leaf litter followed by an A_1 horizon consiting of four inches of dark grey clay loam. The A_2 horizon is six to eight inches thick. It consists of light yellow-brown clay loam which is quite hard. The soil

Soil profile of Brantford clay showing well five inches of light yellow-brown clay loam in the leached A_2 horizon.

quite hard. The collecting, or B horizon, is brown to dark brown and is a hard packed clay. The parent material is varved clay which overlies a stony clay till.

The whole profile is slightly acid but when supplied with lime the soils grow good crops of wheat, corn, hay and legumes. On the more rolling areas sheet erosion is a problem when the fields are cropped.

(d) Haldimand Clay

Haldimand clay is a heavy textured soil which covers approximately half of Seneca Township. Most of the soil is located in the eastern part of the Township on Seneca modified moraine and Welland dissected till. The material has a high percentage of shale which was transported by ice from central Ontario and the basin of Lake Ontario. As there is no limestone in the parent material these soils are acid. The parent material here has been water sorted by the action of Glacial Lake Warren giving it a heavy texture at the surface.

The A_1 horizon consists of five or six inches of soil with a heavy clay loam texture. Below this the A_2 horizon consits of about six inches of yellowish grey clay, with a fairly high percentage of silt. This is followed by a reddish brown very compact clayey B horizon, nearly a foot thick, that overlies gritty clay till. Gritty material may be found in higher layers of the soil too, especially near the tops of hills where considerable sheet erosion has taken place; but stones and boulders are generally rare. The aeration and internal

drainage of the soil are poor, and unless these factors are overcome by good surface drainage and fertilizers, the soil proves difficult to work and is soon exhausted.

The leaf mould of the forest does not have a very good opportunity to melanize with the soil because of compactness which results in poor aeration, and inadequate internal drainage of the soil. Consequently the organic content of the soil is low, and the soil is deficient in nitrogen. The quantity of available potash is also low; calcium medium; and magnesium high. The soils are in need of phosphate, lime and general improvement of physical conditions. This last can be best accomplished by using as much natural manure as possible. Row crops are particularly difficult to grow on this and other heavy textured soils in Seneca Township because of the frequent thunderstorms which tend to pack the ground.

(e) Caistor Clay Loam

Caistor clay loam appears only in relatively small patches north of Indiana and north of York. These are stone free soils found on the water divide between the Grand River drainage and the Welland River drainage. It is also found on the interfluves of the Oswego and Welland Rivers. These soils have developed upon material similar to those whic have produced Haldimand clay but the drainage is not as good since the area is very flat.

The soil is dark grey on the surface, with a lighter leached layer of about seven inches making up the A_1 horizon

Two examples of impeded drainage in the eastern end of the Township. Much of this land is not usable because of the rushes which grow in the swampy land. Cattle graze in the area between the swamps.

which is very heavy textured. This is followed by a greyish brown B horizon in which the organic matter is fairly low. The poor drainage often develops a characteristic mottled appearance in the lower horizon.

Fertility is medium to low with a deficiency in nitrogen, phosphate and organic matter which make it necessary to use fertilizers if the land is cropped. Because of the acidity of the soil, artificial drainage and liming are necessary to make the land productive. For these reasons much of the land on this soil type is left in swampy forest or is used only for pasturing cattle from neighbouring farms.

(f) Bottomland

Bordering the streams are azonal soils known as bottomland. These soils have a high organic content making them darker in colour than the surrounding soils. Probably the most characteristic feature of the bottomland soils is that they have an occurrence of glei a short distance from the surface. The excessive moisture in these soils restrict their use to pasture or woodlot where artificial drainage is not practical. In many places the bottomland is so narrow that it is left as an unploughed area in a cropped field. There are notable exceptions to this land use. These may be seen on the Grand River flood plain where artificial drainage has made the soil suitable for growing excellent corn, oats, hay and garden crops.

Summary of Soils

There is a great inherent potential fertility in the soils of Seneca Township, although their heavy texture and poor drainage counteract their potential productivity. Under good management these heavy clay soils are suited to a wide variety of crops. The improvement of moisture relationships and the promotion of a more friable and improved structure is essential in the good management of these soils. The importance of plowing down of manure, clovers, old straw, hay and grass cannot be over-emphasized as a means of raising the organic content of the soil. Meanwhile the addition of lime is of prime importance in overcoming the acid reaction. Since in many cases tile drains have been shown to be impracticable in the heavy soils of Seneca, the maintenance of good tilth would do much to aid the free movement of water and thus go far to solve the serious drainage problem.

PART II

HISTORICAL GEOGRAPHY

Chapter One

THE INDIAN ERA

The Ojibwa, also called the Chippewa Indians, were the original inhabitants of Haldimand County.[1] The Indians used this territory primarily as a hunting ground, for there was a good supply of fish and forest animals. Agriculture was not entirely absent, however, as the Grand River flood plain provided them with narrow strips of land which were suitable for growing corn, beans and squash, the alluvial material being rich in organic matter and easily cultivated. About the time of the American Revolutionary War, however, their claims to this area were purchased and their title extinguished by the British Government.

During the American War of Independence (1775-1783) the Iroquois, or Six Nations Indians, displayed the most steadfast devotion to the British cause, and under the leadership of Captain Joseph Brant, an Indian Chief, they rendered important assistance to the British forces. After the close of the war the British Government promptly acknowledged the services of their Indian allies by granting them as a hunting and fishing ground part of the land which they had recently purchased from the Ojibwa Indians. The grant consisted of a strip of land twelve miles wide, with the Grand River meandering the length of it.

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1. Nelles, B. The County of Haldimand in the days of Auld Lang Syne, p. 3.

The difficulties presented by the curves of the river were solved by taking the boundaries on each side of the river as straight lines with their distances from the river averaging six miles. This grant, which included some 310,391 acres, was made by Sir Frederick Haldimand, Lieutenant Governor of Upper Canada, and was dated October 25, 1784. The whole of the present Seneca Township lies within this area.

The Indians who came to live on this land continued to use it as had the Ojibwa Indians, growing only small quantities of agricultural produce.

Although this reserve was primarily for the use of the Six Nations Indians, Joseph Brant, the powerful chief, invited some white men whose ally he had been during the War of Independence, to settle within the borders of the reserve. These men were accustomed to pioneer life and were almost as familiar with the ways of the woods as were the Indians; so they readily accepted the invitation to live in the reservation. Two families settled in Seneca Township and were given leases for 999 years. The Nelles family was given a block of land in the vicinity of York, three miles broad and extending three miles back from the River. In addition, they were given a small tract on the opposite side of the River in Oneida Township. The Young family was given a tract of equal size between York and Indiana.

These families immediately began to clear land for the cultivation of crops. They did not grow wheat, as did many

pioneer settlers, because population was too sparse to support a mill in the Grand River area, and the nearest grist mill was at Ancaster, too long a journey even if roads had existed. Instead, these early settlers grew Indian corn which they could more easily grind into flour themselves. Besides the corn they grew a few vegetables for household use. The Grand River provided the settler with transportation, by canoe, sled, or snowshoe as the seasons demanded; and with fresh water and fish.

Chapter Two

THE PIONEER PERIOD (1814 - 1833)

After the Grand River Reservation had been in the possession of the Indians about ten years, Brant thought it best to sell parts of the reserve and use the interest from the proceeds to purchase blankets, guns, ammunition and other necessities which the Indians required. Many of the transactions were carried out cunningly by the white men, with the result that no money was gained by the Indians.

During this period those who settled along the Grand were mostly frontiersmen who were already familiar with Indian crops of maize, beans and squash, and knew how to hunt and fish. It was not until 1814, when the war with America was

over that any settlers other than the Nelles and Young families moved into Seneca Township. The settlement of the township continued at a slow pace, partly because there were no Indian trails giving access to the Township from below the escarpment, and partly because early settlers looked for light-textured, easily worked soils which were lacking in Seneca.

Woodlands, heavy soils and poor drainage were undoubtedly of prime importance in retarding the development of Seneca Township. Its location in the interior of the peninsula was also important, for people avoided the interior, not only because of the superficial difficulties, but because of the pull of a whole series of contacts centered in the scarp foot plain. People hated to leave the lake shore sites as long as there was land to be had below the escarpment, as it was only in this area that contacts with the rest of Canadian society were frequent.

Even when the settlers did start coming in larger numbers, they did not spread over the Township but were concentrated along the banks of the Grand River. The River provided drinking water, power and transportation. The land adjacent to it was better drained and less thickly wooded than that in the interior.

During this period corn growing gave way to wheat growing, as mills were established at Canboro, in Canborough Township, and DeCewsville in Oneida Township, both of which were within reach of the settlers in Seneca. With the facilities for grinding wheat into flour, the farmers began to clear the

land for cultivation of this crop as rapidly as possible. In fact, they were so busy clearing land during this period that they did not develop roads, but simply blazed trails between various farmsteads. The Township continued to be isolated and only sparsely settled until the settlement boom which came after 1833.

Bitterness between the white man and the Indian increased until in 1830 the government decided, with the consent of the chiefs, to sell the remaining portion of Seneca and other townships, and invest the proceeds for the benefit of the Indians. This meant that after 1833 when the transactions were completed, the townships within the "Indian Lines" began to be extensively settled, bringing to an end the pioneer period.

Chapter Three

PERIOD OF EXPANDING COMMUNICATIONS (1833 - 1871)

(a) Water transport (1833 - 1839)

The building of the Welland Canal from 1824 - 1833 opened the area above the Niagara escarpment for trade with eastern Canada. It meant also that cultural contacts with the rest of Canada were greatly simplified. With shipping on Lake Erie thus expanded it followed that trade with the interior of the peninsula would be desirable.

Trade with the interior was possible via the Grand River which entered Lake Erie not far from the Welland Canal. The banks of the River were covered with excellent timber available for less that fourteen dollars and acre. Since timber was in great demand, a great frofit could be realized from it. After the forests were cleared, the land could be used for raising wheat which could then be sold in lower Canada.

Although the Grand River was suitable for canoes and logs, the River could not be used for larger vessels until a number of improvements were made. The early spring of 1833 saw the beginning of improvement to the River by the Grand River Navigation Company who realized the great possibilities of trade along this route. The Company had plans for extending navigation up the River as far as Brantford. The greatest obstacle to this plan was the section of the River between Indiana and Caledonia where the river was shallow and had a number of falls. To overcome these falls and make the river navigable, eight locks were necessary; "the first of these in ascending the river was at Indiana, where there is a fall of 12 feet, nine inches; the next at Sim's lock, or number 3 was one and a half miles west of York (at York a dam and canal were built to carry boats around the shallows) with eight and one half feet fall; from thence there is a level stretch to Seneca where there is five feet nine inches fall; the next at Caledonia with seven and one half feet fall; then there is level water, or as it is termed 'slack water navigation' for twenty five miles. The locks in each case were made

forty feet in width." [1]

In order to build the necessary works for navigation the company bought narrow strips of land along the bank, and on these their employees lived, and stores and mills were erected. Wherever dams were built a town sprang up to take advantage of the power developed at the dam site. Indiana began to flourish after a flour mill, a saw mill and a distillery were built by Mr. Thompson, one of the employees of the Navigation Company. This town seems to have owed its success to the genius of Mr. Thompson rather than to any geographic conditions of location or availability of raw materials, for shortly after his death in 1845 the settlement fell into decay.

York, further upstream towards Caledonia, owed its success to the water power supplied by the Company's dam at that point, and the plaster beds and mills which were developed. This settlement became quite prosperous in this period, because stores were established here by the Navigation Company, and the farms in this district were well enough established to be able to supply surplus food for people working on the canal and in the industries which had sprung up to make use of the facilities provided by the canal.

The settlement most favoured by the Company was Seneca, where stores and a grist mill were established. However, another grist mill was soon established by one of the more adventuresome of the Company's employees, a Mr. McKinnon. This mill was built at lock No. 5, where power was available from a

1. The Grand River Sachem, Wednesday, June 21, 1927

dam built by the Navigation Company. He called the settlement which sprang up around it Caledonia, a name frequently used in reference to his native Scotland. Besides the grist mill Mr. McKinnon established a saw mill, a shingle mill and later a woolen mill, which employed about 25 people. The street plans for the village were drawn in 1844 and have not been changed since that time.

(b) Road Building (1839 - 1852)

The banks of the Grand River had been made accessible for settlement by the Navigation Company, but as yet the interior of the Township had not been opened. The first steps in this direction were taken in 1839 when the Hamilton-Port Dover plank road was begun. One settler writes in a letter, that by 1845, only six years after the road was begun, all of the land along this road was taken up and most of it had been cleared of forest. A bridge was constructed at Caledonia with six arches the last of which would swing sideways to permit the passage of vessels on the Grand River. This site was chosen for the bridge as the river valley at this point was very narrow being compressed between the drumlins of the Caledonia drumlin field. This bridge assured the success of Caledonia for it opened up a new and larger trade area for the village. Shortly after the construction of the bridge the number of commercial establishments increased considerably. These were catering to the needs of people who were passing through the township and needed a place to stay or supplies to continue their journey.

At the same time as the Plank Road was being built

there was considerable development of Township roads. A fair road now joined Caledonia, York and Indiana. There was also a poorer road being built from York to Blackheath.

(c) Rail Transport (1852 - 1873)

The next development of transportation in Seneca Township, was the Buffalo-Brantford and Goderich Railroad, which followed closely after the construction of the Port Dover Road. This railway passed through the Township from east to west well north of the Grand River except at Caledonia where the River reaches further north than elsehwere in the Township. Another railway owned by the Hamilton and Lake Erie Railroad Company was built linking Hamilton and Port Dover in 1873. The two railways (at present owned by the Canadian National Railway)crossed each other at Caledonia, giving the town one more advantage over other settlements in the Township. The railway bridged the river here for reasons similar to those for the Port Dover road, but in addition the already thriving community made it a desirable place through which to pass. The merchants and business men invested a considerable amount of money in this railway.

The competition by the Buffalo-Brantford and Goderich railway built in 1852 was too great for the Navigation Company; and by 1861 it was forced out of business. In that year the Company transported only 100,000 bushels of wheat, while in 1840 it had shipped over 500,000 bushels from Brantford. Along with the end of navigation came the decline of York, since many of the men formerly employed by the Company had lived in this

settlement. The mills at York continued to operate for a few years but they were soon forced out of business as they could not afford the cost of upkeep on the dams.

From an agricultural standpoint this period was on of rapid development. Many people moved in and land was cleared as rapidly as possible. The best timber was sold to the saw mills which were established at York, Indiana and Caledonia. In 1851 there were eleven saw mills in the Township eight of them driven by water power and three by steam. The poorer timber was burned and the resulting ash made into potash and sold to a firm manufacturing candles and soap at Caledonia. For the first part of this period the products of the forest were more valuable than were agricultural products, but by the end of the period the situation had reversed itself as the farmers were busily engaged in the production of wheat, barley and beef. It was during this period that land which would have been better left with a forest cover was put into use.

In the early part of this period the farmers had only a minimum of livestock. These might include two or three cows, some sheep, a few pigs, some poultry and a yoke of oxen. In the pioneering period oxen were indispensible for they were the only work animal that was strong enough to clear stumps from the fields. Oxen were not supplanted by horses until after 1850.

During this period there was no specialization on the farms- each farmer producing a variety of crops and animals. The farmers felt no pressure from outside to make them improve

the quality of their products, with the result that this was often very low. Nonetheless, because markets for farm products were very large in the large cities the products were easily sold.

At first spring wheat was grown in large quantities, but by the end of this period its acreage was below that of fall wheat and by the turn of the century spring wheat had almost disappeared from the farm economy. During the period 1833-1871 wheat was the most valuable crop that the farmers could grow. It was the great profit that could be realized from farming wheat which kept the population increasing until 1871.

Of the farm animals in Seneca Township in 1861, swine and sheep were the most numerous. The sheep were kept primarily for their wool which was woven into cloth in Caledonia for sale both locally and abroad. However, the size of flocks were drastically reduced when the mill closed down because of competion from overseas.

Chapter Four

PERIOD OF DEPOPULATION (1871 - 1951)

(a) Rapid depopulation (1871 - 1901)

The population in Seneca Township declined rapidly after 1871. The greatest depopulation took place during the decade from 1871 - 1881 when the population decreased by 737. This decline continued until, in 1941, the population was 1,604, less than half of the figure for 1871. The trend may be seen in the following table.

TABLE I Population of Seneca Township (1871 - 1951)

Year	Population	Year	Population
1851	3,636	1911	1,712
1861	45577	1921	1,742
1871	3,282*	1931	1,673
1881	2,545	1941	1,604
1891	2,231	1951	1,762
1901	1,885		

* The village of Caledonia in 1853 was incorporated but the census figures did not show this until 1871.

This exodus from Seneca was the result of both external and internal factors. An external pull on population was exerted with the opening of land for settlement in the United States of America and Canada. Many people felt that

opportunities were greater in these lands. Then the opening up of the west indirectly reduced the rural population of the Township even further because, as the west became settled and productive, eastern farmers found it difficult to compete with the cheap grain from the prairies where large scale farming methods resulted in cheaper production than was possible on the small eastern farms. After a time the farmers in Seneca found that they could compete with western grain only if they used modern machinery. This in turn brought about an agricultural revolution wich resulted in a further exodus from the township. Actually only a fraction of the exodus was from the farms, for although it is commonly believed that the use of machinery on farms put many farm labourers out of work, in reality, it meant rather that field workers were freed for specialized farming and the practice of better husbandry. It altered the type rather than the amount of labour, for those who had once woked the fields now looked after the livestock, specialized crops and machinery. On the other hand the rural villages suffered a much more drastic population decline as mechanization and improved transportation had done away with the need for the local artisan.

In the case of Seneca, it was Hamilton and Brantford which drew off the non-farm population, particularly from York, Tyneside and Blackheath. Some of the artisans in Caledonia also found it more profitable to move to larger centers.

Finally, the decrease in population may be set down to changing trends in farming with a gradual transition from

general farming to dairy and livestock raising. This involved the abandonment of the small subsistence farm. It also checked the process of subdividing the land, as large farms were required for this type of agriculture. It became more economical to enlarge farm holdings, and the process has continued to the present. This may be seen in table I, page 49.

During the period 1871 to 1901 there were a number of changes in the agriculture of the Township. At first an increase came in the production of wheat, but soon western competition became too strong and the farmers therefore turned to crops which could be produced more intensively. More dairy and beef cattle were raised and the quality was improved. This necessitated more fodder crops; hay and oats particularly competed with wheat for the largest acreage of crop land.

The farmers attempted to diversify their production so that a great variety of crops were grown. Many planted apple orchards and grew vegetables and small fruits.

For a short time between 1861 and 1901 pea production was very important. Peas were a favourite with farmers because they were a dependable crop and were excellent for fattening pigs. This crop, as in the case of other legumes, was also excellent for conditioning the soils since it added nitrates to the nitrogen deficient soils. However, with the scourge of the pea weavil at the turn of the century this crop rapidly declined in popularity.

(b) Period of population stabilization - 1901 - 1921

The population decrease in the township was temporarily halted during this period, largely because most of the available land in western Canada had already been settled. Other reasons of an internal nature included the establishment of a Gypsum mine and plant at Caledonia and the successful adjustment of farm practices to an increasing urban market and competition from western Canada.

As the size of the farm population changed only slightly during this period there were only minor changes in the size of farms.

Although important for many years as a grain growing area it became known between 1901 and 1921 for its dairy products, but general farming still predominated. A further significat decrease in the production of wheat occurred as more of the land was given over to oats as a fodder crop. The acreage used for hay also increased considerably during this period.

Figures for livestock are no available for this period but there is evidence that the population of cattle and horses increased while that of swine and sheep decreased slightly.

The urban population during this same period grew considerably because there was an increasing demand for labour in the Gypsum mine and plant. Services for these people also meant that more were required in the village than previously.

(c) Period of Continued slow Decline (1921 - 1941)

The period of stabilization did not last long

in the

in the Township for by 1921 the census report showed a further decrease in the farm population. During this time adjustment to large urban markets continued more rapidly now, however, because the means of transportation were steadily improving. Milkcoould now reach the city in a few hours, so that the demand for fluid milk from this area greatly increased. In 1925 a creamery was established at Caledonia, which meant that even more farmers could participate in the production of milk as the demand for in was ever increasing. Dairy farming, however, requires a considerable amount of land and capital; those who did not have this, and many didnot especially after 1929, moved to the city or worked on farms in other parts of the country.

During this period the acreage of wheat remained constant, while the production of oats and hay increased as the variety of crops being grown decreased throughout the Township.

As might be expected there was a steady increase in the number of livestock being kept throughout the Township. Horses and sheep, however, continued to decline in number. The census figures for 1941 shows a great increase in the number of swine being kept. This may be explained by the fact that the United Kingdom required a great deal of meat when the war with Germany broke out in 1939. A similar demand for eggs encouraged the increase in the production of poultry.

The urban population continued to grow during this period as the Gypsum plant in Caledonia continued to expand in

response to increased demand for building material.

(d) Increasing Population (1941 - 1951)

Since 1941 there has been an increase in population, however, this was not on farms but in suburban residences. High cost of living, and scarcity of homes along with improved transportation encouraged people to move into the country. This will be more fully discussed in a later chapter.

During this period the production of wheat increased both in acreage and in bushels per acre. A great demand for wheat was experienced as wheat was needed to feed a war impoverished Europe. Other crops during this period declined slightly as they gave way to the increase in wheat.

The great decline in the number of horses came in this period, due to the increase in the use of tractors. At first the farmers could not afford to buy the special machinery such as side-delivery rakes and combines. By 1941 they had acquired sufficient money to purchase this machinery and could then do away with their horses and their horse drawn equipment.

As Europe recovered from the recent war there was less demand for meat and eggs from Canada so that production decreased to some extent, but because the economic condition of Canada was at a high level production did not go as low as it had been in the thirties.

The urban population did not change much but the continued growth of Caledonia was evident. This was due to the further expansion of production at the Gypsum plant. The

Two of the few remaining horses in Seneca Township as they come to the water trough in the late afternoon.

A combine used for threshing grain in the field. This is typical of the quality of mechanization in the Township.

greatest increase in urban living was experienced throughout the country which helps to explain the slow increase in the population of the town itself.

The whole period between 1871 and 1941 has been characterized by a decrease in population and an increase in agricultural production. Since 1941 there has been an increase of population because of the people living in the Township and working in Caledonia or Hamilton.

TABLE I

SIZE OF FARMS IN SENECA TOWNSHIP 1871 - 1941

(in acres)

Date	Occupiers	10 and under	10-50	50-100	100-200	Over 200
1871	375	15	72	180	88	20
1881	363	27	42	148	111	25
1891	368	55	25	140	115	33
1901	-	-	-	-	-	-
1911	-	27	44	188	105	19
1921	337	10	29	162	108	28
1931	361	-	-	-	-	-
1941	301	6	19	136	103	30

Blanks indicate absence of census figures on a township basis.

TABLE II

CROPS (in acres) 1851 - 1951

Date	Wheat	Barley	Rye	Oats	Peas	Corn	Potatoes	Turnips	Hay
1851	3,908	80	3	977	315	50	156	18	-
1861	4,897	1,127	43	2,238	2,053	33	290	26	-
1871	4,306	-	-	-	-	-	176	-	6,067
1881	5,796	-	-	-	-	-	232	-	6,067
1891	5,275	1,005	-	4,640	-	-	150	52	7,942
1901	-	-	-	-	-	-	-	-	-
1911	2,847	753	33	6,227	324	380	164	6	10,166
1921	1,578	594	8	6,665	37	496	63	5	12,365
1931	1,693	805	111	7,938	-	-	110	-	10,120
1941	1,835	579	1	6,012	-	500	30	1	11,839
1951	3,815	200	34	5,417	-	646	9	-	10,693

Blanks indicate absence of census figures on a township basis.

TABLE III

LIVESTOCK 1851 - 1951

Date	Milk Cows	Other Cattle	Horses	Sheep	Swine	Chickens
1851	743	1,244	546	2,344	1,859	-
1861	1,298	1,434	1,247	2,844	2,866	-
1871	-	-	-	-	-	-
1881	-	-	-	-	-	-
1891	1,688	2,223	1,604	2,354	2,338	11,594
1901	-	-	-	-	-	-
1911	-	-	-	-	-	-
1921	-	-	-	-	-	-
1931	2,007	2,404	1,663	1,761	1,774	47,459
1941	2,558	2,524	1,149	1,478	3,495	60,944
1951	2,727	2,061	536	890	3,325	48,919

Blanks indicate absence of census figures on a township basis.

PART III

PRESENT LAND USE

Chapter One

TRANSPORTATION

Requiring a small but important part of the land in Seneca Township, the railways, roads and bridges provide a means of communication within the Township and to markets near at hand.

There are two railways owned by the Canadian National Railway which services Caledonia but have little effect upon the agriculture in the Township. A third rail line, passing through the eastern end of the Township, belongs to the Michigan Central Railway. The trains on this line are mostly express but sometimes beef cattle, brought from the west to be fattened, are deposited at Cayuga Station.

Three good provincial highways pass through the Township; Highway No. 6 runs from north to south, and Highways No. 54 and No. 56 traverse the Township from north-west to south-east. Highway No. 56 has the best surface and is very straight, but it fails to lead to any large markets other than Hamilton. Highway No. 54, following the banks of the Grand River, has recently been improved. It joins many small communities along the River, including Caledonia, York, Cayuga and Dunnville. These towns had developed at an early date when the River was the most convenient transportation route. Highway No. 6 is the old Plank Road which runs from Hamilton to Port

The bridge at York which carries only a small amount of local traffic.

A long straight stretch of Highway No. 56 which passes through the eastern end of the township.

Dover. This route is the most travelled of the three because it connects Hamilton with the larger urban centers in the southern part of the peninsula.

The location of bridges over the Grand River helps to account for the distribution of towns in Seneca. Caledonia's continued development was assured when it was chosen as the site for Highway No. 6 to bridge the Grand River. The present structure is a narrow cement bridge wich was built in 1927 before it was realized that road traffic would become as dense as it is today. This bridge is likely to be a bottleneck in the future. The bridge at York is little better although it was rebuilt in 1935. It is of steel construction but is only slightly wider than the one at Caledonia. This bridge has kept York from complete decline.

The township roads are on the whole well built and gravelled. However the road along the "Old Indian Line" east of Highway 56 and the one between Seneca Township and Cayuga Township are impassable for long periods when the ground is wet. The latter road passes through a poorly drained area where population is scarce so that it has been found impractical to construct a good road. Two years ago a tar surface was put on the road immediately north of Caledonia linking Highway 6 and No. 56. During the summer of 1954 a tar surface was put on the road from York to Highway No. 56. The best traveling time is made on these paved roads so that transport trucks use them most frequently. To some extent agriculture has adjusted itself to transportation.

Chapter Two

AGRICULTURAL LAND USE

Seneca Township lies within a part of southern Ontario which has all the essentials for successful agricultural development. A favourable climate with warm summers, adequate uniform precipitation, and a reasonably long growing season are characteristic. This climate is uniform throughout the Township. The soils are grey brown podzolics which are usually quite productive, but differences in parent material and drainage already discussed in Part I, Chapter 4. have made them vary from place to place.

(a) General Agricultural development

Mixed farming dominates the agricultural economy of the Township, however, special emphasis is placed upon dairying. The diversification which this type of agriculture permits, has given the farmer a stable income and has aided him in maintaining the fertility of the soil by proper rotation of crops. Nearly every farmer in the Township grows some wheat, oats, and barley and raises some hogs, poultry, and dairy or beef cattle. Most of the farmers have a small kitchen garden from which they obtain some fruits and vegetables. The products of the farm woodlot are not as important as formerly but in

many cases the winter's supply of fuel is obtained from them.

To give a fuller picture of the agricultural products of the township, some census figures for 1951 are given. These figure have changed only slightly since then. In 1951 the crops included 3,815 acres of wheat, 200 acres of rye, 5,417 acres of oats, 646 acres of corn and 10,693 acres of hay. The animals in the township the same year included 2,727 milk cows, 2,061 beef cattle and calves, 536 horses, 890 sheep, 3,325 swine and 48,919 chickens. These figures show the great diversity of agricultural products available in Seneca Township.

It is notable that there is emphasis upon dairy and beef cattle along with the associated crops of hay and grain. Although the increased development of the dairy industry may be attributed in part to favourable conditions of the physical environment, economic factors have provided the stimuli for this expansion. The tremendous growth in the population of Toronto and Hamilton has created an ever expanding market for fluid milk, cream, butter and other dairy products. It is the presence of these two large markets, only one or two hours distant by transport, which has aided the development of the dairying industry in the Township.

The rising importance of the dairying industry is reflected in the farming practices in Seneca. The largest single crop in the area is hay, which constitutes over half of the field crops in the Township. Hay was once grown as a cash

crop but now it is grown almost exclusively for winter feed for farm animals. After the hay has been harvested in early summer, the fields provide excellent pasture for two or three months. A recent development in the use of hay has been to store it as green silage for feeding to dairy cattle in late August and September when the pastures have become dried out. The cultivation of corn for green feed has become important, as dairying has assumed a greater significance in the farm economy. When the silos have been emptied of grass, they are filled with ensilage corn, for winter feed to balance the diet of the cattle.

Oats have become the dominant cereal crop, occupying 5,417 acres. This is 53% of the total cereal crop acreage, and 21% of the acreage of all field crops. Wheat has taken second place among the cereals, but there are still over 3,000 acres of this crop planted each year. The wheat crop is the most important cash crop that the farmers can grow because they are assured of a fairly good return per acre. Most of the wheat produced in Seneca is either fed on the farm or sold to the Caledonia Milling Company.

The production of other cereals throughout the Township has been declining in recent years, but they are still found in crops of mixed grains. Mixed grain has a high fodder value and is grown extensively in years when the spring thaws are unusually late or when late spring rains shorten the planting season. Another crop which is sown when planting is retarded, is the soy-bean which has a high protein content for feeding

to swine.

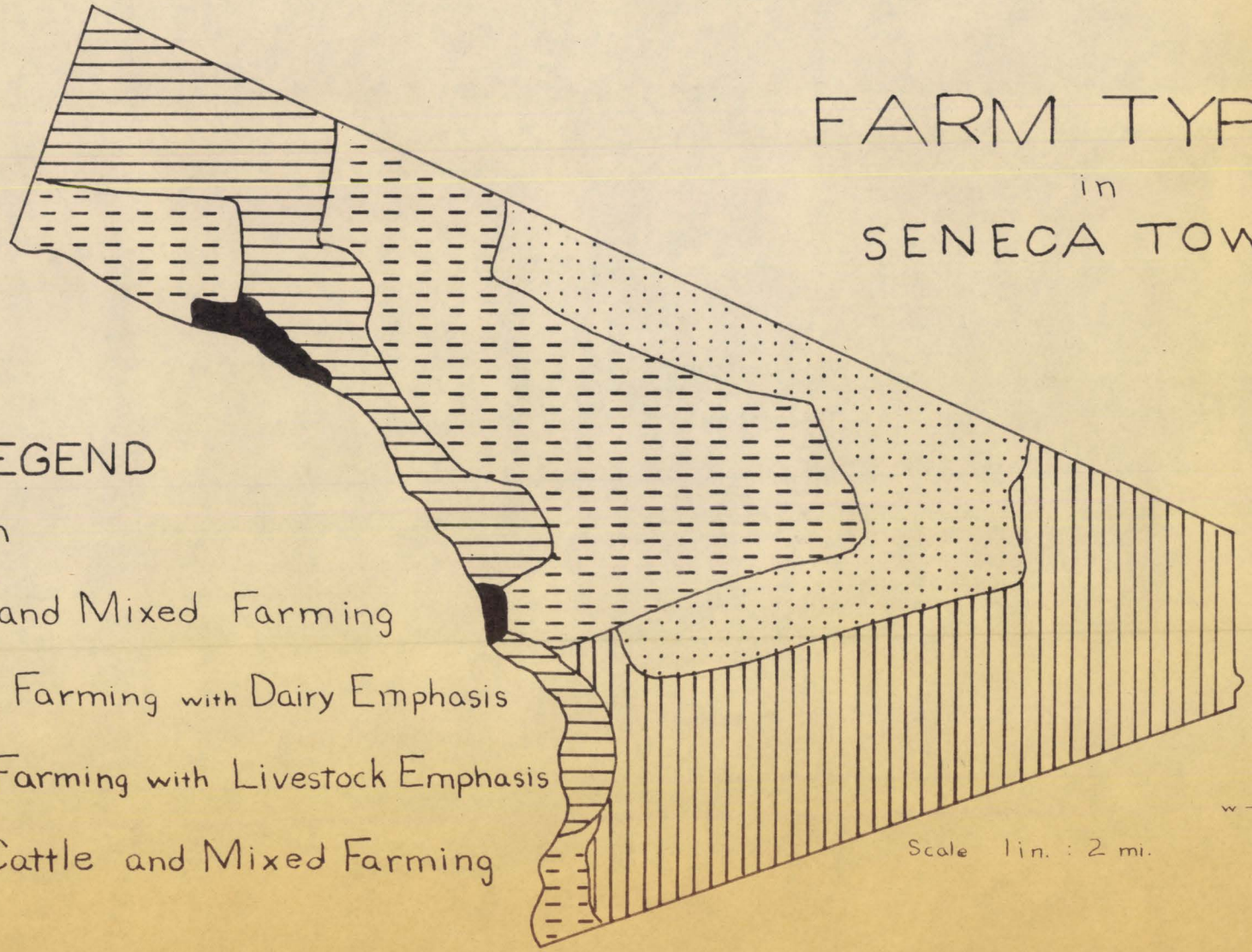
There has been so recent increase in the acreage of pasture in Seneca Township, but the 7,218 acres devoted to this use show that it is an important part of the agricultural land use.

Throughout the Township tractors, threshing machines, and other farm machinery are numerous. This has meant a great decline in the horse population between 1941 and 1951. Although the machinery is expensive it pays for itself in two or three years because yields are so much greater. If the farmer owns his own equipment he can thrash the grain when it is ready instead of waiting until equipment is available. If he has to wait a great deal of the crop may be lost because of a thunderstorm or because the grain gets too ripe.

Hogs constitute an important part of the mixed farming economy and are spread rather uniformly over the Township. Most farmers keep these animals because they require little attention and can be fed kitchen waste, skim milk and quantities of mixed grain. There is a ready market for these animals in the packing houses in Hamilton and Buffalo.

Sheep are disappearing from the farm economy in Seneca Township as there is little demand for the wool or the meat which they produce. Some farmers keep a few sheep as they are good for helping to control weeds in natural pasture. The sheep crop the grass so low that the weeds are killed.

FARM TYPES
in
SENECA TOWNSHIP



LEGEND

- Urban
- Dairy and Mixed Farming
- Mixed Farming with Dairy Emphasis
- Mixed Farming with Livestock Emphasis
- Beef Cattle and Mixed Farming

Scale 1 in. : 2 mi.

N
W E
S

T. Lowden

(b) Farm Types

The division into farm types has been based upon the aspect of farming which makes up the largest part of the farmer's income. The boundaries between these farm types are not as sharp as shown on the map but there is nonetheless a distinct regional differentiation.

1. Dairy and Mixed Farming

Dairy and mixed farming is the most prosperous type of agriculture in Seneca Township and is found to be located on the best arteries of transportation, Highway No. 54 and Highway No. 6, which give easy access to the large fluid milk markets in Hamilton and Toronto. In addition there is an area west of Highway No. 6 where this type of agriculture is practised because physical conditions are particularly favourable.

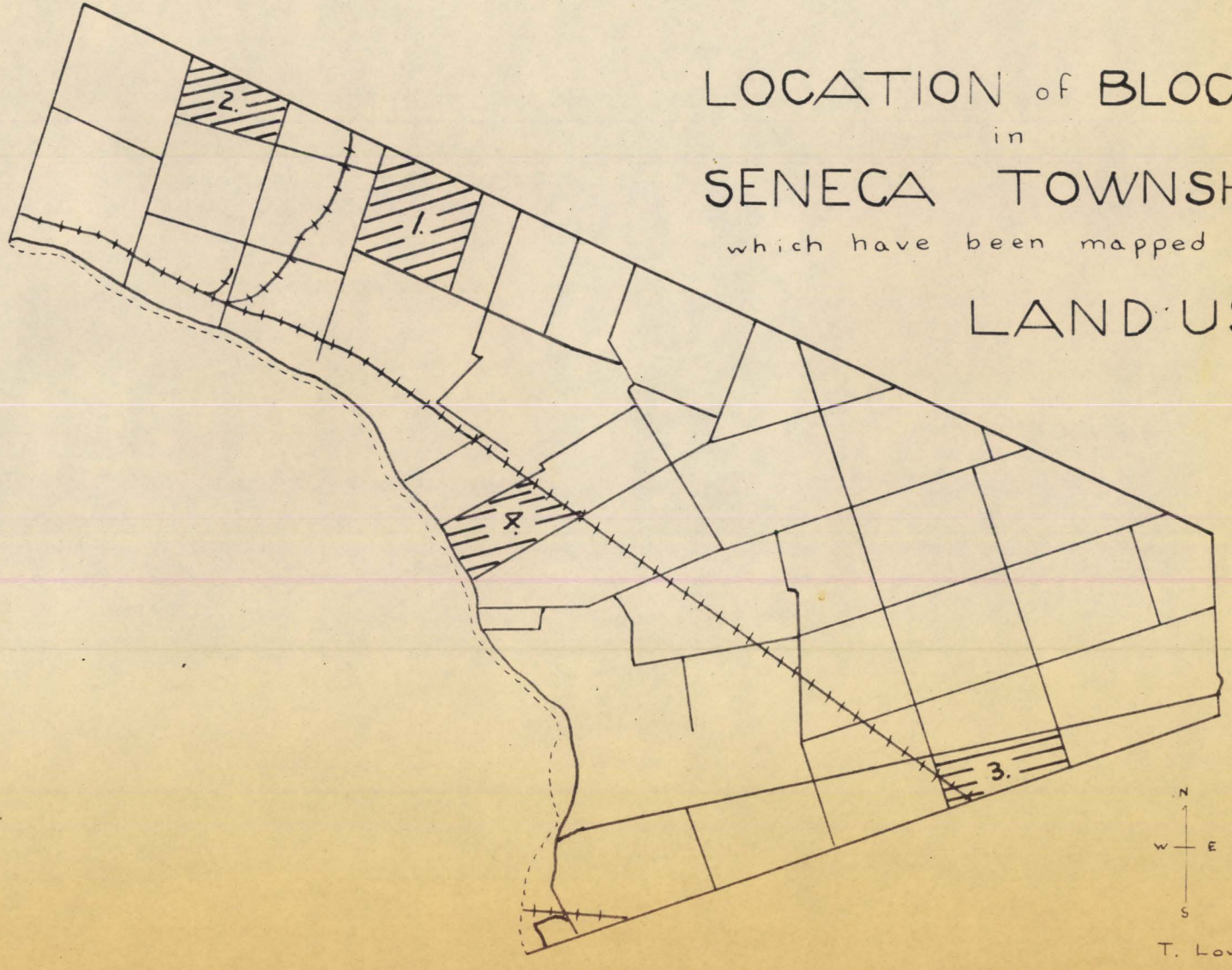
The area in which this type of agriculture is practised is favoured with fertile well-drained soils. The soils include Oneida clay loam, Brantford clay and the productive bottom land along the Grand River flood plain. The dairy and mixed farm type of agriculture is located in the York and Onondaga modified moraine which are well drained areas. As a result of the good drainage and slopes exposed to the south along the Grand River, cultivation of the land in the spring may be commenced 7 to 10 days earlier than in other areas of the Township.

The land utilization on two typical sections in this farm type are shown on pages and , the sections being

Milk cans - a common sight near the dairy farms in Seneca Township. These will be trucked to Caledonia for processing.

The author (6' 2") standing by an excellent crop of silage corn on the Grand River flood plain between York and Caledonia.

LOCATION of BLOCKS
in
SENECA TOWNSHIP
which have been mapped for
LAND USE



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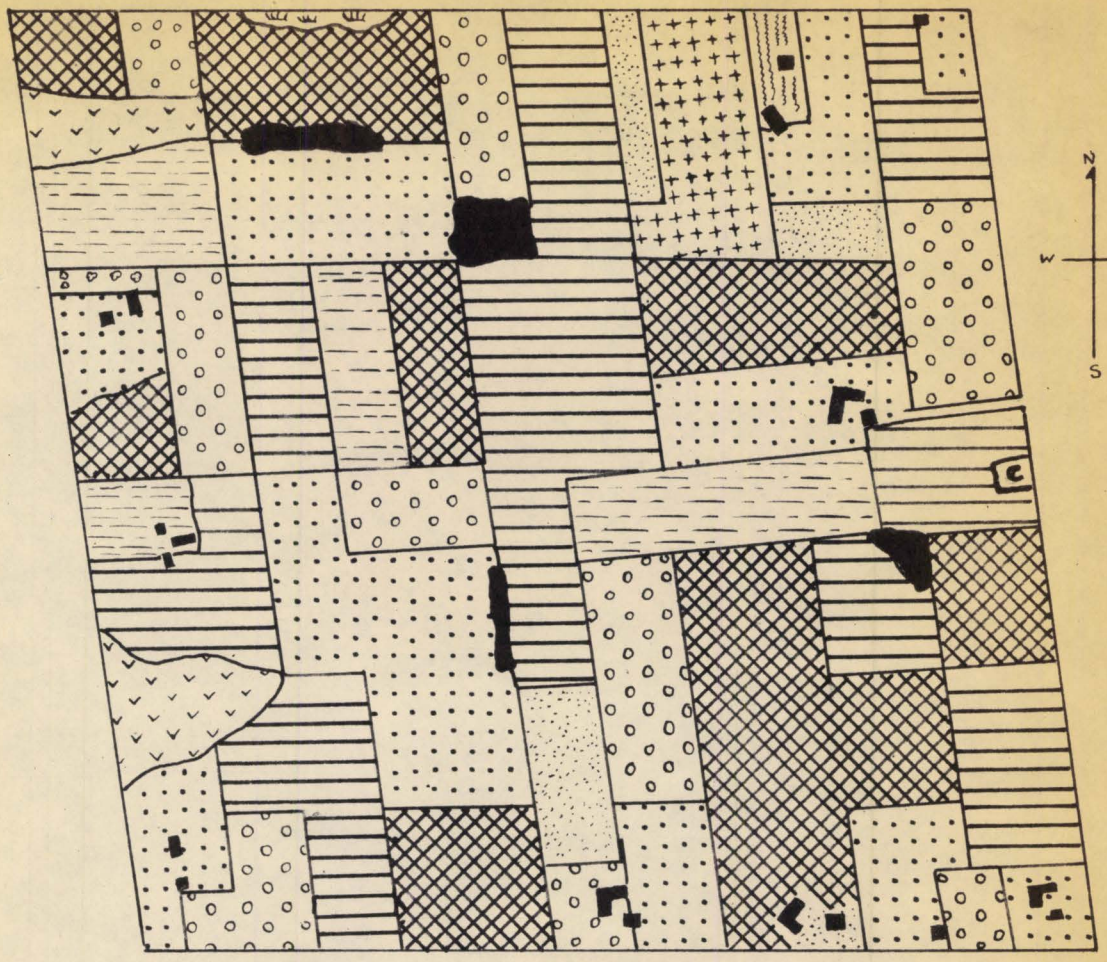

BLOCK 1.

Scale 1 : 15840

LAND USE

- Wheat
- Hay
- Pasture
- Oats
- Corn
- Beans
- Fallow
- Swamp
- Wood Lots
- Vineyard
- Orchard
- Scrub

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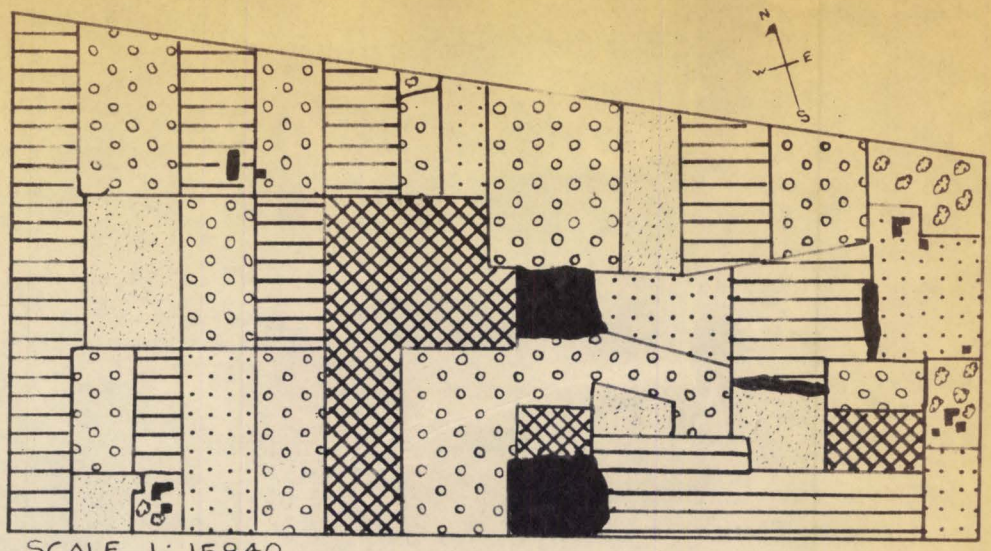
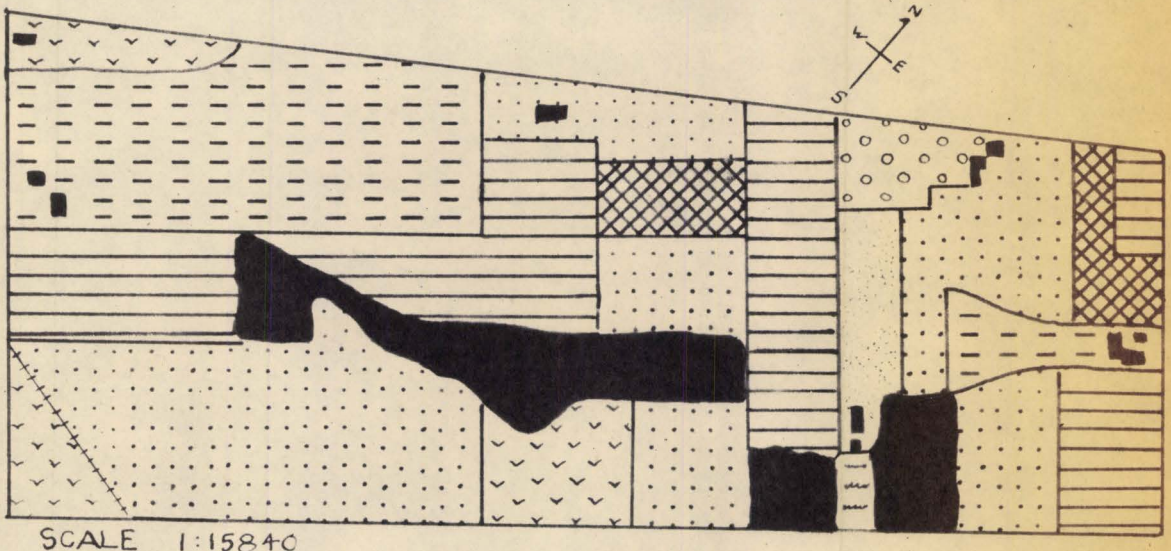


SCALE 1: 15840

LAND USE

BLOCK 2

Wheat
Wood Lots
Oats
Hay
Old Orchard
Corn
Pasture



SCALE 1:15840

BLOCK 3

Pasture
Wheat
Hay
Idle
Oats
Wood Lots
Scrub
Corn
Vineyard

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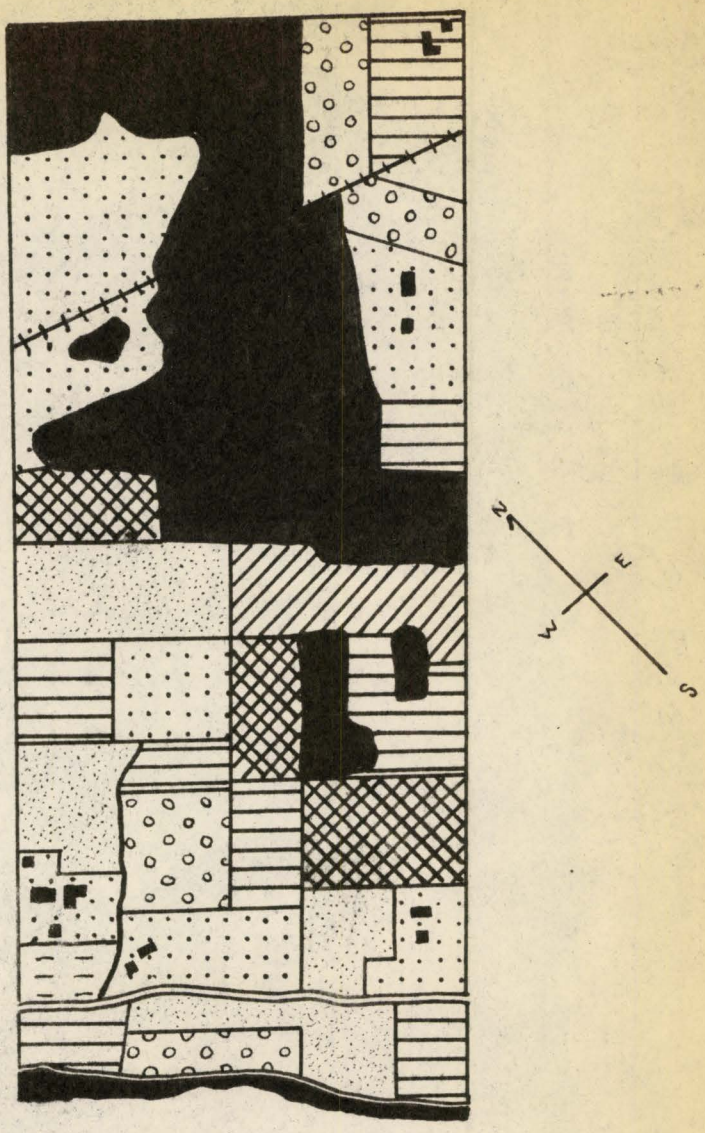


Block 4. Scale 1:15840

LAND USE

Wheat

Pasture

Woods

Fallow

Hay

Oats

Corn

Roads

Holstein heifers on a breeding farm in the dairy region of Seneca. Most of these will be sold to other farmers in the region.

Holstein cattle grazing is a recently harvested hay field in the dairy region of the township. A small pond under the willow trees supplies the cattle with water.

designated as blocks 2 and 4. We see that in both of these blocks there are large areas devoted to grain and hay crops. In block 2, 80% of the area is being used for this purpose. Some pasture, two or three woodlots and an old orchard occupy the rest of the land. The section shown in block 4 contains farms of two types: dairy and mixed farming, and mixed farming with dairy emphasis. Only the farms need concern us here which are located along Highway No. 54 in the southern half of the area shown. On these farms a large variety of feed crops is produced including an unusually large amount of corn. The fertile flood plain south of the highway produces extremely good crops of hay, corn and oats.

The cattle raised on these dairy farms are predominantly purebred Holsteins, but two or three Jerseys are kept with each herd to keep the butter fat content high. These farmers each own an average of twelve milking cows, total milk production being 400 lbs. per day. The present market price for fluid milk is $4.00 a hundred-weight. It is seen, then, that although this type of farming requires a high capital investment for machinery and cattle, the farmer does receive a reliable income.

The high quality of the farm buildings and the large amount of machinery used is an indication of the prosperous economy of the region. This region is likely to remain prosperous because of increasing markets for fluid milk and because the farmers here are very careful about soil management.

A decaying orchard typical of many in Seneca Township

A field in summer fallow in the dairy and mixed farming regien of the Township.

Good crop rotations are practised and large amounts of manure and fertilizers are used to insure good yields and to maintain the tilth of the soil. On the steep slopes of the York modified moraine, some erosion has occurred, but recently the farmers have taken steps to prevent further erosion. In several instances small gullies were noted filled with brush to slow down run off and therefore promote the deposition of any soil particles carried by the run off water.

We see then that a large market, good transportation, good drainage and fertile soils have worked together to encourage dairy and mixed farming to establish itself in this area.

2. Mixed Farming with Dairy Emphasis

This farm type is located on less productive and less easily worked soils than in the case of the dairy and mixed farming type, especialy on the Haldimand clay soils which are heavy textured and poorly drained. Mixed farming with dairy emphasis is found on all of the physiographic regions; so is apparently not closely related to this aspect of the physical environment. Transportation, as in the case of dairy and mixed farming, has played an important role in locating this farm type. This farm type follows quite closely the area bounded by the two tar-surfaced roads mentioned in the chapter on transportation. The output is not sold to the city dairies but to creameries for fluid milk truckers pay $4.00 a hundred-weight and therefore can get all the fluid milk they need without

going out of their way except where physical conditions are especially good for the production of fluid milk. The best that the farmers can do is to sell to the creameries which collect milk in this area, but at a price of only $2.50 a hundred-weight this means that the farmers cannot afford the machinery necessary to keep a large herd of dairy cattle and is reflected in the farming practices of the region, as seen in land use blocks 1 and 4.

In this type of farming a large portion of the land is devoted to cash crops, as the farmers are receiving little money from their dairy products. In block 1, wheat is important as a cash crop and is sold to the Caledonia Milling Company. The wheat yields are very satisfactory when proper fertilizers h have been added to the soil. Close-growing crops such as wheat and oats grow well on this type of soil, but clean tilled crops are not as good because frequent summer thunderstorms cause erosion and make cultivation difficult as the soils become packed.

Summer fallow is practised to some extent on this farm type as the only effective method of eradicating weeds from land to be used for crops the following year. We also notice that a greater amount of the land here is left in pasture than on the dairy and mixed farming type. These pastures support a few sheep and beef cattle, as well as the milch cows.

The diversity of crops and animals is great on this farm type, as may be seen in block 1, where there is a vineyard and a field of beans in addition to the usual field crops found in Semeca Township. The animals in this farm type include sheep

An apiary typical of those found in some of the woodlots of Seneca Township.

A bean field showing that many crops may be grown in this area.

horses, swine, cattle (both milk and beef) turkeys, ducks and chickens. In addition, bees are kept in some of the small wood lots. (Picture, Page 72)

The less prosperous condition of the homes and barns indicates that these people have a more difficult time tilling the soil than have those on the Oneida clay loam and the Brantford clay soils. Gulley erosion is not severe here but a number of cases of sheet erosion due to over cropping were noticed. One farmer crops the same field year after year with oats. The effect of this may be seen in the picture on page which shows a thinning out of the crops at the tops of the hills due to the loss of the surface soil.

The woodlots in this farm type are often fairly extensive but are of no commercial value other than as fuel for heating the homes in winter. The woodlots are mostly located on poorly drained sites and have been left wooded for this reason. A good example of this is seen in the northern part of block 4.

3. Mixed Farming with Livestock Emphasis

The farm type described as mixed farming with livestock emphasis is located along the "Old Indian Line" from Tyneside to Sinclairville. This farm type has developed entirely ithin the boundary of the Haldimand clay soil and bottom land. The physiography includes both Seneca modified moraine and Welland dissected till plain. The soils are heavy and the drainage for the most part is poor.

Due to pressure of time, it was not possible to

An oat field near York showing the effect of soil erosion. The crop is not as heavy near the tops of the hills as may be seen by the distance between stooks of oats.

Bush growing an thrown in a gulley to help check erosion on Oneida clay loam.

map land use for a typical block in this farm type, however, less land is devoted to grain crops than in the two farm types discussed above and more land is left as natural pasture. Livestock includes large flocks of sheep and a few small herds of Hereford cattle. A few crops of grain are normally fed to the swine which make up a large part of the cash income of the farm. In addition to these animals, horses, dairy cattle and poultry a are kept to supplement the farm economy.

Woodlots on these farms are generally quite small and, as in the case of the mixed farming with dairy emphasis, the woodlots have been left only where drainage is particularly poor. Erosion on this farm type is less severe than on those previously mentioned because far less of the land is cropped and more of it is left in permanent pasture.

The farm buildings, particularly in the northern part of this area, appear to be quite prosperous. These farms are mostly in the 150 - 200 acre class so that their carrying capacity is quite large. Good transportation facilities and proximity to markets have helped to make this an area of mixed farming and livestock rather than of beef cattle and mixed farming.

4. Beef Cattle and Mixed Farming.

This is the most extensive type of agriculture practised within the Township and occupies the entire east end, except for a narrow band of better-drained land next to the Grand River. This is the only part of the township where milk and cream are not picked up by the creameries or dairies. The soils

A field in the beef cattle region, which is growing up in scrub.

A road in the eastern end of the Township which is used only for farm machinery. For much of the year it is impassible.

included within this land type are Haldimand clay, Caistor clay loam and bottom land. These soils have developed on two physiographic divisions, Seneca modified moraine and Welland dissected till plain, both of which have areas of poorly drained land.

The majority of the farms of this type are over 150 acres in area, half of them are over 200 acres and some are as large as 400 acres. There are very few crops grown, as is indicated in land use block 3. Only a little wheat and oats are found but no corn or mixed grain. As can be seen in the map there are large areas of hay and pasture. This reflects the requirements of beef cattle which do not need as great a quantity or variety of grain as do milk cattle, but do require a great deal of pasture and a good supply of hay for winter feed. There are also large tracts of poorly drained woodlots and scrub on this farm type. The large woodlots are closely correlated with the areas of Caistor clay loam, a poorly drained soil type. In the past attempts were make to grow wheat and hay on this heavy wet soil but returns were poor and the land was allowed to revert to scrub.

The most important part of this agricultural economy is the production of beef cattle. Most of the cattle are pure bred Herefords but on some of the farms there are still some grade cattle. The cattle are mostly bred on the farms but a few are brought from the west to be fattened before being taken to the slaughter houses in Hamilton and Buffalo. Besides beef cattle sheep and swine are raised in large numbers and are shipped to the

An abandoned farm house typical of many to be found in the eastern part of the Township.

An artificial farm pond used for watering beef cattle grazing in nearby fields.

An old well kept barn on a partially abandoned farm in the beef region of the Township.

A sign post errected by the progressive Junior farmers in the eastern part of the Township is typical of many corners. This was a project sponsored by the farm forum.

same meat packing plants as are the beef cattle.

From the standpoint of economic well being this area is one of contrast, with good farms and farm buildings interspersed with some of the poorest in the Township. This is the result of farm consolidation. Many of the farms are rented as pasture to the large operators in the district, the farmsteads either being abandoned or used as suburban residences. The farmers are among the most progressive in the Township. They have frequent meeting to discuss farming practices and marketing problems. The most progressive of these have had artificial farm ponds built if natural ponds did not already exist. The heavy clay prevents the water from escaping; so ponds provide good water for cattle throughout the year.

It is likely that this land will continue to be used for beef cattle, for the problems of improving the physical condition of the land are numerous. The basic problem is drainage but the installation of field tiles would not provide a solution since the heavy, compact nature of the clay prevents any large amount of downward percolation of the soil water. At present, in some fields there are large areas of swampy land which cannot be used even for grazing since they are filled with bull rushes.
(See Photos, Page 26)

Summary of Farm Types

Each of the four farm types in Seneca is in some way related to accessibility, soils, drainage or to a lesser extent physiography. The predominant determining factor in the dairy and mixed farming type is accessibility of markets and

suitability of the soils to the production of fodder crops. The mixed farming with dairying emphasis apparently has little relationship to soils and physiography, for this type of farming appears on each kind of soil and in each physiographic division. Accessibility of markets and drainage, however, have some effect upon the distribution of this land type. Mixed farming with livestock emphasis is apparently related to soil capabilities and accessibility to markets. Beef cattle and mixed farming areas are characterized by relative inaccessibility, poor drainage and heavy soils.

Chapter Three

FARM BUILDINGS

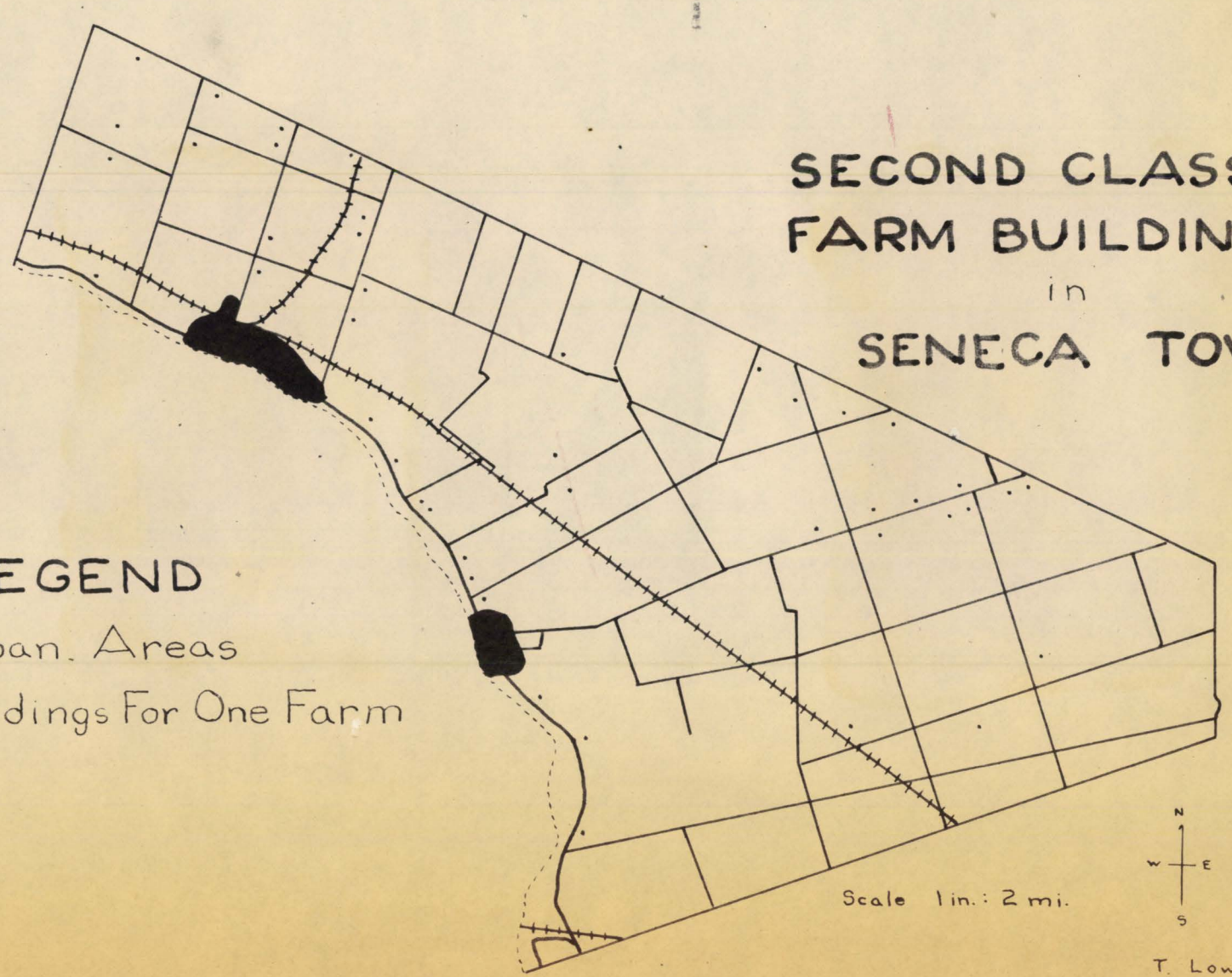
Another interesting aspect of rural agriculture is the distribution of various classes of farm buildings. During the present investigation the distribution of second, third, fourth and fifth class as well as abandoned farms was mapped, the maps appearing on pages 83 - 87. Examination shows them to be closely correlated with the farm types discussed above in detail.

It will be noted that none of the buildings have been placed in the first class to avoid any vision the readers might conjure up of a very large red and white barn with

Typical third class house and barn in the dairy region of the Township. Note the usual small vegetable garden in the foreground.

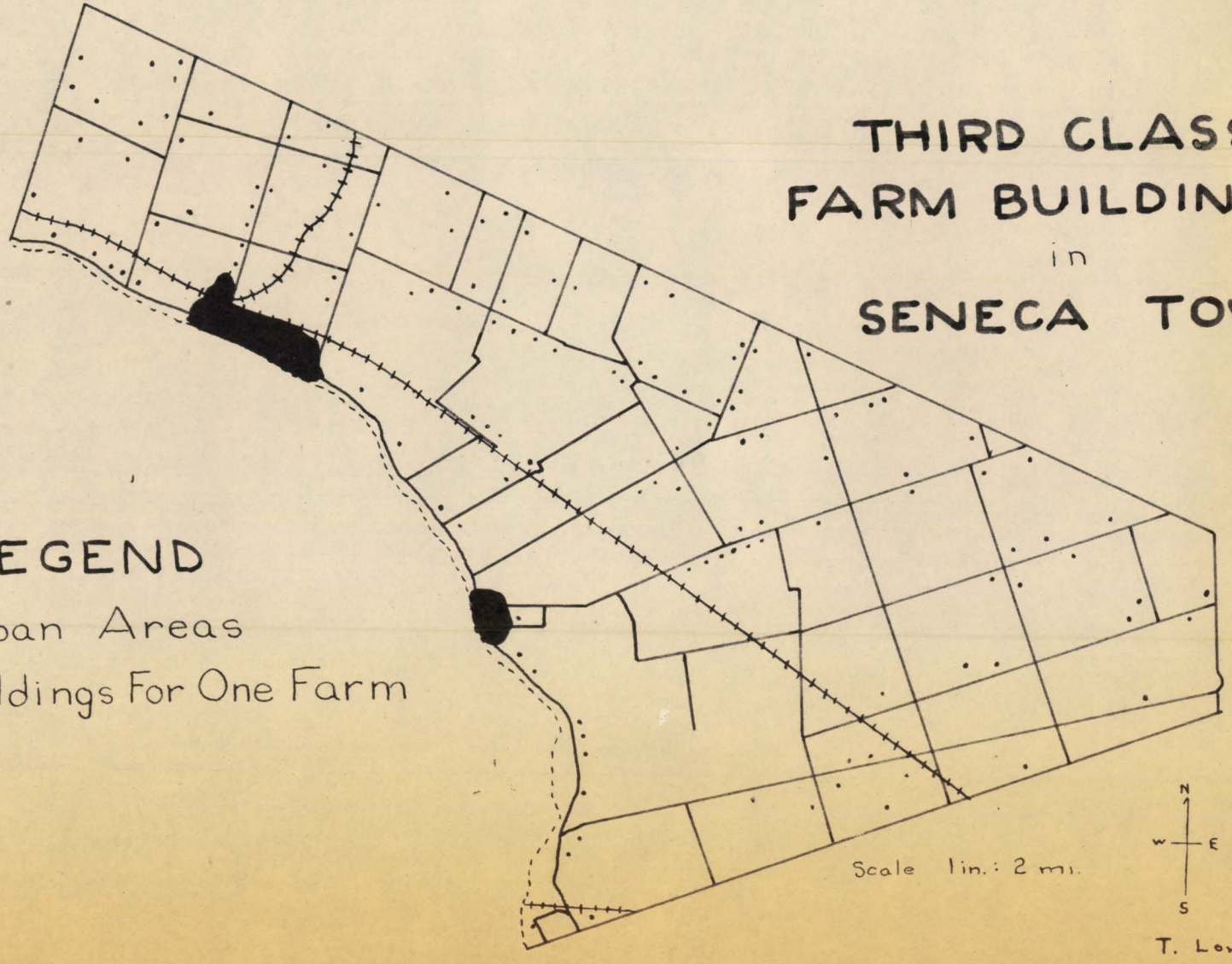
Second class barn on Highway No. 54 where dairying is an important source of income.

SECOND CLASS FARM BUILDINGS in SENECA TOWNSHIP

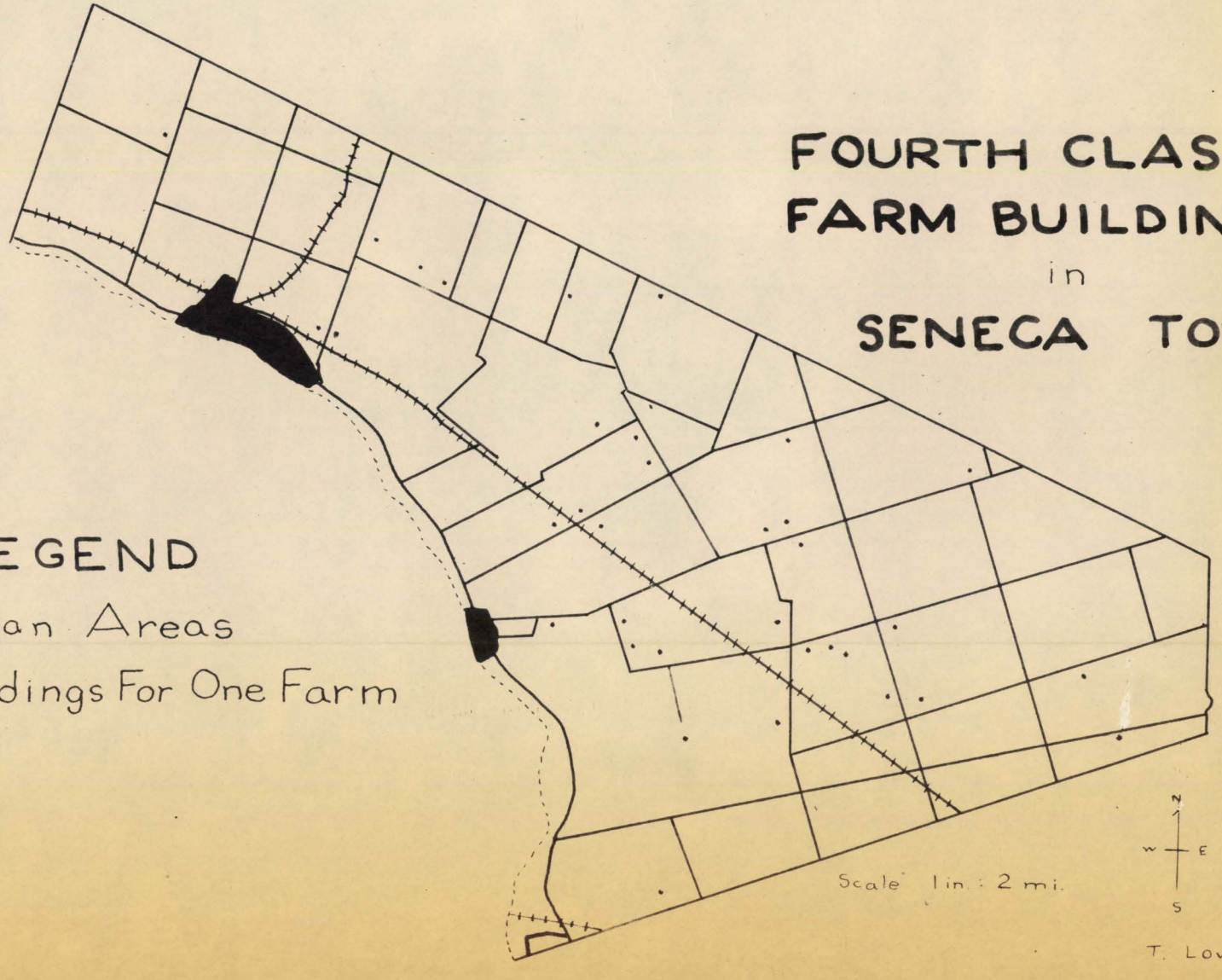


T. Lowden

THIRD CLASS FARM BUILDINGS in SENECA TOWNSHIP

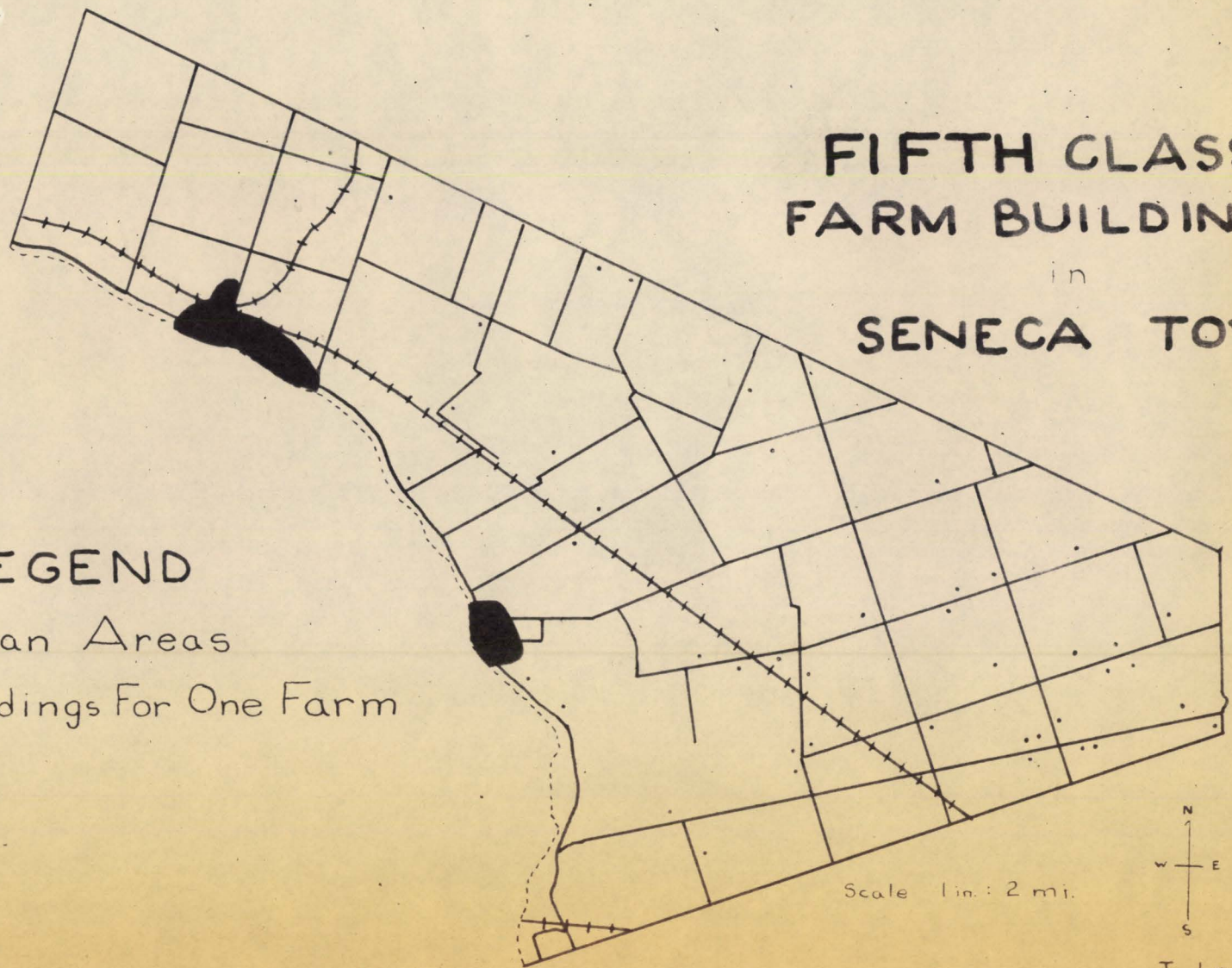


FOURTH CLASS FARM BUILDINGS in SENECA TOWNSHIP



T. Lowden

FIFTH CLASS FARM BUILDINGS in SENECA TOWNSHIP



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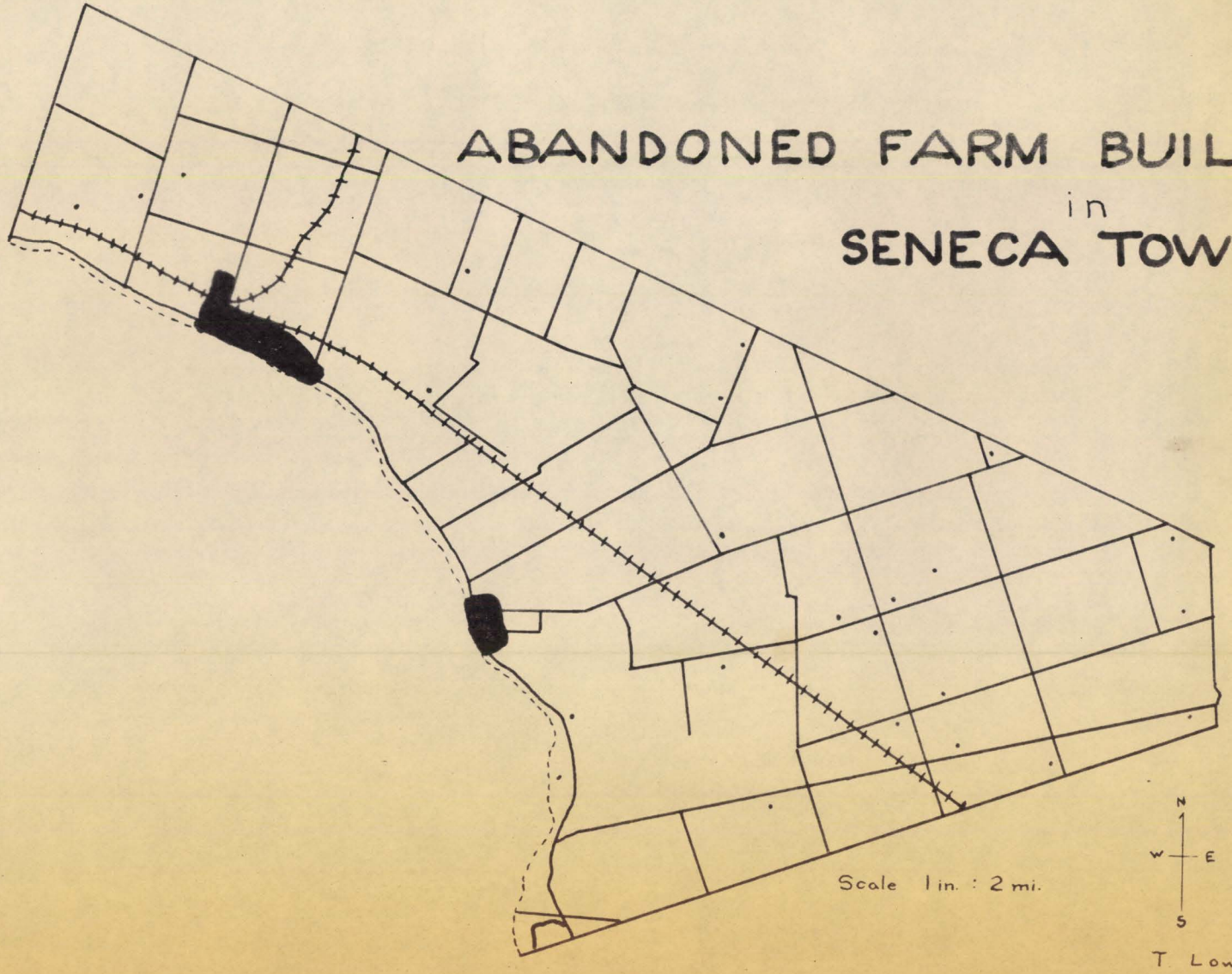
ABANDONED FARM BUILDINGS in SENECA TOWNSHIP



Scale 1 in. : 2 mi.

T Lowden

two great silos and a herd of pure bred cattle milling about the door. There are no such farm buildings in Seneca Township.

Second class

The second class farm buildings are very substantial. The house is usually quite large and of brick construction. The barns are large enough to house twenty cattle and are well kept.

Third class

Third class farm buildings are similar to the second class but there are more frame houses in this class and the barns do not appear to be quite as large or well maintained.

Fourth class

Fourth class houses are very old, in need of paint, and very often of frame construction. The barns about these houses are smaller but there may be two of them, frequently in need of repair.

Fifth class

These are houses which are in need of paint and major repairs. Very often there are no curtains in the windows and the building is leaning to one side. The barns in this category are small and numerous. There may be as many as five on one farm. Many of these are in a poor state of repair.

Abandoned Farm Buildings

Frequently only the house is abandoned. Often the barn is in good condition and the house, if inhabited, would be put in the fourth rather than the fifth classification.

A few second class buildings are scattered throughout the township but most buildings of this class are

found where there is dairy and mixed farming, or mixed farming with livestock emphasis. In the latter case the farm buildings have only recently been brought up to second class standard with money recieved from the sale of high priced meat products during and since the Second World War. In the former, the houses have been kept at a second class standard throughout the years by a continued good income from dairy products. In all cases, it is the larger farms which have second class farm buildings.

Third class farm buildings are numerous and widespread in Seneca Township. There are, however, fewer of them in the eastern end of the township than elsewhere. There is an area directly east of York which is conspicuous because of the absence of third class farm buildings. This area lies within the beef cattle and mixed farming region, and more particularly in that part of the region which is most poorly drained.

Fourth class farm buildings tend to be concentrated in areas where mixed farming with dairy emphasis and mixed farming with livestock emphasis (southern section) are practised. This may be due to the fact that the farms are not well suited to intensive cultivation, yet they are not large enough for an extensive type of agriculture.

Fifth class farm buildings are scattered throughout the area east of Highway No. 6, but are most concentrated in the area specializing in the production of beef cattle. These belong to farmers who have not been able to buy enough land to make a success of raising beef cattle. Because of location and

undesirable soils they are unable to specialize in other agriculture products. It is likely that many of these farms will be abandoned when the present farmers pass away for in most cases their sons have already left the farms to seek work in industrial centers.

The distribution of abandoned farms and buildings more than anything else, indicates the trend in farming practices in Seneca Township. With each farm building that is abandoned, the size of another farm increases. In some cases, the farms on which these abandoned buildings are situated are sold to near farmers. Sometimes they are rented; so that the owner receives a steady income and may perhaps retire to live in one of the small villages in the district.

In Seneca Township, we notice that the majority of the abandoned farm buildings are in the eastern end of the township where the possibilities of intensive agriculture are at a minimum and where there is a tendancy for farmers to pasture beef cattle over a wide area rather than to improve pasture and pasture them in a smaller area. This land was brought into cultivation before farm types had adjusted themselves to climate, physiography, soils, market demands and transportaion.

Summary of Agriculture

The agriculture in Seneca Township has throughout the years been adjusting itself to economic and physical conditions. This process is not yet completed but has progressed far enough

for the four farm types previously discussed to become apparent. Changes in the economy of the nation as a whole and in man's control of his environment may cause a further differentiation, but at present these four tpes may be recognized and have fairly well defined boundaries.

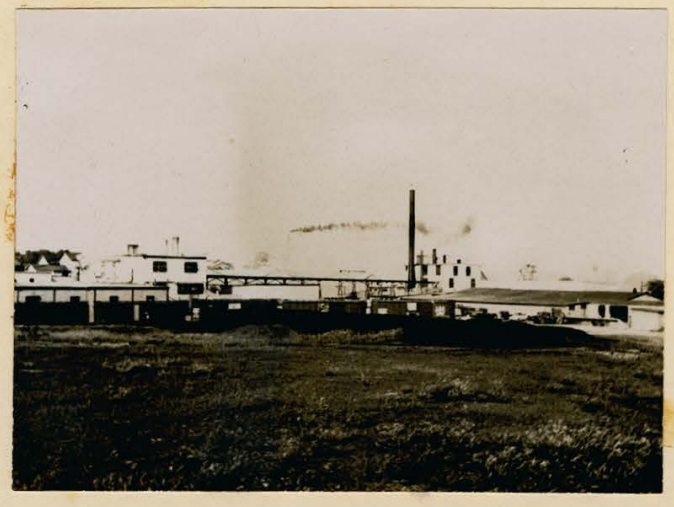
Chapter Four

NON-AGRICULTURAL LAND USE

(a) Gypsum, Lime and Alabastine, Canada, Limited.

The Caledonia mine of the Gypsum Lime and Alabastine, Canada, Limited, which is situated about one-half mile north of the village of Caledonia, includes several hundred acres of land and holds leases on several adjoining farm lots. The lands owned or leased by the Company lie on both sides of Highway No. 6.

Gypsum has been mined in the Grand River valley since 1822 when a mine was opened near Paris to supply the farmers with land plaster or fertilizer. During the next fifty years gypsum was mined near York and processed locally for building plaster. It has only been since 1905 that the deposits near Caledonia have been exploited. The entrance to the mine consisted of an inclined adit driven to a level sixty-five feet (vertical) below the surface. The gypsum rock at this time was moved in wagons to the Grand Trunk Railway (now the Canadian National



The back of the G.L.A. plant west of Highway No. 6 just north of Caledonia. This is the largest o employer of labour in the vicinity.

The head of the G.L.A. mine, one mile west of Highway No. 6.

Railway) in Caledonia, where it was loaded in coal cars and taken to Paris, Ontario, for processing. Soon an efficient mill was built at the mine for crushing the gypsum rock, though it was still shipped to Paris to be calcined. By 1917 the local plant was expanded to produce plaster, plaster of Paris and gypsum wallboard. In 1936 the Company built at Caledonia one of the first plants in Canada for the manufacture of rock wool insulation. Wide acceptance of gypsum products and an expanding market have make the increase in the plants manufacturing capacity necessary. In 1940, and again in 1946, the capacity of various parts of the plant was greatly increased. At present the plant employs 350 men and operates three shifts per day, six days a week throughout the year. The plant is completely unionized, so that working conditions are quite good and wages are high.

The Company's labour force, which is composed of three groups of workers- skilled, semi-skilled and unskilled, is drawn from a large area around Caledonia. The skilled, and most highly paid employees come from as far away as Hamilton, Jarvis and Simcoe. These men can afford the money required for comfortable transportation and maintenance of the standard of living which they desire. A few of these skilled workers live in Caledonia in the upper class districts.

The semi-skilled workers live in Caledonia or in the country nearby, while the unskilled workers, which make up over fifty percent of the employees, nearly all live in the village itself. Even these men earn good wages; so are able to live

quite well in a village where cost of living is not great.

The bed of gypsum being mined at present is eleven feet thick and lies about one mile west of the processing plant on Highway No. 6. The present bed is 87 feet below the surface and four feet below the normal level of the Grand River, one mile south of the mine. The result is that considerable quantities of water must be pumped from the mine. A compensating feature of this situation is that much of this water is utilized in the processing of the gypsum rock.

The plant on Highway No. 6 is a calcining mill which contains, a rotary calciner, and crushing, drying and ball grinding equipment. After the gypsum rock has been milled, it is manufactured by various processes into "Gyproc" wallboard, sheathing, lath and plasters, wool insulation and other materials used in construction industry. Some of the calcined "Gyproc" is sent to Paris, Ontario where it is manufactured into a full line of water-mixed paints.

The expansion of the plant's capacity during the war has raised the weekly output of "Gyproc" products to a point where sufficient is manufactured to construct 1,000 average sized homes. Surplus supplies of gypsum rock, already crushed but not milled, are shipped to various of the seventeen plants throughout Canada. The manufactured products find their largest markets in the expanding cities of Southern Ontario, but some are shipped by rail and truck to Quebec and the prairie provinces.

This plant, with its continuous programme of

expansion has done a great deal for the economic health of Caledonia. It employs about one-third of the working force of the community.

(b) Silverwoods Dairies, Limited (Caledonia Branch)

This creamery is located on the west side of Highway No. 6 just beyond the nothern boundary of the village. Two Company trucks and three commissioned trucks bring cream from as far as Nelles Corners (south of Cayuga), Onandaga, Ancaster and Hagersville. Milk collections are made over a much more extensive area reaching south as far as Jarvis and Port Dover and west almost to Brantford. The collections to the east reach well beyond Cayuga but to the north, the greater local demand for fluid milk limits the collections from Caledonia. As already implied during the study of present agriculture very little of the mild taken to the creameries is collected along the main highways.

In the summer when a surplus of milk is collected by city dairies, it is shipped to creameries to be processed into other dairy products. Caledonia receives the surplus milk from Silverwood Dairies in Hamilton, St. Catherines, Brantford, Oakville and Toronto.

The cream which is collected from the farms, together with that which has been separated at the creamery, is manufactured into butter and sweet cream products. The 600,000 pounds of butter produced last year were sold by Silverwood Dairies throughout southern Ontario. In addition to this 1.250,000 pounds

of sweet cream was shipped by truck to Brantford where it was processed into ice cream. The bulkiest products which are manufactured at the creamery are powdered skim milk, powdered whole milk, and powdered butter milk. Last year over 2,000,000 pounds of these products were produced and sold throughout Canada and the United Kingdom.

The Company Currently purchases approximately 20,000,000 pounds of milk a year, paying $2.50 a hundred weight for Grade A products. During the winter the creamery recieves about 50,000 pounds of milk per day from 341 farmers. In the summer they receive 100,000 -120,000 pounds a day from the same number of farmers.

The regular staff of twenty-nine men is increased during the summer when a double shift is worked.

This plant has had a great effect upon agriculture in the Township because the farmers know that they can sell all the milk that they can produce. The factory has a good location in the center of an extensive area of mixed farming, not far from large markets which will consume their butter and cream products.

(c) Natural Gas

Drilling for natural gas constitutes another non-agricultural land use in Seneca Township. Although the individual wells are very small, they have become of great economic value to the farmers who own them. They are found in structural enclosures in the Medina and Clinton formations, particularly in the east end of the township. Sandstone is the most common

An old gas well near York. This well has to be pumped out periodically because pressure is very slight.

Small polluted channel on the Grand River only a few miles below Caledonia.

resevoir rock in this area, while overlying shales and dolomite formations prevent the escape of gas.

There are at present 102 producing wells in the Township. Of these fewer than half have an open flow, the rest have to be periodically pumped out by tractor because the rock pressure is not sufficient to raise the gas and force it through the gas mains. (A picture of such a well appears on page 97)

All the gas produced in Seneca Township is of the "dry" and "sweet" variety. As a result no purification of the product is required before it is delivered to the consumer. A large part of the gas produced in the Township is used for heating and appliances in Caledonia and in the Gypsum plant for the calcification of gypsum rock. Most of the wells are leased by the Port Colborne-Welland Gas and Oil Co. Ltd. which maintains a pumping station in Caledonia.

(c) Recreation

There are no really good facilities for recreation for the Grand River is so badly polluted that swimming and even fishing in the summer is undesirable. However, east of York there is a small lodge established where the River is fairly deep. This lodge is poorly kept and reflects the undesirability of the area as a whole for recreation. Picnicking has become quite popular however along the banks of the river since the new highway was put in as the old road gives easy access to the River without a lot of traffic passing by. All of the land along the edge of the River where the old highway was built is still owned by the Government and plans have been made to improve picnic facilities.

Chapter Five

URBAN LAND USE

(a) Caledonia

The village of Caledonia, the largest urban center in Seneca Township, is situated at the point where No. 6 Highway bridges the Grand River. It has become a focus of transportation in this area because Highway No. 54 and two branches of the Canadian National Railway also meet at this point. The road connection with Hamilton thirteen miles distant is inadequate at present, but it is expected that in a short time a four-lane highway will be built east of the present highway No. 6 but will still bridge the river in Caledonia itself. This extemely favourable position in relation to transportation routes has contributed greatly to the continued prosperity of the community.

The higher north bank was developed first because of better drainage, but both sides of the River have been settled. Construction of buildings has been easy because of the absence of bedrock near the surface and the consequent ease of excavations.

1. History of Settlement

The first white settlement in the vicinity of Caledonia took place in 1833 when the Grand River Navigation Company began the construction of a dam, canal, grist and saw

The concrete bridge at Caledonia which carries the heavy traffic of Highway No. 6.

Narrow flood plain above the dam at Caledonia being used for growing corn. The C.N.R. bridge may be seen in the background.

mills at Seneca, approximately one half mile east of the present site. Soon, however, other industries were established by Mr. McKinnon at the present site of Caledonia which offered greater advantages for power and transportation. He first built a saw mill and a grist mill, and shortly after, he established a carding and fulling mill. By 1842, when the Hamilton-Port Dover Road was built, the village had lost its saw mill but had gained a second grist mill and two stores, and had a population of 50 - 100 people.

In 1843 the success of Caledonia was assured as the Plank Road was constructed with its bridging point at Caledonia. A third artery of transportation reached Caledonia with the construction of the Huron and Lake Erie Railway. This did not make Caledonia more thriving and prosperous as had been expected but had rather the opposite effect. The railway drew business from the Grand River Navigation Company; so that by 1861 it was forced to close, bringing to an end employment for all who had been engaged in the thriving business of water transportation.

The advent in 1873 of a second railway, however, running north and south between Hamilton and Port Dover was entirely adventageous to the village. This line was used by local manufacturers for the shipment to the city of Hamilton of products such as carriages, woollen goods and foundry products.

Disaster struck the village, however, in a series of fires which destroyed a large part of the industrial and commercial section of Caledonia. A decline in population set in for the merchants, instead of attempting to re-establish their businesses, moved to the cities to work as hired hands or went west

to try their luck again. By 1890 the only industries left in the village were two grist mills which continued to operate under separate managements. Essentially, Caledonia had reverted to little more than a distributing point for the surrounding rural area.

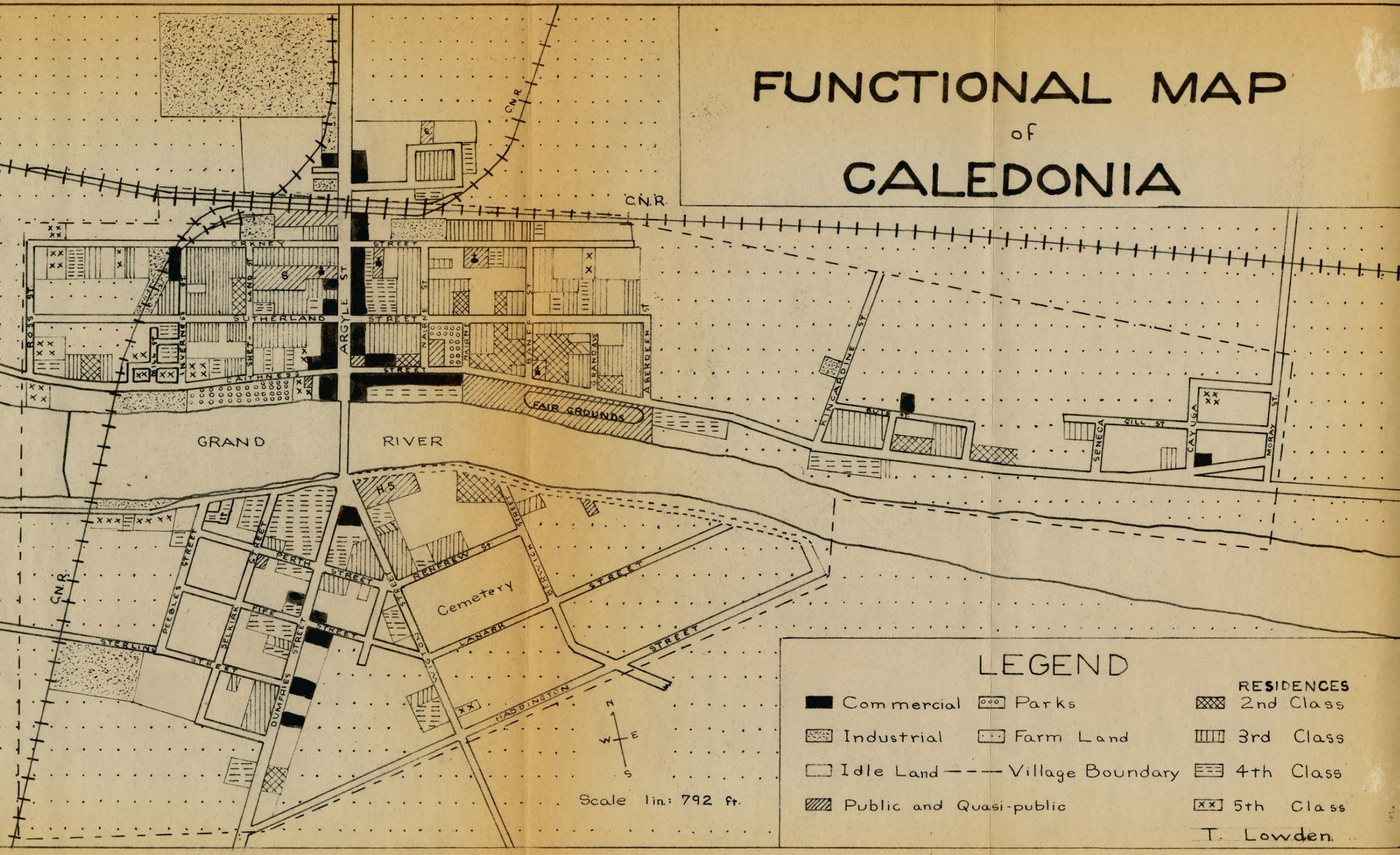
The tide turned early in the twentieth century when in 1905 the Alabastine Company from Paris began the development of their mine, just outside of the village limits. Since that date Caledonia has progressed as this Company has continued to expand, employing more people each year. The Census figures of Caledonia's population tell the story very effectively.

Year	Population	Year	Population
1871	1,246	1921	1,223
1881	1,242	1931	1,396
1891	968	1941	1,401
1901	801	1951	1,506
1911	952		

2. Settlement Pattern

The development of Caledonia has taken place in four different areas. The first to develop was Seneca which now forms the eastern part of the town and is now predominantly residential. The largest and most prosperous part of the village developed after 1840 under the leadership of Randal McKinnon. It was this part of the village which gained most from the building of the bridge and railroads. The area is characterized by old, well-built homes and contains the main commercial area. The third

FUNCTIONAL MAP
of
CALEDONIA



Scale 1in.: 792 ft.

LEGEND

- Commercial
- Industrial
- Idle Land
- Public and Quasi-public
- Parks
- Farm Land
- Village Boundary

RESIDENCES

- 2nd Class
- 3rd Class
- 4th Class
- 5th Class

T. Lowden.

district is the west end, which was developed for the labourers working in the mills, carriage factories and foundaries. This district developed about the same time as the central core but it has changed little since the last century. The most recently developed part of the village is on the south bank of the Grand. This part has expanded a great deal since the gypsum mines and factory were established.

These developments are recorded in the plan of the village which is basically a modification of a grid pattern. This may be seen in the functional map of the village (page 103) Surveys were made in 1844 and the plans have been unaltered since. The survey was made with little regard to the topography of the village; with the result that a number of the streets planned have veen impossible to develop. As may be seen in the same map, much of the village still remains empty and part of it is still used by nearby farmers as pasture and cropland.

The village is roughly rectangular in shape with the long axes parellel to the Grand River. The street plan on the north bank is quite regular with all of the east west streets leading to the commercial core. The commercial core developed on this side of the river because of the focus of transportation at the corner of Caithness and Argyle Streets. It is notable that Dumferies street and Wigton Street focus on the bridging point, so that access to the commercial core is relatively easy. In the form of the street plan Caledonia is a typical river town with a bridge.

The large undeveloped area between Caledonia and Seneca

is caused by poor drainage. Most of the land which is suitable for building on the north bank has already been used. The unused land is very hilly so that building is difficult. On the south bank there is still a considerable amount of land suitable for building.

3. Commercial Zone

The retail zone of Caledonia is concentrated on the north side of the River on Argyle Street and, to a lesser extent on Caithness Street. The village has a wide range of shops dealing in both essential and luxury articles. At present there are 45 stores providing for the needs of the people. The number of stores dealing in various lines of products is as follows: general dry goods, four; clothing, three; furniture, two; shoes, four; and other retail products, eight. All but the most specialized of equipment and commodities are found in these stores. Nonetheless the local people admit that they do not patronize the village stores as much as they could, for they frequently go to Hamilton looking for a larger selection of goods, and lower prices. On the other hand, the presence of two feed stores and a milling company has done much to attract farmers to the village where they buy feed for their cattle and shop for household articles, foodstuffs and clothing.

In the last few years the retail zone has been enlarged by the addition of a number of large automotive retail stores on the south side of the River. Chrysler and General Motors have both built excellent sales and service garages. Close to these

The main street of Caledonia looking north from the bridge.

Argyle Street looking south from the railway.

One of the more prosperous of the hardware stores in Caledonia.

Farm equipment and supply Co. on the main street of Caledonia.

has been established a used car lot for the sale of cars which have been traded for new models. The addition of these establishments has attracted a few customers from Hagersville and Cayuga.

Associated with the retail zone are a number of legal and assurance businesses which cater to the local populace.

There are several companies supplying building material. These are located near rail transportation and are flourishing as the town is extending considerably. These stores are a combination of commerce and industry for they do some construction work at the stores.

4. Industry

There are only two industries located within the village. The main industrial developments which affect the town are the Gypsum Lime and Alabastine, Canada, Limited and the Silverwood creamery, both operating on the northern outskirts of the village. These have already been discussed in the chapter on non-agricultural land use in Seneca Township.

The Caledonia Milling Company, Limited, employing twenty men is the largest industrial employer in Caledonia. The Company maintains three buildings. A flour mill is located on the south side of the River, obtaining its power from a dam built in 1835. The mill now has five sets of rolls in which Ontario and Western wheat are ground respectively into pastry and bread flour. The flour is distributed by truck to nearby bakeries in Caledonia, Hagersville and Cayuga. Larger volumes are transported by tractor-trailer to bakeries in Hamilton and Toronto. To insure

The feed mill owned by the Caledonia Milling Co..
This is the oldest building in the village.

Grain elevator beloning to the Caledonia Milling CO.
The C.N.R. station and tracks may be seen at the left.

large enough supplies of pastry flour the milling Company sometimes gives local farmers western wheat in return for the special soft winter wheat.

The western wheat is brought to Caledonia by rail in car-load lots and then stored in the Company's grain elevator which is located just north of the Canadian National Railway tracks. The grain is removed to the mill by truck as it is required.

Any surplus flour which is produced is purchased by the Gypsum Company for bonding paper to wallboard. The Gypsum Company will use either Western or Ontario flour; so the milling Company is safe in buying large quantities of either.

The third building which the Company owns is a feed mill located on Caithness Street in the west end of town. There grains are mixed for feeding livestock. The farmers in the vicinity often sell their grain crops for cash and then buy commercial feed already mixed with "Sur-Gain". These feeds are made almost entirely from Ontario grain and from bran which is milled on the south side of the River.

On the south side of the river, on Sterling Street, is located the second and the newest of Caledonia's industries—the Welded Products Company Limited.

Here are manufactured storage tanks of all sizes which are sold to companies installing oil furnaces throughout southern Ontario. The Company gets its sheet metal from the Steel Company of Canada in Hamilton via the Canadiam National Railway

which passes close to their buildings. Although the area occupied by this industry is large, it employs only fifteen men at present, for it has not yet expanded to its anticipated optimum size.

This industry is not as important to Caledonia as those already mentioned because none of the raw materials it requires are obtained locally and only a few of its products are consumed locally. It is, however, a sign that other industries may establish themselves here to take advantage of the existing lines of communication, and increasing labour supply. It has the added advantage of being free from congestion which is difficult to avoid in large cities.

5. Residential

In the functional survey of the community four classes of housing were recognized and mapped.

(a) First class As in the case of rural farm buildings there were no houses recognized as belonging to this class.

(b) Second Class These are homes which are of superior appearance in Caledonia but would not be considered as first class homes in Hamilton. Although many of these homes are quite old, they are large, well-built and have been especially well-kept. The lots on which they are set are spacious and carefully landscaped.

(c) Third Class This category includes many of the newer homes and the majority of the smaller homes built between 1900 and 1939. About half of the houses in this class are of frame construction. The lots on which the houses are built are smaller and have less attractive gardens than those in the second class.

An example of the second class housing on Caithness Street opposite the fair grounds.

A typical third class home. The sidewalk indicates the state of repair of these homes.

A new fourth class home on the south bank of the River. This is smaller than most of the older fourth class homes.

A fifth class residence in the west end of the village. Some attempt has been made to make a garden which is unusual for these homes.

(d) Fourth Class These houses are similar in construction to those in the third class except they are poorly kept, many of them requiring extensive repairs to bring them to the level of third class residences.

(e) Fifth Class This category contains the poorest homes of the community. The houses are made of wood and lack such conveniences as water and sewage. If these houses were in a city they would probably be condemned by the health authorities.

The only large area of second class homes is on Caithness Street, east of the commercial zone and opposite the Caledonia Fair grounds. On the south side of the river there are a number of second class homes, which are not as large but are new well-built structures. In addition to these, there are a small number of newly constructed homes, in what was the village of Seneca, at the extreme eastern end of Caledonia. These homes all have one thing in common and that is that at one time or another they have had a good view of the river making them desirable locations for those who can afford such locations. The second class homes are the residences of the merchants of the village and, in a few cases, the managers of industries.

The majority of the homes, as in all small villages, are third class hmes. Those on the north bank of the River are mostly old homes which have been moderately well kept by hard working home owners. On the south bank of the River, many of the third class homes have been built since the war. Many of the people who live in these homes are employed by the Gypsum Company in some specialized capacity. Others living in these homes include

garage operators, salesmen and owners of the smaller commercial enterprises.

Fourth class housing is less abundant than the third class and is more scattered. The largest number of these homes to be found in one place is on the south side of the River. These are old frame houses which were built close to the mill on the south side of the River. The people living in these homes find employment as labourers in the mill and at the Gypsum plant and mine. On the north side of the River these homes are more scattered and of brick construction.

The fifth class residences, with two exceptions, are found in the west end of the village. These homes are of such ancient and poor construction that repairs to them are impractical. The people living in these are out of work for the largest part of the year and live mostly from assistance from social service agencies. These homes were originally built for the employees of the flour mills but have since passed into the hands of a less industrious class of people.

There is still a large part of the village which has not been settled; so that there is room for expansion, should this occur.

6. Services

(a) Cultural

Caledonia has an eight-room high school on the residential south side of the river which serves the West Haldimand School District. The south bank was chosen as residential expansion is most likely to take place here, and most of the

suitable sites on the north bank were already occupied. There is a large public school consisting of two buildings built on the same plot of ground.

A small public library has been built on Caithness Street east of Argyle Street.

One of the most important cultural sevices which a village may provide, is the weekly newspaper. In Caledonia "The Grand River Sachem" published every Wednesday, provides its readers with news of local interest and advertises the products of the local merchants. The newspaper is sold to 95% of the homes of the village and 90% of the homes on the four rural postal routes operating from Caledonia. The total weekly circulation of the paper is 1,170.

The religious needs of the people of Caledonia are served by churches of four denominations- Anglican, Presbyterian, United and Roman Catholic.

(b) Health and Recreation

Caledonia has no hospital; but an ambulance service is provided by the local funeral home. This ambulance can reach Hamilton's St. Joseph's Hospital in less than fifteen minutes. There are two medical doctors, one doctor of chiropractic a dentist and several nurses prctising in Caledonia.

The following sports facilities are available: a skating arena, a baseball diamond, two tennis courts, a gymnasium in the High School, and bowling greens. Entertainment in the town is provided by a motion picture theatre and various amateur

A sulky at the Caledonia Fair.

The race track at the Caledonia Fair grounds.

groups. In addition for three days in the fall of each year the Caledonia Fair is held, attracting as many as 15,000 visitors. The contacts made at this time provide an important stimulus to the business life of Caledonia.

(c) Public Utilities

1. Streets The streets in Caledonia have been macadamized. Curbs exist only on Argyle Street and part of Caithness Street. The side-walks are old and in many places rough and broken.

2. Water Works and Sewage Disposal The water works system was started in 1948 when water was pumped from three drilled wells into a 50,000 gallon elevated tank and seven miles of eight, six, and four inch cast iron mains. The people of Caledonia are assured of an ample water supply for many years to come as the system was planned to serve a community of double the present population.

Last summer the village proceeded with its plans for sewage disposal by building eight and a half miles of sewers leading to two pumping stations which pass the sewage under the River to the processing plant on the south bank of the River. After the sewage is processed it is emptied into the Grand River. This service has already had an effect on the village for there has been a noticeable increase in the number of permits issued to home builders. The town clerk feels that many of the empty lots will now be built on because of this added service.

3. Hydro Electric Power The village operates its own Hydro system under the jurisdiction of the Ontario Hydro Electric Power Commission. At present there are 625 consumers in and around the village.

4. Telephone The Dunnville Consolidated Telephone Company has supplied the town with this service since 1908 when there were only ten telephones in Caledonia. At present there are 683 phones serving Caledonia and district.

5. Gas Gas for heating and cooking is supplied by the Port Colborne- Welland Gas and Oil Comapny Limited. Gas is supplied to Caledonia by a two inch main from York and a one inch main from Tyneside. About half of the homes in Caledonia have gas appliances and about one quarter of them heat their homes with gas. This may be explained by the fact that gas was at one time very cheap in Caledonia because many people were able to drill wells right in their own yard and get a good supply of gas. Now, however, they have to buy their gas.

6. Milk and Bread Milk is provided by the River View Dairy which has two trucks operating in Caledonia and the surrounding district. Bread is supplied by truck from large bakeries in Hamilton, Brantford and Toronto.

7. Transportation During the war a regular bus service was maintained by the Canada Coach Lines, but a steady increase in the number of cars using the highway meant that fewer people used the bus service. As a result, in 1950 the service was cut in half, and in 1954 the service was reduced to four buses daily to Hamilton.

The Canadian National Railway has discontinued its commuters' service to Hamilton, but still picks up passengers on its east-west run. These rail lines are more important for freight service than passenger communications but even this has declined considerably because of competition by trucking companies.

In recent years the merchants have found truck


RETAIL TRADE AREA
of
CALEDONIA
Lake Ontario
Hamilton
53
ER.
2
20
6
Brantford
Mt Hope
CALEDONIA
54
56
York
Hagersville
Cayuga
N
W
E
S
T. LOWDEN
Scale 3.95 Mi : 1 In

tranports which pass through the town more convenient than freight service from the station.

We see then that Caledonia has a wide range of services to offer to its residents and in the future it will have more.

7. Trade Area of Caledonia

The industries, services and facilities discussed above, not only serve the village, but tend to attract many farmers to Caledonia from the surrounding district. Because many farmers look to Caledonia as the place in which they will be able to sell their cash crops and buy their home and farm supplies, the village has built up a fairly extensive trade area. As the relationships between the village and the farm continue to be strengthened by mutual dependence, the trade area will be more clearly defined.

At present, Hamilton dominates the trade area of Caledonia but Caledonia has been able to cut out of Hamilton's trade area a zone in which it is able to compete with Hamilton for ordinary products and foodstuffs. This trade area may be seen in map 17, page 120.

When looking at this map it is seen immediately that the trade area is elongated in an east-west direction. The reasons for this will become evident as limiting factors to Caledonia's trade area are discussed. The trade area extends to the north to within two miles of Mount Hope, since there is a

more complete line of products in Caledonia than there is in Mount Hope. To the east, on both sides of the River, the trade area reaches only a little past York, for beyond that point people begin to look to Cayuga as their urban center. If they require any special goods they may go either to Caledonia or to Hamilton. The trade area in Oneida Township, as determined in this study, extends almost half way to Hagersville. To the west there is no urban center closer than Brantford; so that the trade in that direction is quite extensive.

We notice from this description that the extent of the trade area in any direction is determined by competition from other centers. The trade area of Hagersville as determined by Ralph Vicero overlaps into Caledonia's trade area by nearly a mile. The most likely explanation for this is that local merchants, both in Caledonia and Hagersville, are inclined to include rival territory within their own trade area.

8. Future Possibilities for Caledonia

The future growth of Caledonia will depend largely upon her ability to attract new industries to the community. With the exception of the Gypsum, Alabastine and Lime Comapny, little expansion of the existing industries can be expected. With the establishment of new water and sewage facilities the possibilities of attracting new companies has greatly increased.

Another possible stimulus to expansion may be the completion of the new four-laned highway to Hamilton, which would

make Caledonia desirable as a dormitory town. If this were to happen, however, the commercial part of the village would probably decline, as the influence of Hamilton would become stronger.

It is reasonable to expect that the village as a whole will continue to expand and that before long the plan of 1844 will finally be fulfilled.

SUMMARY

Caledonia has had various functions throughout its history. It started out as a milling town and then became important as a distributing and manufacturing center for the surrounding district. During its decline, at the turn of the century, it retained only one of its functions, that of distributing. Since the erection of the gypsum plant, the village has once again added the activities of an industrial village, to its function as a distributing center.

Chapter Six

OTHER URBAN CENTERS IN THE TOWNSHIP

(a) York

York, located on Highway 53, is the only other center which remains as an urban agglomeration in Seneca Township. At present York has only twenty-seven houses which are spread over a fairly extensive area, a service station, a general store, a

Fine United Church on Highway No. 54 near York

The last store remaining at York: a remnant of another era.

school and two churches. The once prosperous town declined with the passing of the age of water transport. It has maintained itself as a village largely because it is situated at a bridging point on the Grand River.

(b) Indiana

This once busy hamlet has all but disappeared. The only indication of its once flourishing condition is the grassy mounds by the river which are all that remain of the dam which once provided power for its mills. At present the hamlet consists of two farms and a one-room school, located well above the flood plain, three and a half miles east of York on Highway No. 53.

(c) Blackheath

The hamlet of Blackheath, too, enjoyed greater relative importance in years gone by. Located on the Indian Line six miles north of York, it was in the past an important resting point on Highway No. 56. The village was founded in response to the need of early settlers for a general store and post office. Blackheath today continues to fulfil its function as a cross-roads, shopping center and post office. A general store, a garage, a church and a few homes comprise the buildings of this hamlet. It is not likely that this hamlet will increase in size, for in 1953 Highway No. 56 was removed to a new location slightly to the east, to eliminate two sharp turns.

(d) Tyneside and Sinclairville

These two centers, both located on the "Old Indian Line" have all but vanished. Sinclairville was once

quite prosperous, but as a milling town, it declined rapidly when better sources of power were found. In 1954, the only remnants of the hamlet were three houses and an old Methodist Church. Tynesdide, the other of these hamlets once had a blacksmith's shop, a general store, several houses and a church but all that remains now is the church and one home.

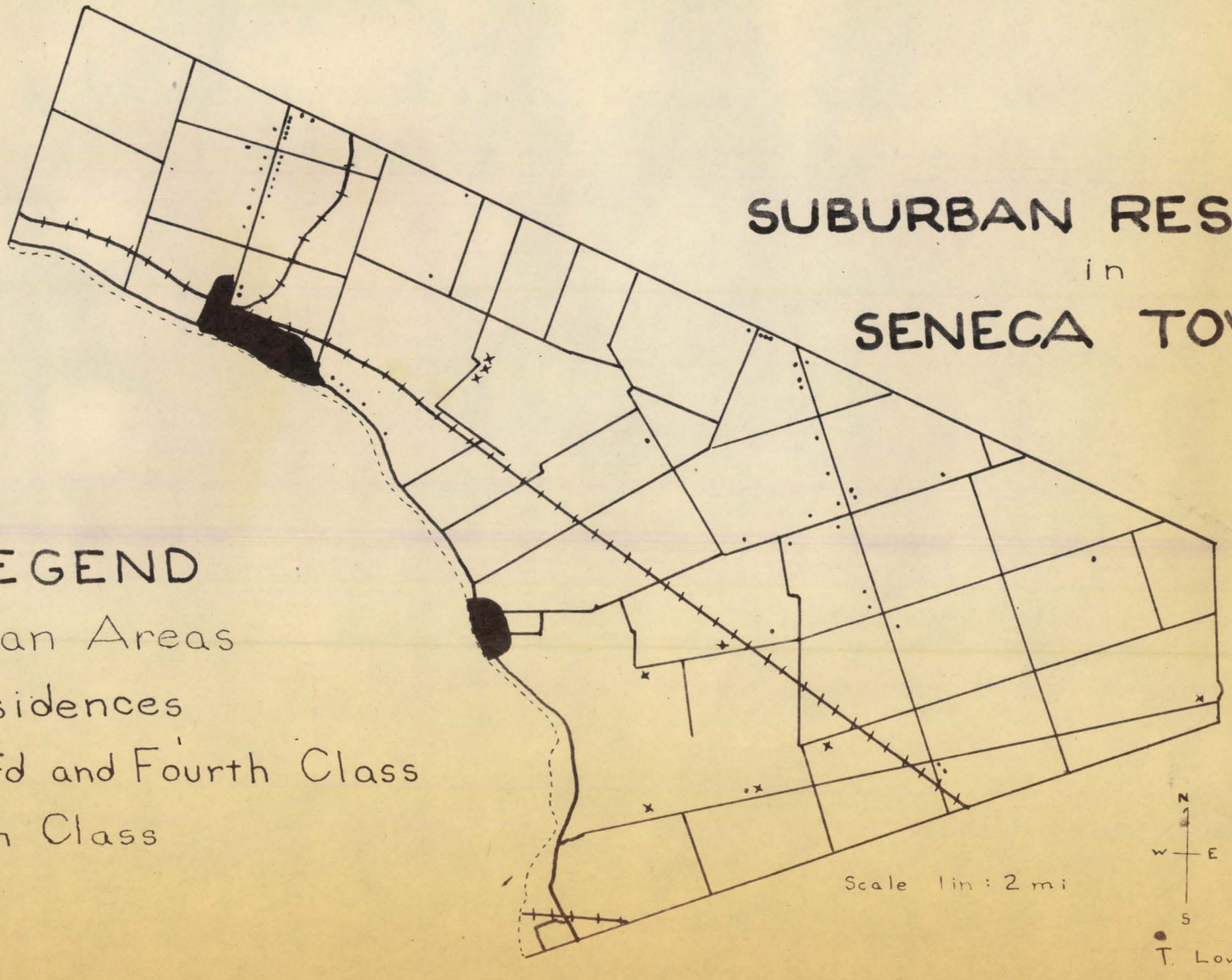
Chapter Seven

SUBURBAN RESIDENCES

A recent development in urban land use in Seneca Township has been the construction of new homes in the country for the use of people who work in industry in Caledonia or Hamilton. The first development of this nature took place along Highway No. 6 where a good road and regular bus service provided transportation to either town. The shortage of housing and the high cost of land in Hamilton, along with improved modes of transportation provided the stimuli for this movement.

Since the end of the war in 1945 there has been an increase in the number of these homes, many of them being built also on Highway No. 56 in the northern part of the township, closest to Hamilton. None of these homes are of high quality, but compare with the third and fourth class homes in Caledonia.

SUBURBAN RESIDENCES
in
SENECA TOWNSHIP



As may be seen in map 18, page 127, these third and fourth class homes are built beside the main highways or a short distance from them on good township roads. A great many of the lots on which these ~~farm~~ homes are built are over an acre in size, because that is the minimum required by the Department of Veterans Affairs, which supplied the money for a large number of these lots to veterans of World War II.

The fifth class residences which are shown in the same map belong to men who have no permanent jobs but work from time to time . The rest of the time they are satisfied to live off the family allowance, pension and relief checks which they receive monthly.

These homes are built in the most inaccessible parts of the Township, on poorly drained, wooded land where the residents can get enough wood to heat their homes in the winter. The fifth class homes were built before any building restrictions were placed upon property in the Township. The Township has since placed building restrictions on the land to prevent an influx of such buildings, should employment become scarce in the city.

The trend towards urbanization along the highway seems to have subsided considerably in the last two years, partly because the number of homes available closer to the places of employment has become greater.

Another aspect of suburban living is seen in a number of farm houses which are rented to people working in

The only second class suburban residence in Seneca Township, just east of Caledonia on Highway No. 54.

An old farm house on Highway No. 56 being used as a suburban residence. The land is being used as pasture for beef cattle.

Hamilton or Caledonia. These are large homes and most of them are found along Highway No. 56 which gives easy access to the industrial east end of Hamilton. Low rents make it possible for those living here to pay the high cost of transportation to the city.

PART IV

SUMMARY AND CONCLUSION

Chapter One

SUMMARY

Seneca Township, located in the western part of the Niagara Peninsula, is well served by rail and road connections with Hamilton and Toronto. The relief of the area has been largely determined by glaciation during Pleistocene times. The area was subsequently inundated by the waters of glacial Lake Warren the sediments of which covered the area with a thick layer of clay.

The soils of Seneca Township have developed on this clay; so most of them are heavy clays and clay loams. These soils, however, are potentially fertile and with careful management the fertility may be maintained and some of the drainage problems which exist eliminated. The climate in Seneca is favourable for the production of fodder crops on these soils.

The area in which Seneca is situated was under the control of the Six Nations Indians up to the year 1833 when the purchase of these lands was completed by the British government. This was one of the reasons why settlement lagged in this area. However, in 1833, when communication began to improve, settlement increased rapidly. This trend continued until 1871 when the Canadian west began to attract many of the settlers.

Changes in technical skills and mass production did away with the need for local artisans so that the population of rural villages declined.

Depopulation continued until 1941 but since then there has been a slight increase in numbers due largely to the influx of suburban dwellers.

The combined effects of fertile soils, a favourable climate, and large markets in Hamilton and Toronto have encouraged the rapid agricultural development of this Township. A generally diversified agriculture exists, but there is an emphasis upon the production of milk to satisfy the demands of the nearby urban markets. Hay crops and pasture comprise the most extensive type of land use in the Township while oats lead all other cereal crops.

The Township has been divided into four farm types, each based upon the dominant source of income and each presenting a different land use pattern. The distribution of these types has been determined partly by physical conditions and partly by accessibility. We also noted that farm types are not static but dynamic so that adjustment to farm types is never complete and that they may change as man perfects his technical skills.

There are a number of non-agricultural activities in the Township. Most important of these is The Gypsum, Lime and Alabastine, Company, Limited, which mines gypsum rock and manufactures it into many products. Employment for 350 men is provided here. The second industry, the Silverwood Creamery

is closely allied to the agriculture of the Township as it provides a market for much of the milk produced.

Drilling for gas constitutes the third important non-agricultural activity.

The largest community in the thesis area in the village of Caledonia, situated on Highway No. 6 where it bridges the Grand River. The town has a two fold function: distributing to the surrounding territory and manufacturing building materials.

Other urban agglomerations in the Township have all but vanished, except for York, at another bridging point on the Grand River. Recently, however, there was an increase in the number of suburban residences.

Chapter Two

CONCLUSIONS

When the physical backround was studied there was found to be a uniformity throughout the Township of climate, physiography and soil fertility. In addition to this the agriculture in the township was based upon livestock. From this one might assume that there would be uniformity of farm types throughout the Township, however, four farm types have been discussed as differences in land use and in the class of farm buildings are apparent. Differentiation has occured from two sources one physical; the other human. The dairy region was most suitably situated for aceess to urban markets - a human factor, while the mixed farming with dairy emphasis, mixed farming with livestock emphasis, and the beef cattle region have each in turn been found to be more remote from the large urban markets and each has a correspondingly larger area of impeded drainage - a physical factor.

Seneca Township has come under the influence of Hamilton as seen in the adjustment of agriculture to the demands of the large urban population for a constant supply of milk and meat products. Adjustment of farm types to local conditions and demands has been slow in the past, however, the future this process could be speeded up by a careful program of development.

Although Seneca Twonship is influenced by Hamilton, Caledonia is far enough away that it has developed as a distributing center for the surrounding territory. Local mineral resources in the form of gypsum has given the town a good industrial base. The village provides most of the services which a city can offer so that living there is quite comfortable.

As previously stated geographic conditions are never static but are dynamic; so that in the future we may find a number of significant changes in the differentiation within the Township.

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