Westminster Township

A Regional Study

by

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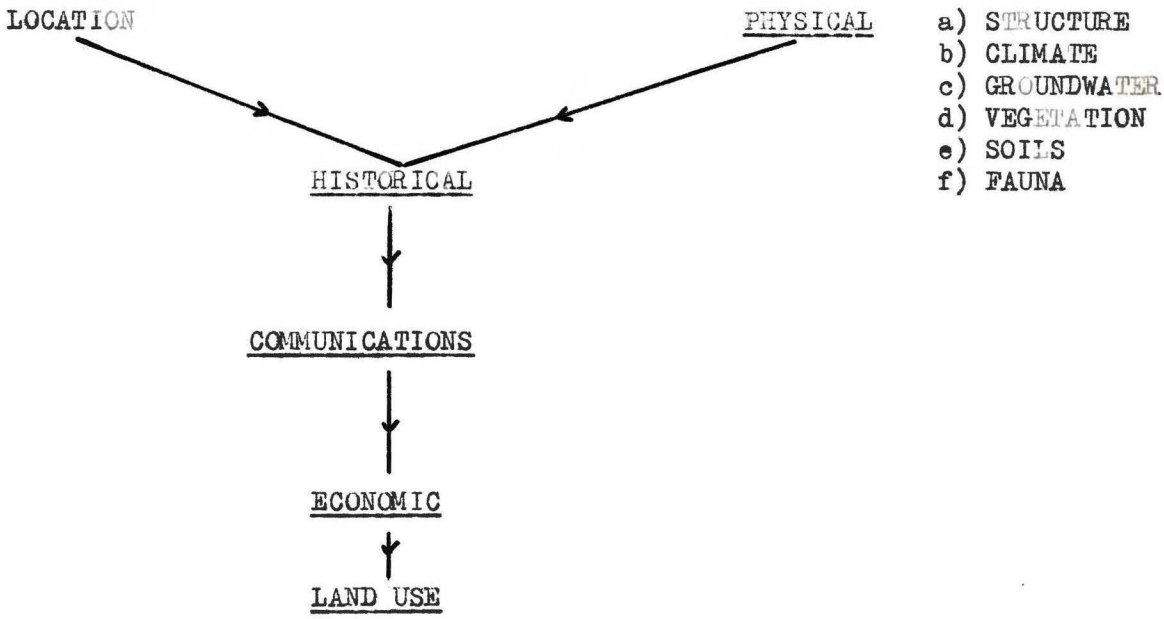
PLAN

INTRODUCTION



a) RURAL b) INDUSTRIAL c) URBAN

DISCUSSION OF PROBLEMS ARISING OUT OF SUCH RELATIONSHIPS

HUMAN

a) POPULATION b) URBAN CENTRES c) CULTURAL LANDSCAPE d) MODE OF LIFE

GENERAL CONCLUSION

INTRODUCTION

The study attempts to explain the geographical conditions in Westminster Township. Emphasis is placed on the relationship existing between the township and the city of London, the large metropolitan centre adjacent to it. The problem is attacked from a functional point of view.

The physical geography of the township is described. However, since historical forces are recognized in any study of settlement, one chapter is devoted to historical geography. The following chapters are devoted to communications and land use patterns, both rural and urban.

The thesis is changing interrelationship, between the city and the township. It shows clearly that the city does not terminate at its political boundary, but encroaches upon the adjacent rural township. The result is a change in the character of the township in the shape of an "Urban Fringe" specialized agriculture and new super imposition of communications.

LOCATION MAP OF WESTMINSTER TOWNSHIP

LEGEND

MILES 10 5 0 10 20 30 40 50 60 70 80 90 100

HIGHWAY

CITY OR TOWN

RIVER

TOWNSHIP

N W E

U. S. A.

LAKE HURON

LAKE ERIE

LAKE ONTARIO

LAKE ST CLAIR

GODERICH

PORT HURON

SARNIA

DETROIT

WINDSOR

CHATHAM

LONDON

INGERSOLL

WOODSTOCK

STRATFORD

KITCHENER

GUELPH

GALT

BRAMPTON

TORONTO

HAMILTON

BRANTFORD

ST CATHARINES

NIAGARA FALLS

WELLAND

FORT ERIE

BUFFALO

ST THOMAS

TILLSONBURG

WESTMINSTER TOWNSHIP

THAMES R.

GRAND R.

401

LOCATION

The township of Westminster, located in southwestern Ontario is the second largest township in the county of Middlesex. It has a total of 62,750 acres. The township is 115 miles southwest of Toronto, 114 miles northeast of Windsor, 20 miles north of Port Stanley on Lake Erie and 40 miles southeast of Grand Bend on Lake Huron. It is thus almost the geographical centre of southwestern Ontario.

Westminster township lies between the Thames River, which divides it from London Township in the north, and Elgin county to the south. On the east it is bounded by North Dorchester township and on the west by Delaware.

By astrononic bearings the township lies between 42° 50' 42° 59' north and 81° 05' to 81° 23' west. In the extreme north of Westminster township, across the Thames River lies the City of London, the great urban centre and sometimes called the capital of the region.

I

PHYSIOGRAPHY OF WESTMINSTER TOWNSHIP

Structure of Bedrock.

Geologically Westminster township lies on the south westerly dip slope of the great cuesta which forms the major structural feature of South Western Ontario. The cuesta is formed of paleozoic limestones, sandstones and clays, the underlying rock in Westminster township being the Norfolk clay and sandstone formations of the Silurian Period. The bedrock of Westminster township does not outcrop through the overburden of unconsolidated material which covers it. Generally this bedrock is 100 ft below the surface of the land, but 230 ft is not uncommon in places. Although such deep cover of mantle exists the bedrock is very important in two ways:

1/ It determines the general altitude and slope of the land.

2/ It is the source of most of the over-burden and is therefore indirectly the source of the mineral constituents of the soil.

The backbone of the continent, the ancient precambrian rocks, lies under 2800 to 3400 feet of sedimentary rocks, namely sandstone, shale and limestone. The precambrian base has a surface with an average slope of 28 feet per mile towards the south-west. The sedimentary rocks on top of the precambrian shield have a surface with slightly less dip. This dip is the

main factor, which determines the general drainage pattern in the township. Because the sedimentary rocks, underlying the soft materials are mostly shale and limestone, the soil materials have therefore large clay content, are derived from the shale and are quite limey. Along the valley bottoms the soft material is not as deep as in the surrounding countryside, this being particularly true of the valley which contains the River Thames.

Drainage.

The Thames collects all the natural drainage of the township, either directly or from the Dingman Creek, which follows a parallel course before joining the main stream a mile or two beyond the western limits of the township. The Thames is a consequent stream insofar as it may be postullated that it follows pre-glacial valleys, related to the underlying bedrock. This is by no means certain. The rest of the surface drainage except for Dingman Creek which also is a consequent stream, the secondary drainage channels, form an insequent pattern imposed on the landscape by the haphazard or unorganized surface of the glacial overburden.

Process.

Westminster township has been subject three types of processes:

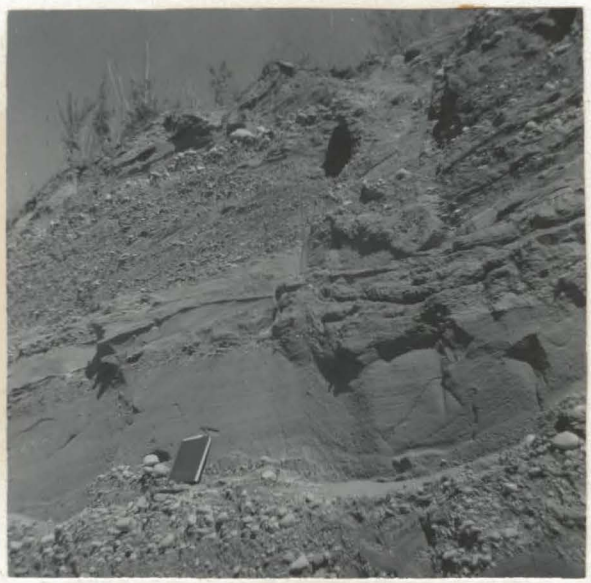
1/ The normal preglacial and inter-
glacial erosion

2/ The glacial deposition of Pleistocene
period

Dingman Creek Spillway
River terracing is evident

Kettle hole at Pond Mills

Stratified meltwater stream deposits
in Ingersoll moraine



Stratified sand and gravel in
Westminster moraine

3/ The normal post glacial erosion.

The kind of lower deposits made by earlier glaciations or by bodies of water between glaciations determines to a great extent the amount, depth, and chemistry of ground water supplies in Westminster township. This is found in the buried landscape.

The overburden which covers the bedrock is the result of the action of large masses of ice, namely the continental ice sheets of twenty to thirty thousand years ago. The material called drift was acquired from the bedrock, transported in some cases and deposited during the retreat of the ice sheet. The land glaciation formed the landscape as it is seen today. If provided materials from which the soils developed. Such surface deposits were made by the ice sheet, at its edge or underneath it as the ice sheet decomposed. Streams and bodies of water created by the melting ice also contributed to the deposition of flurral-glacial sands and gravels.

The topography today is essentially that, which was formed during the retreat of the glacier, however some past glacial erosion in the township has been done by the numerous streams, particularly the Thames, and the Dingman Creek. The waters of the Thames have done sufficient erosion as to form terraces, the Dingman Creek, occupying a spillway has reached an erosional stage where a flood plain already exists in its lower reaches.

<u>Glaciation</u>.

The glaciation process was long and complicated. However

a simplified account must be given so that the process of the landform evolution can be properly appreciated. The great ice mass covering southern Ontario gradually split and assumed the form of two ice lobes. They separated in their recession in the vicinity of London. In fact it is strongly suspected that this took place just S of the village of Byron.

Meltwater from the glacier poured into the upland of "Ontario Island" that was uncovered, from the higher ice around it, and found an escape in the crease to the south between the retreating lobes. This crease is the Thames valley. This way there was built a number of drainage outlets or spillways, which formed gaps in the deposited glacial till. These are occupied today in Westminster township by Thames River.

In this important glacial feature associated with the retreat of the ice sheets was, the formation of the various glacial features which today characterize the landscape in Westminster township.

The Glacial (Wisconsin Retreat).

In the glacial period Westminster township was covered by the Lake Erie ice lobe at its northernmost extent. The retreat southward occured in three stages. The Phases are represented by till plains, and the intervening halts by stadial moraines. The retreat process did not include any drumlinization or esker formation on the till plain. However it did involve the isolation of lumps of stagnant ice in the north central section of

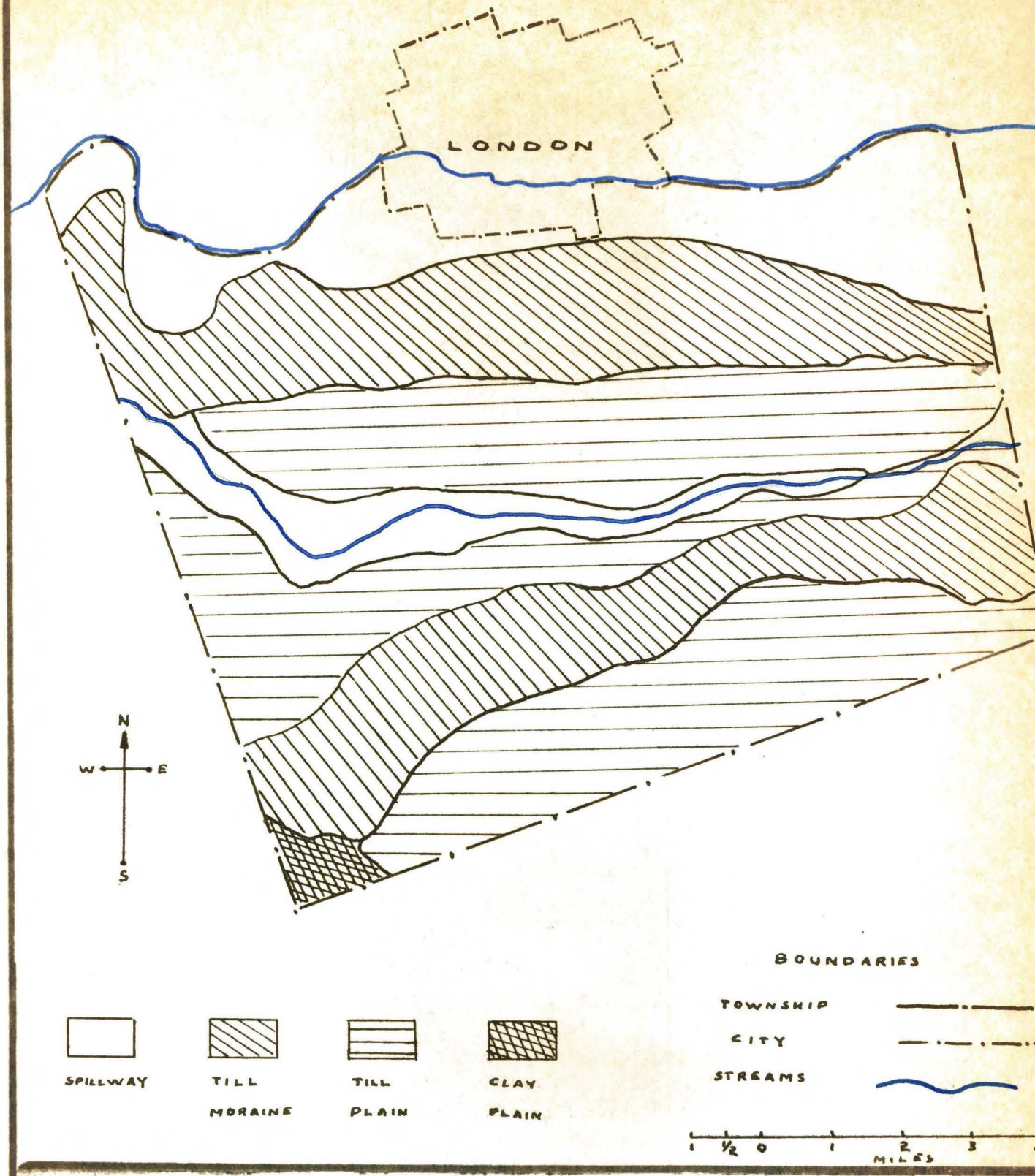
the township, and some slight shoreline work in the south west. Most important of all, the meltwater resorted much morainic material and deposited fluvio-glacial sands and gravels, in the N.W. corner of the township. Lacuotrine deposition occurred in por-glacial Lake Maumee.

Westminster township became part of the "Ontario Island" at a relatively early stage and therefore its preglacial and post glacial history began before the formation of Lakes Whittlesey, Warren, Algonquin and Iroquois.

Landforms.

The existing landscape in Westminster township was formed in the three stages of the retreat of Lake Erie ice lobe. The first stage was the formation of a moraine just south of the Thames River. It is possible that this is a part of the Ingersoll moraine. The great Thames spillway, just north of it, carried the drainage when the glacier stood here. This moraine extends throughout the northern part of the township, from east to west. The moraine is not distinct. Only occasionally a faint trace of a small ridge indicates its presence. The exception is the extreme north-west corner of the township near Byron where it assumes a height of 1000 ft, is rugged and contains sand and many bolders. The materials however are fairly well sorted. Predominent pebbles in this till moraine are of pale brown or brownish-grey limestone colour being derived from the underlying formation.

In the next stage the ice sheet retreated rapidly leaving a till plain, containing subangular stones of various sizes,



PHYSIOGRAPHY OF WESTMINSTER TOWNSHIP

many of which are scratched. This till plain extends from east to west ends of the township, covering the area between the second and fifth concessions. This till plain is quite flat dissected only by Dingmans Creek which cuts the plain in half in an E to W direction and acts as the drainage channel for that particular section.

This Creek drains a broad valley floored with salt, clay and sand or in places gravel. The sediments relate to a late stage of Lake Maumee, which was one of the glacial lakes covering the West end of the township.

After this till plain was formed, the ice sheet remained stationary for a period of time. As a result of this the Westminster moraine was formed. This moraine is separated from the Ingersoll moraine by the till plain described above and by Dingman Creek. Similar in form and composition it is a clay ridge approximately 50 feet high and a mile and a half wide. It diminishes towards the west.

From the Westminster moraine southward, another till plain covers the remaining portion of the township. Thus the topography of Westminster township consists of a series of moraines and till plains extending from east to west.

Surface Drainage.

Since the glaciation did not create any striking or rugged landforms, and since the materials deposited were generally uniform, the drainage in the township was not hampered to any noticeable extent. Only in the north-west corner, where the

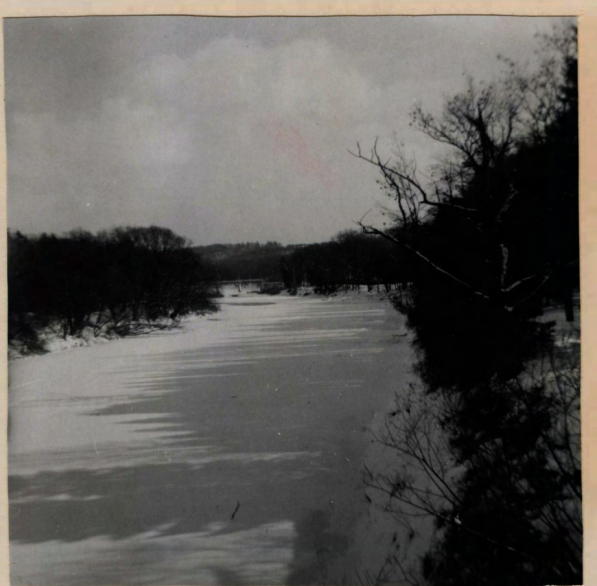
Sand deposits in Westminster Moraine

Well sorted sand and gravel in Ingersoll moraine

Ingersoll moraine as seen from Thames River spillway

Till plain is extremely uniform in appearance F

The Thames River



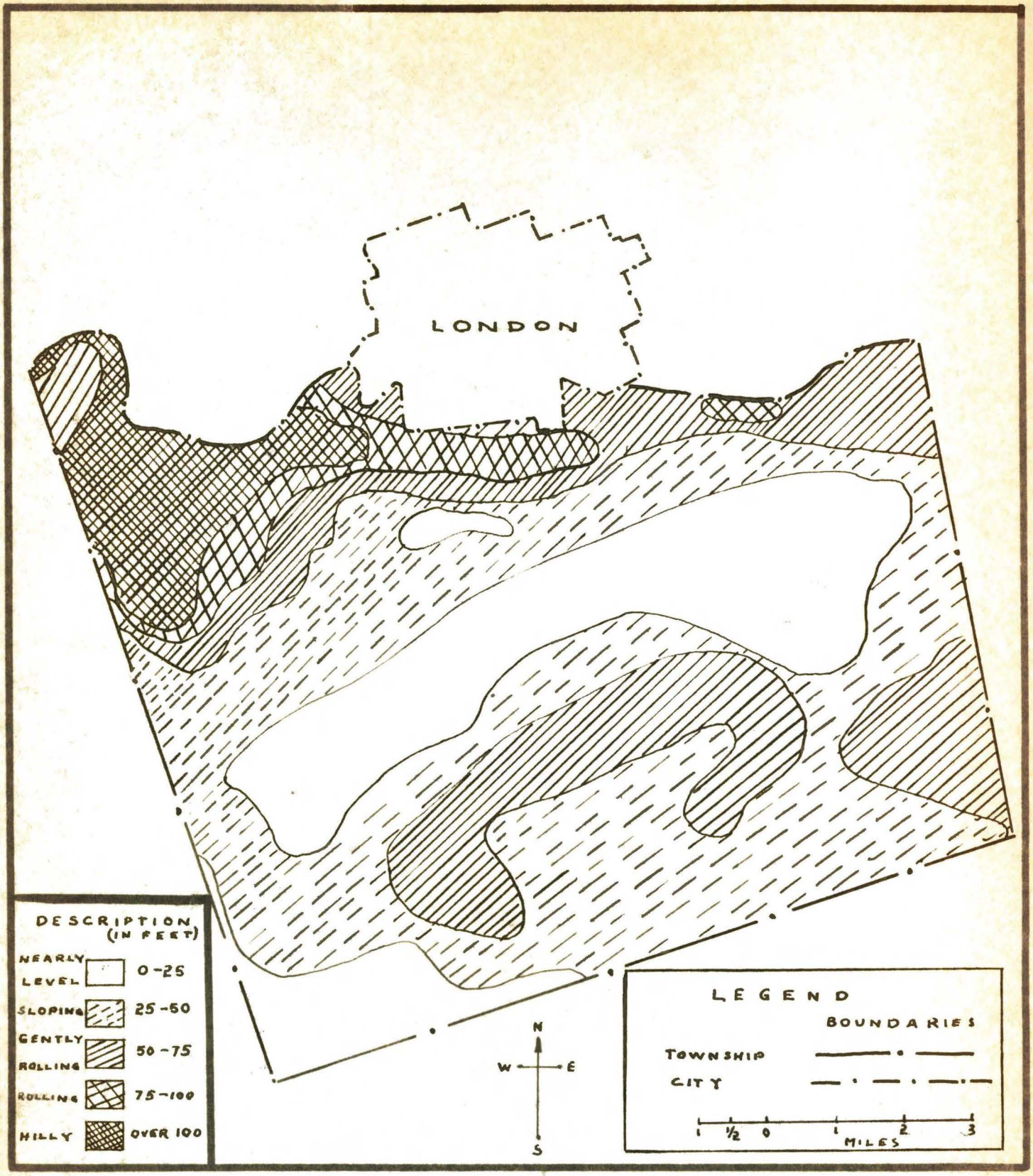
Thames River Spillway

Dingman Creek spillway approaches the rugged features of the Ingersoll moraine, the stream begins to make turns that at times reach 90°. The drainage is guided by the topography, particularly because it is indicated on it.

The relative relief of the landscape of Westminster township is low. However the slope of land is sufficient to permit good run-off for the surface waters. The greatest differences in elevation are found in the N W section of the township, where the land rises from 800 feet the Thames River Valley to 1000 feet just S E of Byron. In the rest of the township the land lies at an average of 875 feet above sea level. The streams are very small, but they are numerous and well distributed and only very few of them are intermittent. Actual swamps are non existant, although three marshy areas are found in the township. The first is in the extreme S E corner in the till plain, and the other is in the south central section of it. The third marshy area is S E of Wilton Grove in the Dingman Creek Spillway, where there is a flood plain.

Just east of Wellington Road south-east of the Westminster Military Hospital in the Ingersoll moraine five small ponds are situated. They occupy kettle holes, which were left filled with water when large pieces of ice formerly embedded in the ground melted after the recession of the ice sheet.

Westminster township has therefore a landscape of glacial deposition, subdued relief and adequate surface drainage, that presented man with no hindrances in its occupation and utilization.



RELATIVE RELIEF IN WESTMINSTER

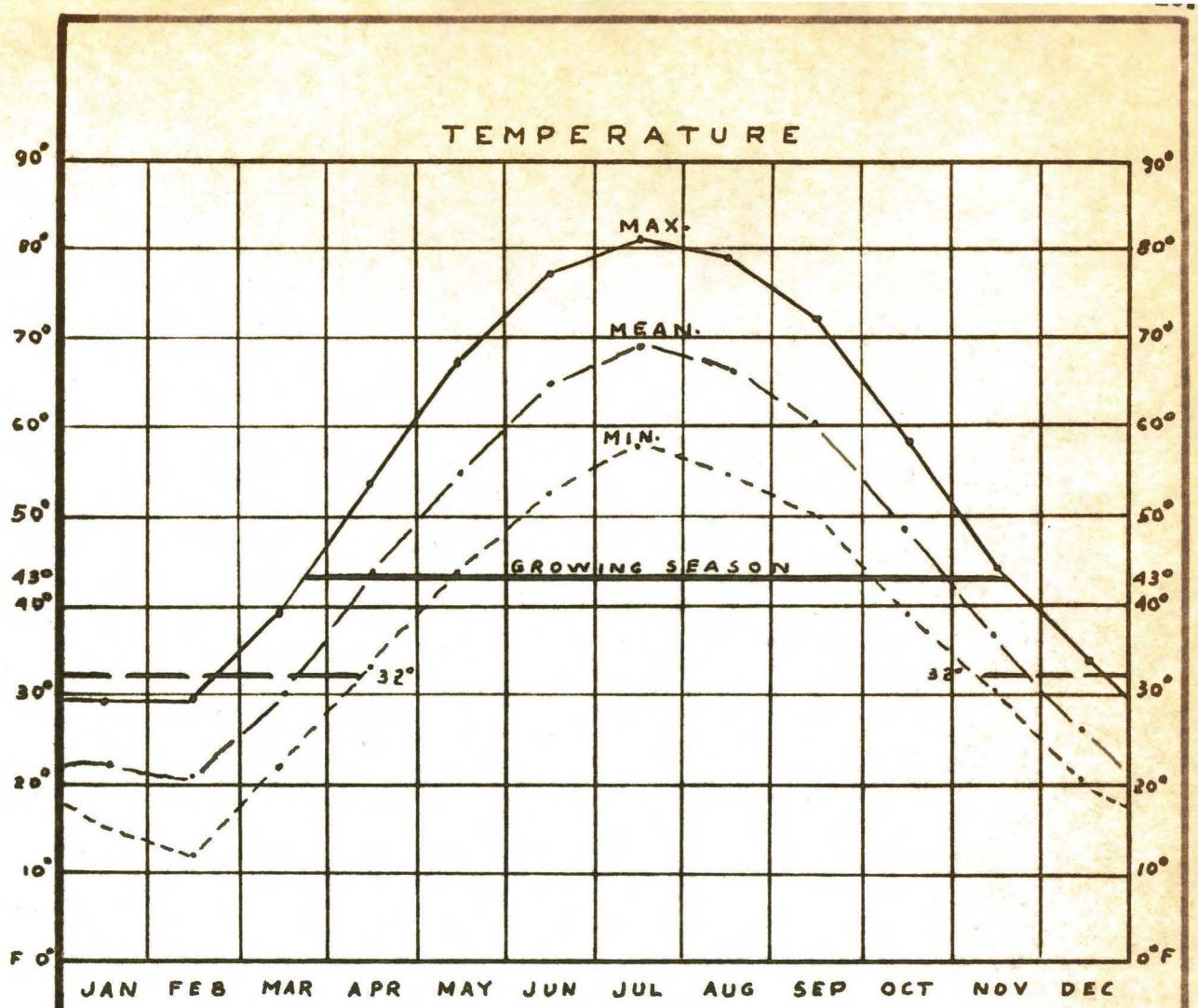
It follows that after examining the hydrology of Westminster township the next treatment would be given to ground water formations and its associated relationships. This however, cannot be done until an account of the existing climate is given. Because there is no weather station in Westminster township, the recordings of London weather station are taken. Due to its close proximity to the township, the figures are quite accurate.

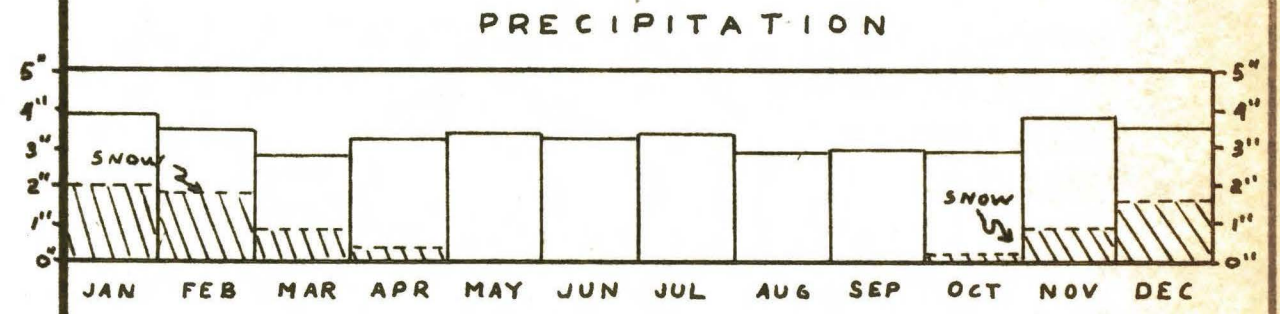
CLIMATE

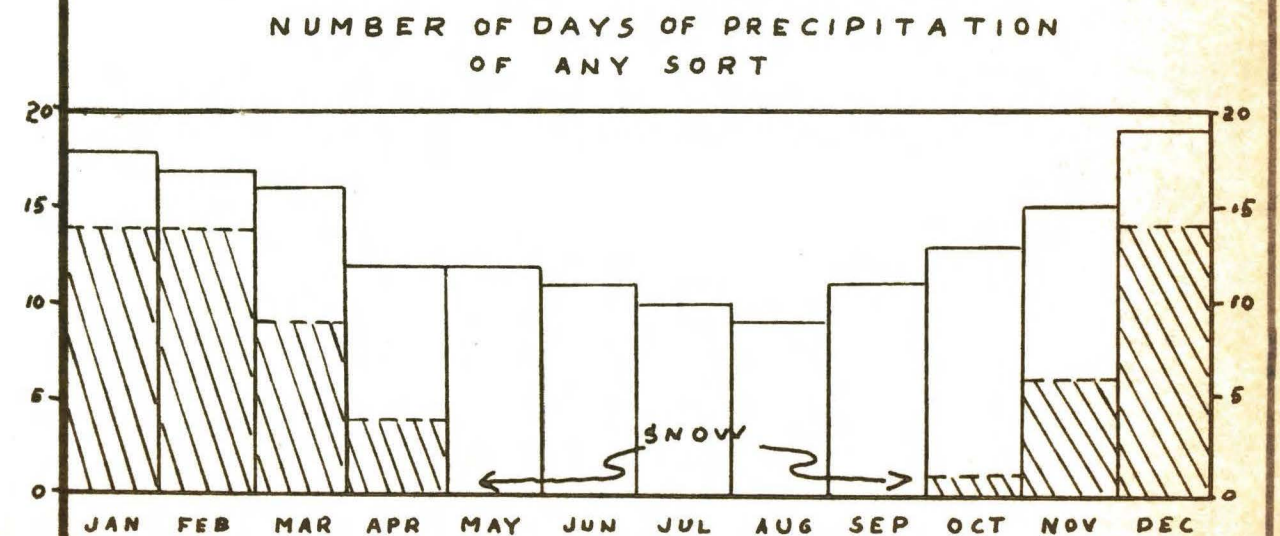
The climate of Westminster township is influenced by air masses which obtain their characteristics in areas at a considerable distance from the boundaries of the township. Two of such air masses are the Tropical Gulf and the Atlantic air masses.

The greatest effect of these air masses upon the township is achieved in the summer. At this time the interior of the North American continent develops a low pressure, while the eastern part becomes a high pressure area. Thus moist and warm air invades the continent, becoming warmer until it reaches the Great Lakes. This extra heat gives rise to thunderstorms in the township which are accompanied by precipitation. Most of the summer precipitation in Westminster township is of this kind.

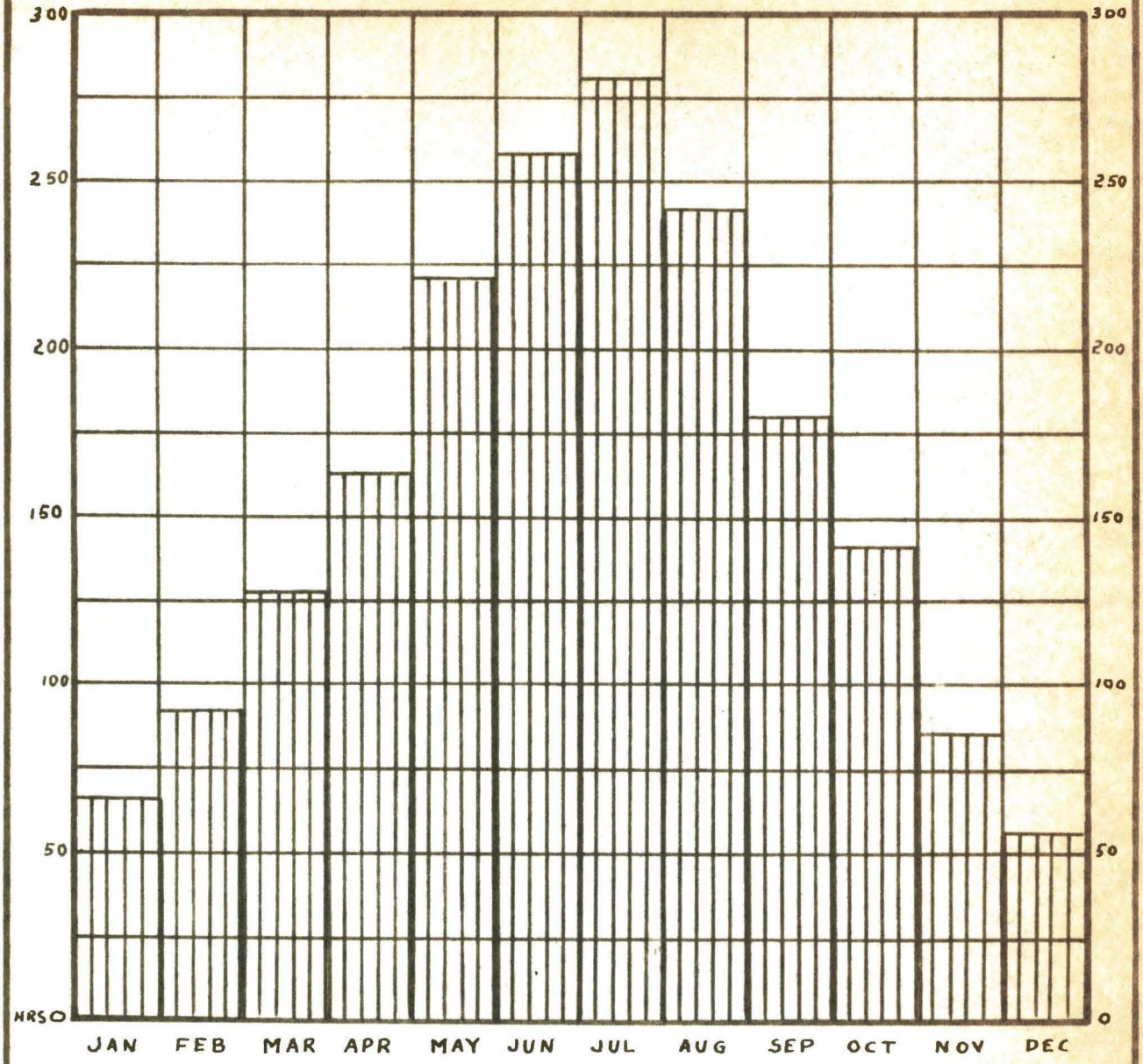
In winter time the Tropical Gulf air coming from the Gulf of Mexico, encounters the Polar Continental air mass from the northwest. The air masses meet along a front which fluctuates in the


TEMPERATURE
90°
80°
70°
60°
50°
43°
40°
30°
20°
10°
0° F
MAX.
MEAN.
MIN.
GROWING SEASON
32°
32°
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC


PRECIPITATION
5"
4"
3"
2"
1"
0"
SNOW
SNOW
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC


NUMBER OF DAYS OF PRECIPITATION
OF ANY SORT
20
15
10
5
0
SNOW
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

NUMBER OF HOURS OF SUNSHINE



general area between the Gulf of Mexico and the Great Lakes. The winter precipitation therefore is cyclonic in character. At times the Polar Continental air mass is so strong that it pushes back the warm air, bringing high pressure to the township. This produces spells of cold, dry and sunny weather.

From an analysis of the accompanying charts it is evident that Westminster township enjoys a temperate climate, with neither the summers nor the winters extreme. Therefore, it has a modified continental climate, largely due to the moderating influence of the Great Lakes. Summer temperatures average about 68° F in contrast with winter temperatures of about 22° F. Annual range is 46 degrees. Effective growing seasons where temperatures are above 43° F is on the average seven months long, thus leaving five months of average temperature below 32° F.

No marked wet or dry season exists in Westminster Township. It is an area where westerly winds predominate. Rainfall each year is sufficient for successful agriculture. The driest month is August with 2.8 inches of precipitation. This facilitates harvesting considerably. The wettest month on the other hand is January with 3.97" of precipitation, 2 inches of which come in the form of snow. It must be noted that the precipitation in the summer months comes in the form of convectional thunderstorms, some of which are severe enough to do damage to the crops. The diagram showing the number of hours of sunshine in any month helps to deduct that fact.

The rainfall averages about 36 inches per year, although abnormal-

ities occur, as was the case in 1947, when the precipitation was almost 5 inches above normal. Moisture deficiency thus is very small. However, from the agricultural point of view the most important factor is the annual frost free period. In Westminster township this averages between 150 and 165 days annually.

Thus the climate in the London area of which Westminster township is a part, is such which favours human habitation, with the associated economic developments.

GROUNDWATER

Groundwater is largely dependent upon the climatic conditions surface topography and geologic structure of the area. If climatic factors, precipitation, temperature, wind and sunshine, with their resulting hydrologic effects are observed over a sufficiently long period, a fairly accurate estimate of future groundwater condition can be made.

This is indeed important in Westminster township, because this type of water is the only source for obtaining fresh water. This water is obtained from wells that have been drilled into the ground to depths varying from 60 to 170'. No known natural wells exist. This indicate that the water level is not very near the surface. It is sufficient to note that at the present time and at the present rate of consumption the ground water supply is ample, for farm, home, and industrial use.

However, the main point of interest is the depth or the depths at which this ground water is found and what materials cover the water table. (See Appendix "B".)

Because the wells are so numerous in Westminster township, a sample number is taken which will show the cross-section from east to west and from north to south.

In addition to this a test well was sunk in 1946 in the Valley of Dingman's Creek. This test well the same as all the other commercial wells, ends in gravel above the bedrock.

From these observaticns a number of conclusions can be drawn.

1. The groundwater is situated in the stratified sedimentary layers which are considered as water - bearing formations, namely limestone and shale.
2. The water is found in gravels, and solution channels of limestone. These are rocks where the permeability and water transmitting power is the greatest.
3. The source of groundwater is precipitation.
4. The water is subartesian in the sence that it rises to a higher level but not at the surface.
5. In general the sedimentary floor of the glacial aquifer series is the deep reservoir.

VEGETATION

After the glacial period had ended a gradual recolonization of the earth by plants took place. This took place in several phases:

1. TUNDRA vegetation was dominated by dwarf beech and willow trees.
2. The coniferous forests came next with their various soft wood types.
3. Deciouous hardwood forests were the last stage in the evolution of natural vegetation. It was this forest which was considered to be the virgin forest in Westminster township.

Man's activities in the township have been very extensive, however, from existing records and present day observations, some definite conclusions as to the original vegetation can be made.

Since plants are immobile, their whole nature was determined by the combination of elements existing in the township. Temperature and moisture, qualities of soil and even details of surface restricted the type of vegetation, so that the plant cover is the observable result of the combination of all. Of these climate has the biggest influence.

Forest. The natural vegetation of Westminster township was

first, belonging to the Niagara Forest of the Southern Ontario Forest Division. The chief original species of the well drained till plains of the township were broad leaved hardwoods such as base wood, sugar maple, black cherry, yellow birch, ashes and oaks. Forest Vegetation on the moraine features were the same, although silver maple, and white elm seemed to predominate. In the lower parts willow was the main tree.

This is only a general description of the forest cover, a more detailed explanation will come in a later chapter. Grasses & Herbs. Although dense forest was the original natural vegetation, occassional clearings existed where grasses and various herbs grew. (See Appendix C). Many of the grass varieties grew also under the forest cover. When the white man came, he added to the already existing varieties. They all grew with ease, and provided the township with the first original major grass varieties, therefore they are included in the natural vegetation classification.

The variety of plants both large and small is very large and luxurious. This is an indication of the good natural physical conditions that exist in the township. This then is considered to be the natural vegetation cover under which the soils developed and into which man penetrated. The Aboriginal inhabitants, having achieved a low level of Neolithic culture undoubtedly have some influence on the forest, particularly affecting the variety and distribution along the Thames by

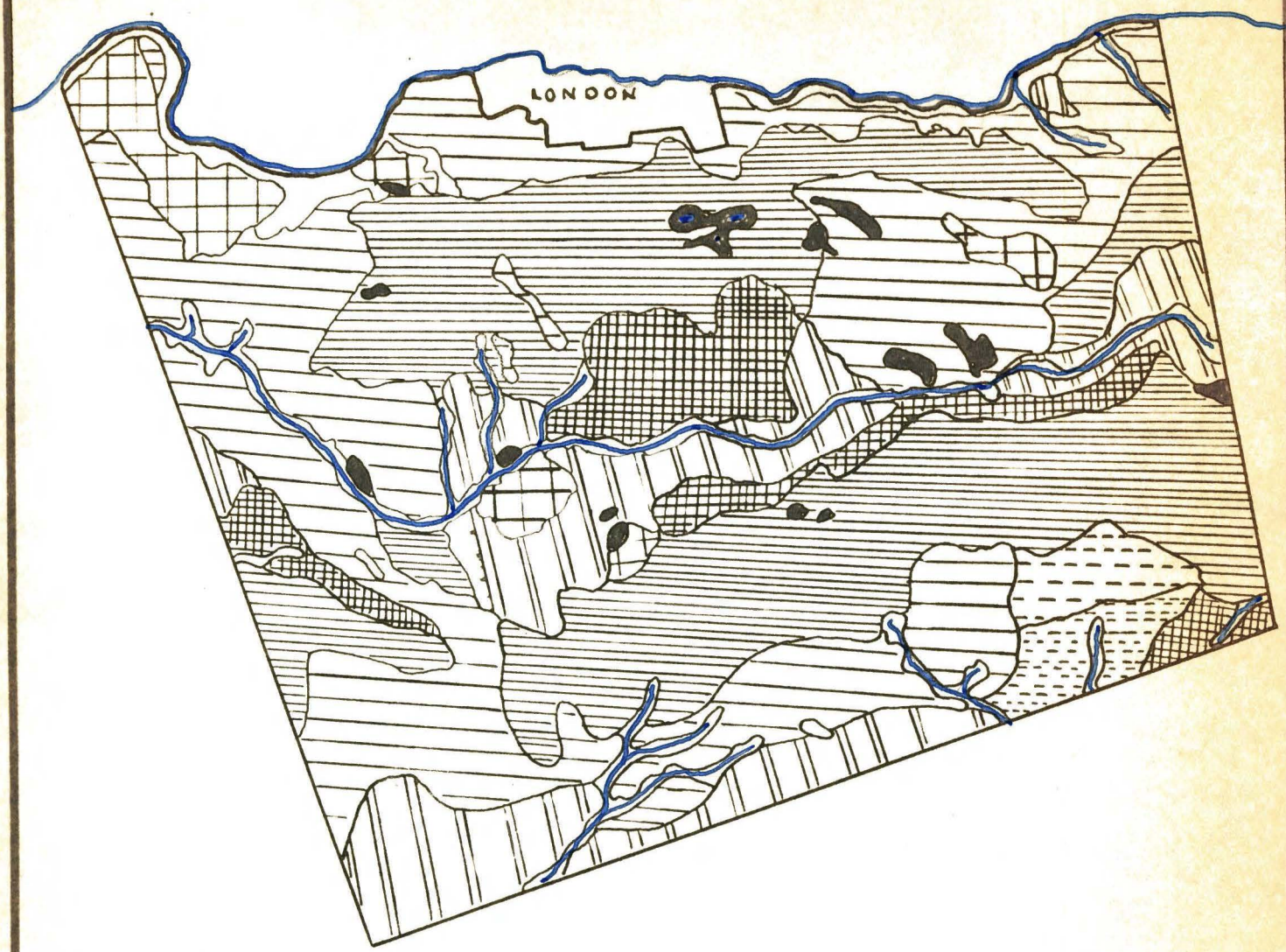
selection of useful species. The white pioneer cleared the dormant vegetation, leaving little of the original cover. They added, however, their own crop cover, of which a few special species excelled.

SOILS

Soil development in Westminster township has been proceeding under the influences of climatic change, subaereal weathering circulation of ground water and plant colonization since the area joined the ice free "Ontario Island". They are generally gray brown podzolic soils developed under a forest vegetation. These soils can be subdivided further. However, in Westminster township only one major category exists - namely loams.

They are of several varieties, including clay, silt, and even pure loams. One of the largest and the most common soil types is the Huron Clay loam. These soils are brown clay loams and silt loams covering reddish brown and then grey stony clay loam. Stones are frequent. The Huron Clay loams with the exception of the areas N W and S W of Lambeth, generally follow the boundaries of Ingersoll and Westminster moraines respectively, and therefore occupy the higher ground where the surface drainage is fairly good. The soils are either slightly acid or neutral, however fertility is quite good.

The second loam type is of the Guelph loam series. These soils are greyish brown and light brown loams deposited over reddish brown and grey stony loam, which are slightly acid and have many small stones and some large boulders. Such soils are found on quite level land. Drainage is good. These Guelph loams generally occupy the areas of the till plains N and S of the



PERTH CLAY LOAM | HURON CLAY LOAM | HURON SILT LOAM | PERTH SILT LOAM | PARKHILL LOAM | GUELPH LOAM | LONDON LOAM | ERODED LAND | MUCK

1 ½ 0 1 2 3 4
MILES

N
W E
S

STREAMS

SOILS OF WESTMINSTER TOWNSHIP

Westminster moraine and the general area W of North Talbot Road.

The London loam in Westminster township is found adjacent to the Guelph loam. It generally follows the larger streams and surrounds the bottomlands. It is a brown loam over greyish mottled stony loam and clay loam. Stones are frequent. The soil is found in level basins, however, drainage is adequate.

Perth clay loam in Westminster township is found in three isolated instances in the central and west central sections of the township. As the previous soils, so also this one follows a general direction from E to W. It is a dark grey brown clay loam over grey and mottled stony clay. Some larger stones and boulders are also found in this soil. Topography is flat and drainage is naturally poor, although in places it is fair. These reaction is near neutral, organic matter and Phosphate would increase the soil fertility.

Parkhill loam in the township is not as extreme as the other soil types already mentioned. It is found in two widely seperated patches in the central part of the township. This soil is a dark grey brown loam covering brown and grey loam and silt and clay loam. Stones are few, and drainage is poor since it is found on level ground. Phosphate and potash would increase the fertility of this almost neutral soil. In the S E corner of the township two more minor soil types exist. The first is Perth silt loam, which is a brown loam over yellowish silt loam, grading into mottled reddish brown and then grey stony salt and clay loam. Some stones are found in surface soil.

The other soil is the Huron silt loam-brown silt loam over greyish brown silt loam covering grayish brown silt loam and reddish brown clay loam. Grey stony salt and clay loam are found in the lower horizons. Stones are frequent. The topography is slightly rolling and therefore the drainage is good. Chemically the soils are slightly acid to near neutral. Organic matter, phosphate and potash would improve their fertility.

Muck and Bottom land are found in nearly flat areas where drainage is very poor. Such places are the Walker and Mill ponds and the low lying areas along the stream, courses in the township. Black, well decomposed organic materials of varying depths are characteristic of such soils. The lands are very similar to the muck lands. The only difference is that these areas are so low, that they are subject to flooding. Frequently they are covered with water for most of the year.

Both these soil types, if they may be called soils, are chiefly bush and waste lands. Chemically they are neutral to alkaline. It is therefore the physical characteristics and not the chemical, that determine the chief limitations fertility as such soils in Westminster township.

Just S E of Byron in the highest part of the township, another type of soil is found. This is a stream and weather eroded hillside area along the Thames river. It is badly eroded, seldom if at any time cultivated, with frequent stones and boulders. The drainage there is excessive due to the rugged topography and steep hillsides. The main fertility need is reforestation, which is presently being carried out.

Conclusions. From this analysis of the soil types in Westminster township a number of observations emerge:

1. The soil formations are closely related, to the composition of the bedrock.

2. The climate and topography also have helped the evolution of these loam types.

3. Although a number of low lying areas exist where the drainage is poor, generally exceeding the soils in Westminster townships are on a surface which is well drained and where soil formation process is not hampered by natural physical means.

FAUNA

Animals are usually limited to ranges within which they find the necessities of life. Most of them do not remain fixed in any one small region; however, their distribution is still associated with natural vegetation, climate and to some extent topography.

Former Species - The animals found in Westminster township are of both northern and southern species. The ranges here overlap two of the major life zones of North America. It is suspected that the township probably supported a maximum of game and the larger species of wildlife a few years after it was first settled. The great variety of open and ungrazed woods, cleared fields and forest edges provided food and shelter for large numbers of them.

The following are the chief species of wildlife in the township at the time of the first settlement. The list is based on the available literature of the time.

Animals

1. Beaver
2. Black Bear
3. Deer
4. Marten
5. Fisher
6. Wolverine
7. Timber Wolf
8. Otter
9. Bay Lynx
10. Canada Lynx
11. Cougar
12. Beaver
13. Squirrel (striped)
14. Raccoon

Birds

1. Quail
2. Wild Turkey
3. Passenger Pigeon

Besides these animals and birds which today are quite rare, it is reasonable to assume that also the more common species existed at that time. By reading early accounts of the area, which

are available in London Public Library, this assumption proved to be true. The language of these various descriptions is quite flowery and picturesque, nevertheless they all indicate of the wealth of wildlife, birds and fishes in the township. Later accounts show that growing concern arises about the extinction of wildlife. This happened in conjunction and even the direct result of the cutting of the woods in the 1840's.

It is interesting to note that already by 1846 the decline in some species of game and fish had been observed and discussed in government circles. Smith* in that year writes: "The living denizens of the forest are various, but their numbers are fast diminishing before the destructive progress of civilization."

"Previous to the winter of 1842 wild turkeys were plentiful in the London District, but the severity of that winter and the great depth of snow caused them to be completely starved out of the woods, and immense numbers were killed in the farmyards whither they had ventured in search of food. In consequence of the wholesale destruction not a single turkey was met with during the following year."

Present Species - Today however, the situation is changed. Many species have increased enormously. This is in fact, due to the rapidly growing interest in natural history in the London area, and the enlightened conservation practises that arise from such interest.

The immediate London area including Westminster township, today, provides a breeding habitat for at least 123 species of birds, 38 species of mammals, 15 species of amphibians and 14

* Smith W.H. Smith's Canadian Gazetter, Toronto 1846.

species of reptiles.

Conclusion - Such development lead to the following conclusions.

1. The Animal population is directly proportional to the shelter and food available to it.

2. There exist endeavours to adapt wildlife to the land and thus produce a permanent population of interesting and useful species for crop of game and fur.

3. Such population, if an equilibrium is achieved, will not harm the agricultural land and by cultivating the proper species, the land may even benefit to an extent.

General Chapter Summary and Conclusions. - It is evident from the previous discussion and from the imposing list of animal and bird species that wildlife in Westminster township is abundant. The land is quite flat with sufficient wood cover brush and covered fences to give refuge to the various animal, reptile and bird specimens.

It is important to note however, that further elimination of tree covers will only harm the wildlife. The latter need an underbrush and tall grass for shelter and food. Reduction of such cover would have a markedly detrimental effect on the fauna of the township. Therefore in order that the wildlife can be preserved, careful land farming practices and selective wood cutting and brush clearing must be exercised by the landowners.

Associations of the Various Physical Factors Already Described

Westminster Township - Such is the case in Westminster township. True, similar conditions also exist on the surrounding townships, therefore, this man made unit is a part of a larger geographic region. However for specific purposes Westminster township can be considered as a region in itself, where the above factors have merged, integrated with each other and influenced one another as tc produce a sound working basis for man to explore, develop and change.

The township is geographic region. It cannot be subdivided into smaller parts, therefore, if further subdividing occurs, it will be artificial, because man will have made it such. If that happens then the newly created regions will be ecconosive or social ones, and it will prove once again man's ability to change the land according to his own needs.

Before this topic is pursued further, an insight in the type of the man who came to this township must be gained.

In conclusion it may be said that W. T. was, ecologically, a part of a large region where landforms posted no obstacle and where the climatical regime, natural vegetation cover, and soil development provided favorable bio-physical environment into which man could enter.

II

HISTORICAL DEVELOPMENT

Before the township of Westminster was settled by Europeans it had an aboriginal American Indian population of the Huron nation. These were wandering Indians practising for the most part gathering and hunting economy. Their contribution to the development of the township, therefore was negligible, consisting of a few small garden plots which were soon incorporated in the ploughed land of the European settlers. The first exploration party of Europeans was led by Lieutenant Governor Simcoe in February 1793. He was accompanied by Captain Fitzgerald and Lieutenant Smith. They camped near the Kettle holes called Westminster ponds. Simcoe's impressions of the area were very good and he did not hesitate to make them known in public. This influenced to some degree the township's early settlement. However, most of the credit for settling Westminster township goes to Colonel Thomas Talbot, aide-de-camp to Lt. Gov. Simcoe.

Talbot was one of the most colourful of the colonisers of Westminster Township and of Southwestern Ontario in general. For his services in the British Army he received in 1803 a large land grant of 5,000 acres in Dunvich and Aldborough townships. In addition, for every 50 acres upon which he settled a pioneer family, he received 150 acres himself. Thus for 35 years he administered the settlement of some 40,000 peoples in the London district, proportion of which number came to Westminster township. He also built the Talbot Road through the township to link Niagara and Windsor.

The earliest settlers brought in by Col. Talbot were Americans who were dissilusioned about their new republic. Therefore, they came to live in Upper Canadian in 1801.

By 1808 the number of settlers was large enough, as to merit some sort of land measurements. Thus a survey was begun in 1809, by Deputy Provincial Surveyor Simon T. Z. Watson. He worked for a year, but his work included only the N W part of the township. Most of the survey however, was carried out by Col. Mahlon Burwell between 1811 and 1819. It was completed by Col. Bostwick in 1820. The land was surveyed along lines at right angles to the baseline on the Lake Erie Shore.

The lands in the township were not granted to absentees or sold to speculators prior to 1817. Thus a controlled settlement took place. The settlers were largely United Empire Loyalists of English origin, and many of their descendants are still living in that township.

The first record of the Westminster council is dated March 4, 1817. The meeting was held at Archibald McMillan's tavern, in Byron, the first settler in the township. The local stalwarts of the new community took executive posts. The first law that was passed dealt with the erecting of fences 4 feet high, with nails no more than 4 inches apart. This seems to indicate that the numbers of livestock in the township was already beginning to creat a problem at that time. In that year Westminster township had 107 houses and 428 people, two school buildings, one grist mill and one saw mill.

Pioneer Days. The life of the pioneer is described best by the county historian.

* (It was not an uncommon sight to see a band of wandering Indians with their squaws, papooses, ponies and dogs travelling through the township on the blazen trails and some deep worn paths all leading toward the forks of the Thames River. These people were not concerned, as were the white settlers with cutting down the forest to make room for arable land; nor were they bothered by building permanent houses and barns which were to be storage places for the hard earned food commodities as well as themselves, and their animals during the cold winter season.)

The life of the pioneer was a hard one in Westminster township. It is true, that the soil, once it was cleared was fertile, but the hardships encountered in establishing a civilized community was great. The pioneer's day consisted of tending to the animals, making farm implements and constructing buildings and cutting down forests. His life was regimented and dictated by the physical surroundings. The only recreation he has was the occasional gathering at the "pub" or in the church on Sundays or at the grist or saw mills. In these places the pioneer met his neighbours and by talking to them and exchanging stories he was able to retain his morale and composure. It is in this manner that social cohesion developed and a viable society resulted.

Later Expansion. The township was populated gradually with it associated the development. By 1859 it has 4,525 inhabitants, 3 grist mills, 2 carding machines, 1 fulling mill and an indefinate although substantial number of schools. All this pointed

* Extract from "History of the County of Middlesex" W.A. and C.L. Goodspeed, Publishers Toronto and London 1889.

to a considerable stability in the progress of economic growth in the township.

In 1840 a lime quarry was opened on Concession I. Soon afterwards a limekiln came into existance. The finished material was used for bridge abuttments and foundations of buildings among which the Roman Catholic Church was prominent.

Westminster Insurance Company was formally organized in October 1857. In the same year 76 applications were accepted and policies issued. In 1888 there were about 850 members holding policies, amounting to $1,204,960.

Churches were also being built, indicating that the religious life of the inhabitants of the township was not being neglected. The people belonged to several different denominations, Presbyterian, Roman Catholic, Church of England and Wesleyan.

The development took place along the axes of the Base Line and Talbot Roads. This area was inhabited first and any further growth spread outwards from here. This cultural landscape that pioneers constructed, began to disappear at the end of the nineteenth century. All the grist and saw mills were gone by the end of the first world war, when higher industrialization and new trends in economy did not allow this type of community to survive.

The pioneer settlement, living at a slow pace, tended to form nuclei of smaller centres at decreased intervals than at present time. Thus as the population grew, need for services increased. Therefore a tendency developed, where the incoming people seemed to accumulate in such small centres, that served the immediate vicinity.

Byron - The first settlers of Westminster township settled in what today is known as the village of Byron. It was Archibald McMillan who came prior to 1801 and established a tavern there in 1811. In this same year a road was cut from there to Lambeth, which in 1823 facilitated the establishing of a distillery by Lawrason. By 1850 the village had already approximately 300 inhabitants.

Lambeth - Formerly called "The Junction" was settled in 1809 and 1810 by David Pattrick and his followers. Stores and a blacksmith shop soon sprang up. In 1859 a temperance meeting was held within a stone church for the use of which the temperance men paid $1 per month. It is interesting to note that the building was the Anglican church and it is still standing today. The Bible Christian church was established at Lambeth in 1872. The people who went to this church were Methodists. In the 1860's a steam spoke factory, two taverns and several more stores came into existance. The business was good, as the commercial establishments seem to indicate. By 1860 the village of Lambeth had 392 inhabitants.

Hall Mills - or today known as Westminster was settled at approximately the same time as the previous two villages. By 1837 it could claim a distillery, a grist mill, a tannery, a cloth factory and a carding machine. The population there was fairly stable. It did not experience very great growth. In fact the population even declined.

Pond Mills - was settled first in 1820. In the same year the grist and saw mills were opened there and did thriving business.

In June 1865, a large lodge of Good Templars was organized there. By 1882 it had a post office. Also here the population remained quite stable, around the 180 mark. It was not until late 1940's that people moved in here to set up residences.

Glanworth - was primarily a shopping centre for the neighbouring farmers. By 1830 it had a general store and a blacksmith's shop. In order that the spiritual needs of the people would be satisfied Church of England was established there in 1844. The Glanworth Presbiteryian Church in 1854 came into existance. When the London and Port Stanley Railroad was built in 1850's a station was built in this community, which gave impetus to the construction of a grist mill.

Belmont - Belmont a small community in the S E corner of the township came into existance in 1820's. Since it is on a stream, a cheese factory, a flax scutching mill, and a grist mill were established. Except for the grist mill, the others were outside the village boundaries. Nevertheless people from Westminster township worked and did business there. By 1870 it had a population of 500, approximately half of which lived within Westminster township.

Nilestown - the only community in the N E corner of the township could also boast of having commercial establishments at an early date, the most important of which was a grist mill. Since a good road between the village and Commissioner's road was built in early 1830's Nilestown drew business from a wider area than most of the other communities. This gave encouragement to opening of two taverns and several more stores. By 1850 thepopulation

of the community consisted of 180 people.

General Conclusions - of the people who settled Westminster township many were of Scottish and English descent. Although the so called Americans were the first settlers they were soon outnumbered by the newcomers from the Old World. They were a hardy people who made best use of the various physical factors they encountered. The development proceeded so fast that already in 1860 an unknown visitor to the township reports: "The glory of fertile fields, the bounty of dairies, the forest of trees and wine, the sweets of the bee farms, pay tribute to the rich district and to the people that have made this possible; especially so when it has surpassed townships which have been settled at a much earlier date".

This seems to indicate that if the physical conditions are favourable and the human being energetic, the development of the landscape should be quite considerable. As it has been traced in the previous chapters, exactly such conditions prevailed in Westminster township. It is therefore in order that the developments based on the above conditions should be examined.

However, world conditions have changed since the nineteenth century. This change undermined the economic and cultural development of Westminster township. Instead a new trend towards urbanization developed, causing a change in the landscape. And it is therefore this changed landscape which will be examined later.

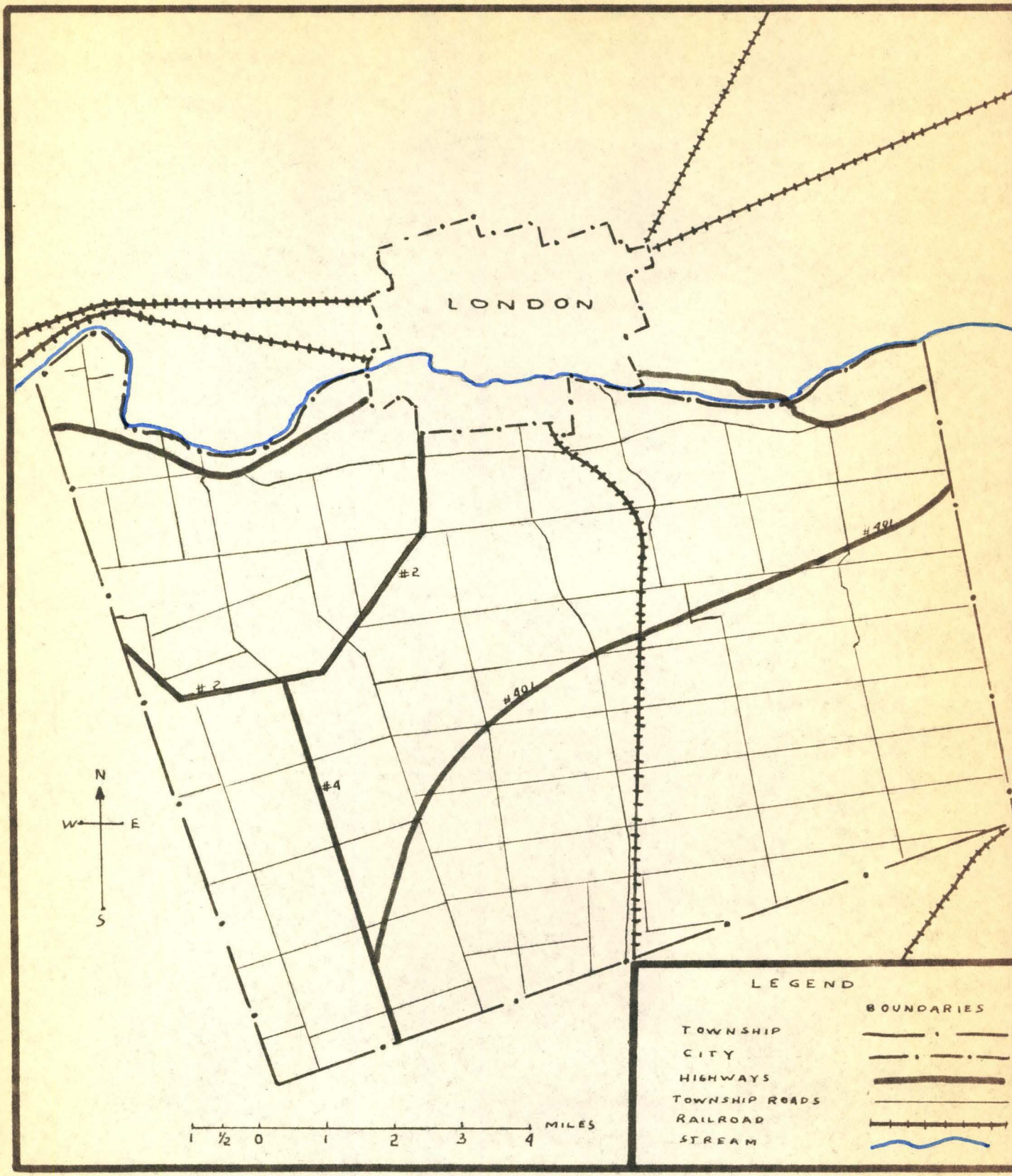
III

COMMUNICATIONS

The road pattern in Westminster township imposed by the early survey of the area. Result is the formal grid pattern that is common to British North America and which takes little note of the existing landforms. In Westminster township there is no indication that physical factors have influenced the layout of roads at all. Formal, integrated road patterns was integrated road patterns was introduced immediately in the township.

There are two exceptions to this condition; Talbot Road, linking Lambeth with London, and the Base Line Road winding just south of Thames river. These roads existed before the survey of Westminster township was carried out.

They represent a stage of extension from which the present grid pattern quickly emerged. The peculiarities of present pattern of routes, superimposed on the grid pattern, reflects the ranges from a simple to a complex stage of economic growth. Early Communication. In 1824 when the township was very new and relatively uninhabited, the roads were mere trails through the woods. They were in such poor condition for a great part of the year, that it was impossible to travel even on horseback. As the township grew, a pressing need developed for an adequate road system. A large road building program was put into effect in 1830's, from which emerged the present pattern of township roads. There are ten roads from north to south and nine from east to west. They are never spaced more than one mile apart from each other.



ROAD MAP OF WESTMINSTER

London - Port Stanley Railroad was constructed spasmodically in the 1850's and 1860's. Also improvements were made on the main highways which today are known as Numbers 2, 4, and 74. This development of improved communications was gradual and resulted in the present day system.

Modern Communications.

(a) Internal - Westminster township today is served by a very good network of rural and suburban roads. They are spaced such, that no place in the township is more than one half mile away from a road. The rural roads are gravel roads, but they are well packed and well maintained and can accomodate traffic with heavy loads up to 30 miles per hour. The suburban roads are paved. They are generally new, and require more care for the same load carried on the rural road. The total mileage of rural and suburban roads in the township is approximately 230 miles. Because of construction of new suburban residential areas, the total mileage of roads keeps changing.

(b) External.- In addition to the rural and suburban roads Westminster township is also served by major highways. The largest and best is provincial Highway 401 which traverses the township in a great curve from N.E. to S.W. It is $13\frac{1}{2}$ miles long, four-lane highway, carrying through as well as local traffic across the township quickly. It serves therefore as a bypass and a commuters road. The highway is part of a larger construction program which eventually will link Montreal and Windsor. This particular section terminates at Highway 4. Three cloverleafs

London and Port Stanley Railroad taking advantage of Kettle hole gap in the moraine.

Highway Number 401.

are also in existance in the part of Highway 401, in the township. These cloverleafs one at the junction of this highway and Highways 2 and 4 and also at Wellington Road South.

Besides Highway 401 there are three other provincial highways which carry traffic in and out of Westminster township. Highway 2 from London to Windsor crosses the Thames river at London and comes south for 2½ miles. By doing so it crossed the Ingersoll moraine. Then it swings southwest to Lambeth, crosses Dingman Creek and proceeds along the high ground towards the northwest. At Lambeth, Highway 4 branches off from Number 2, leading directly south to St. Thomas and Port Stanley. In the east end of the township Highway 74 carries the north to south traffic. This road carries considerably less traffic than the other provincial highways. The total mileage of the highways within the boundaries of Westminster township is 43 miles.

The London - Port Stanley railroad bisects Westminster township in half in a N to S direction. It is a single track electric railroad, meant primarily for connecting the city of London to the harbour in Port Stanley on Lake Erie. There are however, three stops in the township at Pond Mills, Walker Grove and Glamworth respectively, making it possible for people to use it as a means of transport. However, due to increased motor transport and the excellent highways, commuters diminished and passenger service was discontinued in 1956. Occasionally freight is still shipped by rail to these three stops.

(c) Services - Although people today depend largely on their own private transport, bus services are provided. The Grayhound Bus Company has a route through Westminster township. People living along the Highways 2 and 4 thus have easy access to its services.

The Springbank Bus Company was incorporated to connect London to Byron turning the latter into a wealthy dormitory. The urban part of the township is served by the London Transportation Commission. Both of these bus lines have their routes through residential areas. It is worth noting that no place in the residential areas is more than $\frac{3}{4}$ of a mile away from motor communication routes. Telephone communications, which are a monopoly of the Bell Telephone Company of Canada, are adequate in the township; almost every home is provided with a telephone.

The essentially urban culture of the inhabitants of Westminster township, their motorized economy, and the transitional stage in the development of that economy determine the nature of the communication network and the intensity of its use. First class highways together with the surfaced and many unsurfaced (township roads) feeders, are essential, especially when the society is so far advanced as to depend almost entirely on private means of transport. The result is a network of straight roads in a grid pattern making every point in Westminster township easily accessable, and thus facilitating its economic growth.

IV

ECONOMIC

Land Use.

Any given land use pattern is the result of the interplay of several elements, both cultural and physical. This is true whether the population is rural or urban. It is not a matter of whether the physical or the cultural elements are the more important, but a matter of particular combination of physical and cultural conditions resulting in specific land use pattern - urban or rural, as the case may be. Today we live in a machine age, however, farming is fundamental to our whole existance. Primary use of the land is the way of living for many human beings - even in Westminster township. Therefore it is imperative that the rural land use in the township is examined first.

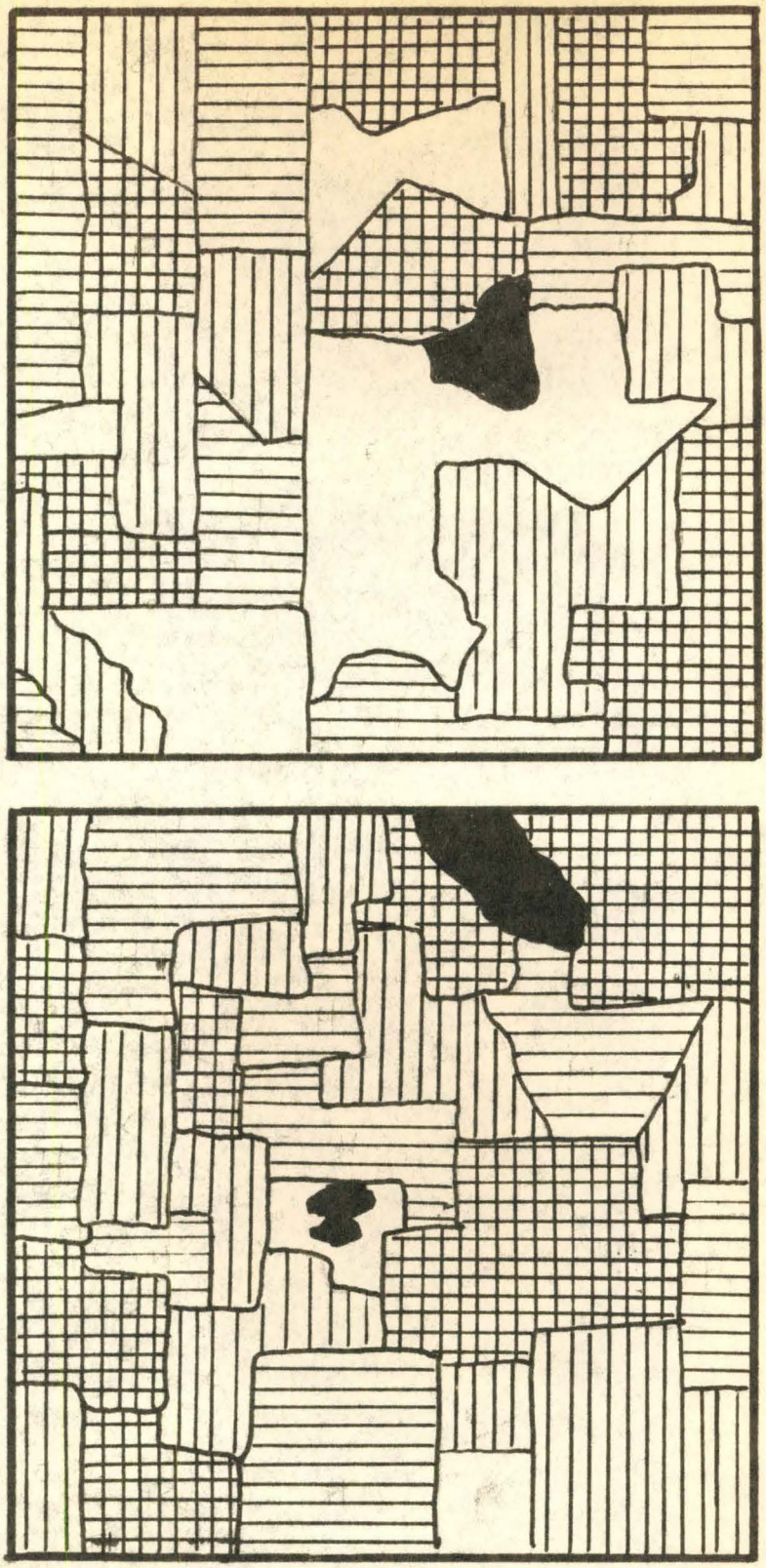
Total area of farm land in Westminster township is 51,1148 acres.

Improved Land	Under crops	28,635 acres
	Summer fallow	1,165 "
	Open Pasture	12,500 "
	Other	2,283 "
Unimproved Land	Woodland	2.815 "
	Other	4,411 "

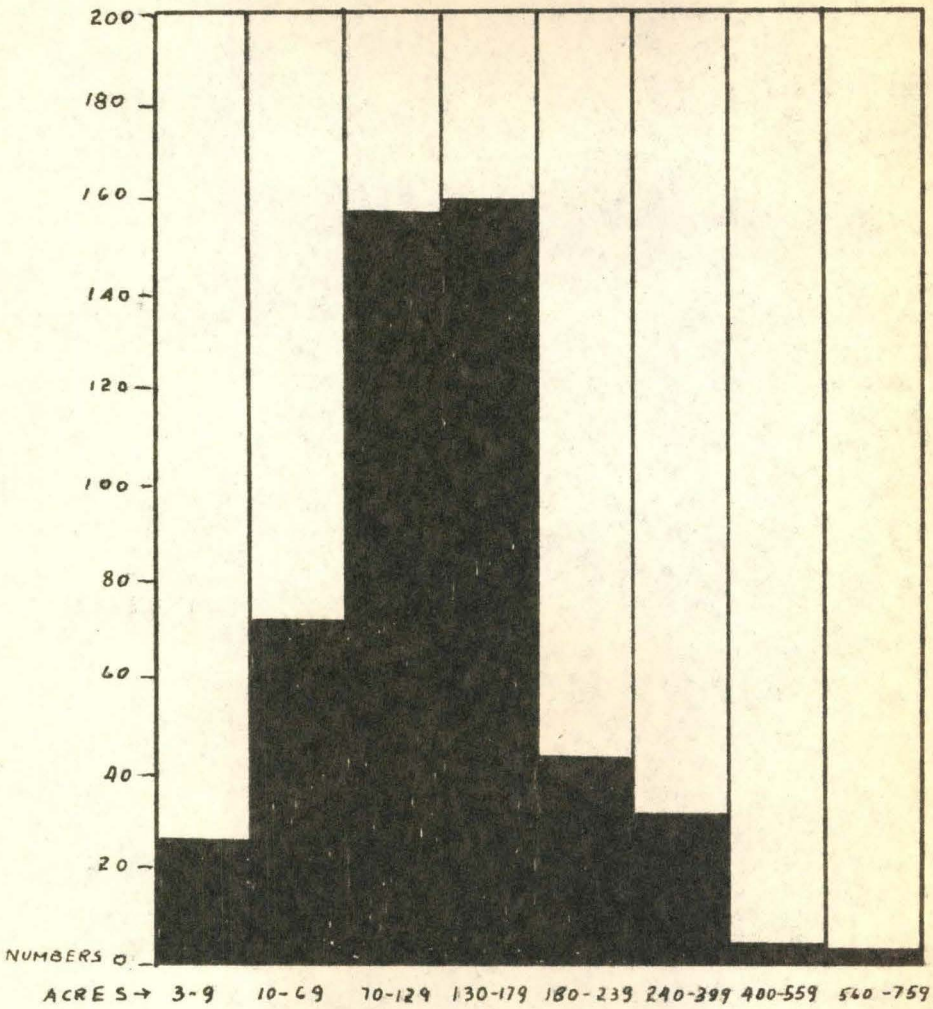
(a) Rural

Agricultural - Since the township of Westminster is adjacent to the city of London it lies within its sphere of influence. Thus a large proportion of the agricultural land, although still short of a capacity production, is devoted to dairy production - milk, cheese, and butter. In the last two years,

LAND USE BLOCKS



FARM SIZES AND NUMBERS



(1956-57) livestock raising, farming, pork and beef production has come into existance. About 90% of the total dairy products are consumed in London locally, the remaining 10% being exported to Toronto. The beef and pork are all consumed locally in London.

These enterprises are carried out especially along the better roads and closer to the city of London. In fact a dairy fringe may be identified, reaching from end to end in the northern part of the township and attaining a depth of 3-4 miles. 95% of the dairy herds consist of Holstein cows. These are noted for their capacity to produce more milk per day than other thoroubread milk cows.

This differentiation between general and specialized farming is reflected in the prosperity of the farms. Those emphasizing the raising of livestock and dairy cattle have well kept barns, and out buildings. Houses are generally small in size. Those farms that maintain the traditional grain farming have poorer buildings and usually have greater acreage.

Farm Size and Numbers

	Size	Numbers
Dairy	3-9	26
and	10-69	72
Beef	70-124	157
Farms	130-179	160
Traditional	180-239	44
Grain	240-399	31
Farms	400-559	33
	560-759	21
	TOTAL	495

It is seen from these figures that the sizes of the majority of farms are between 70 and 180 acres large. It is also

Holstein herds are usual sights in the farm landscape

A corn field in the till plain.

General farming

Ingersoll moraine - typical farm site.

evident that open pasture occupies large territory of the agricultural land. Judging from the number of cattle in the township it is evident that much of the crop land is used for growing fodder crops. The steady increase in the number of cattle indicates that more and more land will be needed to support this cattle. Thus there is a tendency for the livestock farmers to either buy or rent adjacent lands for their dairy and beef cattle. This explains the appearance of the deteriorated farms scattered among the well kept ones. It also explains the large number of middle sized farms in Westminster township. The trend of the sizes of the farms is to increase their extent and also to change the system of land tenure towards personal ownership which today is not complete enough, because the township has 99 farms that are not owner operated.

Topography, soils and drainage also affect the use of the land. On the open and gently sloping morainic lands the farmer is faced with the problem or erosion. Therefore, these lands are now devoted to livestock grazing. In the well drained and tree covered depressions in the toll plain the soils are slightly more fertile and better for grain growing. In this area no organized effort to control erosion exists beyond the ordinary use of manure and crop rotations. Contour ploughing is uncommon. The development of specialized livestock farming therefore appears to be an unconscious economic response due to the loss of topsoil. This probably accounts for the absence of truck farming on the southern fringe of London. However, the main reason for the farmer's planning and development of the lands is the proximity to the city of London.

USE Capabilities

The present rural land use is in roughly the following poportions:

Agricultural Land	60%
Pasture	35%
Wooded	5%
TOTAL	100%

Taking the above figures into consideration an interesting situation develops. It is becoming apparent that the demand for durable land is predominatly for milk production and this demand is steadily rising. Thus a question arises: "Is there enough land of high capability that 60% of it could be put under the plough?"

* The following table of land classification may help to answer the question of the total agricultural land.

Cultivable land (C)	13%
Restricted cultivation (RC) (for specific crops)	27%
Usable Land (UL)	45%
Other Lands (O)	15%
TOTAL	100%

Now land (C) presents no problem. On land (RC) rotation takes place usually every four years, but the yield of grain usually drops 20%. Thus C & RC = 13% & 27% = 40%. This 40% subtracted from 60% (durable land) leaves 20%. Now this is less than one half of the land designed as usable (UL) = 45%. Therefore still enough land suitable for cultivation exists. This is very encouraging. Also the lands of higher capability in Westminster township are used more intensely than lands of lower capability. This also proves that the land use capability still has a wide margin.

* Method adopted from Upper Thames Valley Conservation Report 1952.

Soil is ready for fall sowing

Suburban homes encroach upon the farmers.

Although this theoretical bright picture exists, it is not certain if these possibilities will be explored further on every farm. In Westminster township as elsewhere, the human factor is important in determining the rural land use. Local communications have benefited the area, but only up to a point. Due to ease of transport, and higher wages in urban centres about 40% of the farmers work in the city, and thus, only part time on the farms. Also, people from London, come out and buy farms for the sole reason that they want a country life. Neglect of the farms is the result in both cases. In Westminster township this is particularly noticeable along the northern fringe, where neglected farms are a common sight.

It can therefore be concluded that the township has not yet achieved stability and is likely to change in character and justifies the "pioneer" character of the new phase of urbanization.

FORESTRY

Since the second world war great social and political pressure has been exerted for protection and wise use of forest. This has been generated by the belated recognition that forest resources are limited. Situation is particularly urgent in Westminster township.

The full utility of forest is seldom appreciated. Most persons think of forests only in terms of lumber supply, therefore they regard them as purely economic propositions, which is basically wrong. As elsewhere, so also in Westminster township people did not really appreciate the two fold benefits of the forests. They forgot that their ecological functions were to control soil development and provide a habitat for wildlife. They prevented soil erosion.

History of Forests since Settlement in Westminster Township.

The attitude of the early settlers in Westminster township was very hostile to the forests. This feeling was natural, because the forest was undoubtedly their greatest obstacle to one occupation of the land. Part of this hostility may have been engendered by the fact that it had sheltered the wandering Indians who presented a threat to the safety of the new homesteaders.

When Westminster township was opened for settlement, the best land on each farm was naturally cleared first. The land

* The number of woodlots in Westminster township is 440; the majority of them however, is composed of very small ones. The total acreage of woodland is 2815 acres some of which are used

FORESTRY IN WESTMINSTER

was usually cleared first along the front of the farm and the woodland cut progressively towards the back of the farm lot. This was done in many cases without regard to the quality of the soil, except where it was completely unsuitable. Such places however, were very few. The result is that the majority of woodlots now lie at the back of the farms between the concessions, or in the valleys of the small streams.

The land bordering the marshy areas in the township along the Dingman Creek and in the south eastern part was eventually taken up. The marshes were partially drained, so that the edges became dry enough for partial cultivation. Thus the forest was pushed back there too, so that today the centres of the marshes form the nuclei of all the larger patches of woodland in the township. Most of them are today declared crown game preserves, so that cutting there is prohibited. If this was not the case, even these woodlots would have perhaps dissappeared.

The woodland in Westminster township may be classified according to the sizes of trees. If their diameters are taken breast high, the following results emerge:

Virgin	none %
Over 18"	8%
10-18"	40%
4-10"	38%
Under 4"	12%

All these trees are hardwoods. No natural coniferous trees exist in the township. The above chart illustrates that no virgin trees grow in Westminster and also that most of the trees range between four and eighteen inches. This majority of the trees are medium to small sized.

By examination of the available data following results were obtained:[1]

Aged Forest	evenly	42%
	unevenly	58%
Grazed Forest	grazed	43%
	ungrazed	57%
Fenced Forest	fenced	39%
	unfenced	57%

From these figures it becomes evident that the evenly aged woodlots are almost exclusively grazed by livestock and that they are generally fenced. The unfenced forest lands are ungrazed and therefore the result is an uneven growth. This phenomenon is explained by the fact that there is no livestock to exterminate the smaller underbrush, permitting an uncontrolled growth. The grazed woodlots also indicate that the open grazing areas in the township are insufficient to absorb the existing number of livestock.

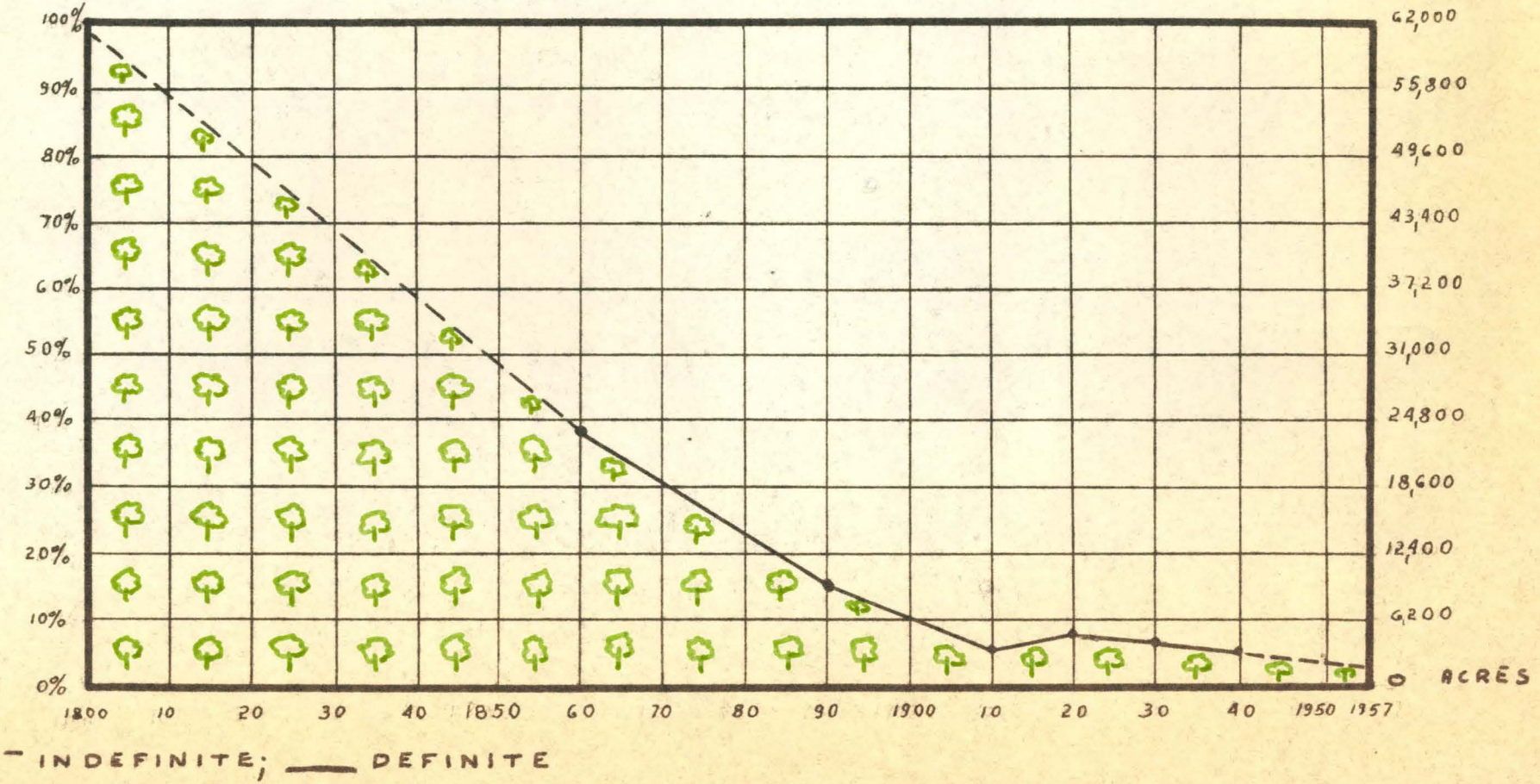
In the unfenced and ungrazed forest lots regeneration takes place on a large scale than in the grazed areas. On the average the regeneration is as follows:

Excellent	6%
Good	10%
Fair	42%
Poor	42%

This is a poor situation, because it indicates that some woodlots are deteriorating, either due to natural or artificial reasons. In order to determine the cause of forest deterioration

1. Upper Thames Valley Conservation Report "Department of Planning and Development" 1952, Part 2 Ch 1 Page 30.

RATE OF FOREST DEPLETION



in Westminster township, the rate at which forests have been, and are cut, must be examined.

The forest cutting in the township is not an industry. Timber cutting for commercial purposes has stopped since 1910. Today only enough trees are cut to satisfy the immediate needs of the landowner.

* Year	Acres	Percent (of total)
1860	23,715	38.4%
1890	9,583	15.5%
1910	3,162	5.1%
1920	4,163	6.7%
1930	3,913	6.3%
1940	3,553	5.7%

It is clear from the above statistics, that the rate at which the forests have and are being cut in Westminster township is steadily decreasing. This is a good sign, because it shows that the people there have at last appreciated some of the forest values. However, it is also clear that deterioration has not been eliminated. Therefore a solution to these conditions are active reforestation and development of more pasture lands so that the forest lots do not have to be used as grazing grounds. If this is carried out only partly, the natural beauty of the landscape will be preserved, and wildlife development encouraged. Erosion will also be partly prevented.

* Upper Thames Valley Conservation Report "Department of Planning

INDUSTRIAL

Today the work "industrial" means to make, process, or fashion various commodities both large and small by the use of machines. For those parts of the country, which have become industrial, the old ways of life have changed rapidly. Population have shifted from farms to urban centres, factories have grown and swallowed many rural areas. This is true to some extent in Westminster Township.

The factor conditions that have promoted this encroachment of industry into the township, are availability of raw materials, availability of power, amount and type of labour, nature and distribution of transportation facilities, capital, and nature and size of market. They are factors which the township shares with London.

Westminster township lies in the heart of southwestern Ontario's manufacturing region. Because it is located there, raw materials are easily provided for the various industries which are located in it. It is true that most of the industries are located outside the township's boundaries, however, that concentration is not very far, and therefore the raw materials are also easily obtained for the industries in Westminster.

To make goods under modern economic conditions, great amounts of power are required. This is amply supplied in Westminster township by "The Ontario Hydro Power Corporation" from Panshave Dam Power Plant in North of London. The township also has an adequate

labour force that can work in the industries. Most of the industries in the township require small numbers of skilled employees, and this condition is met, because the township is located in a region where permanent settlement has been long established, and skilled labour has been encouraged.

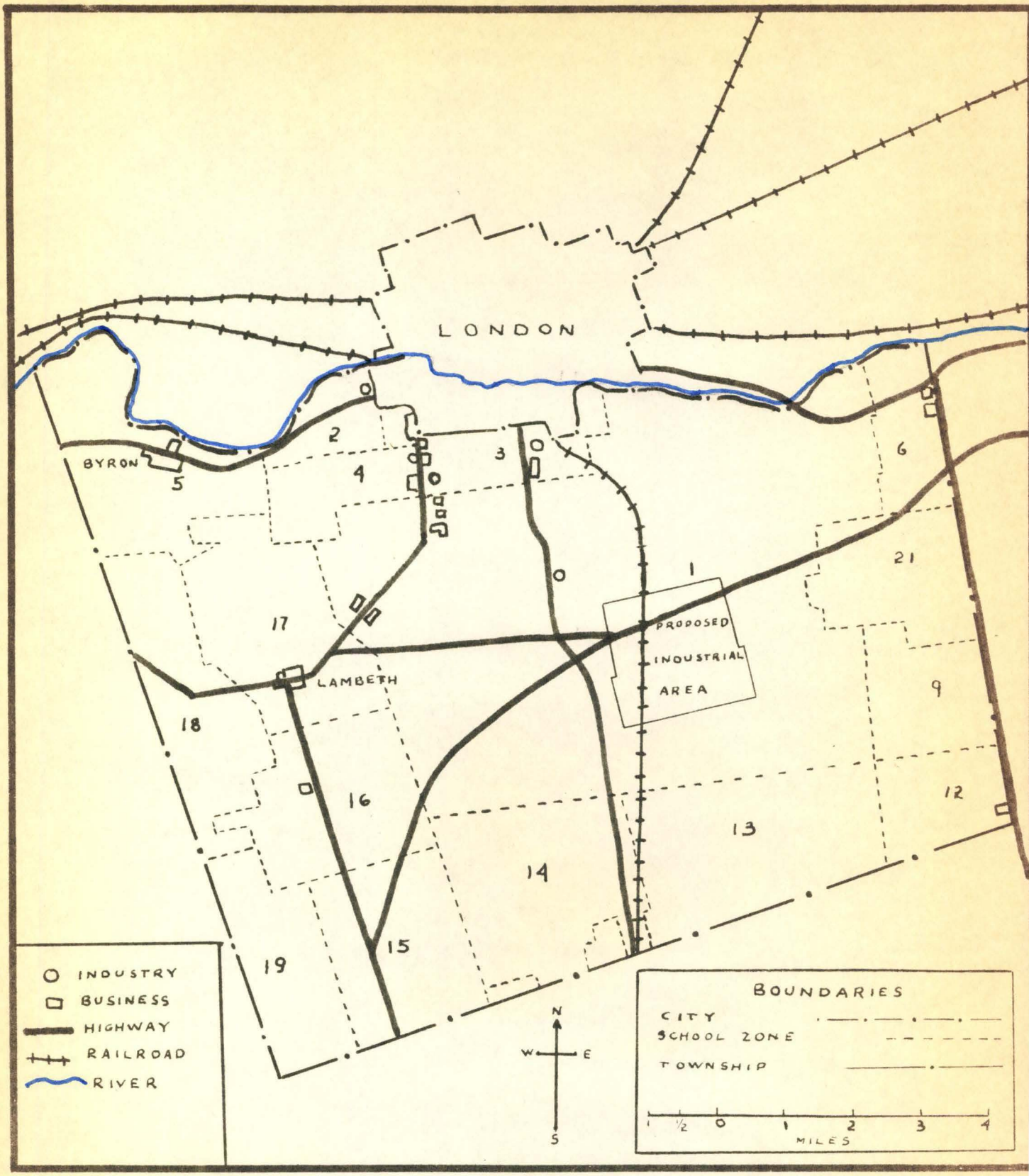
To manufacture goods requires the movement of raw materials of many kinds over both short and long distances. This condition is supplied in the township by virtue of its central position in S W Ontario and by the convergence of routes towards the bridge points over the Thames at the north end of the township.

Not only good transportation system is required for raw materials but also for distribution to consuming areas. This relationship between obtaining raw materials and the distribution of the finished products is very close in the township. As a result the industries are located on or very near the major communication routes. This will be described in detail a little later.

Capital resources to buy raw materials, provide power, pay wages, develop and retain markets, pay taxes. All those plus various other payments, are readily available in the nearby financial capital of southwestern Ontario.

The fact that each region is its own best customer is not frequently recognized. This is not the case in Westminster township. With the exception of one industry only, the markets, for the commodities produced here are found in the near vicinity.

Mechanised industry has replaced the old rural industry of the pioneer period. There has been an urban drift of population from farm to factory, and a resultant expansion of factory space



LOCATION OF INDUSTRY

into rural areas, swallowing farmland. Westminster township has retained much of its rural population owing to commuting practices, but it has lost land as urban and industrial growth has brought metropolitian London south of the Thames. Annexations of township land on the south bank of the river occured in 1890 and 1912, and the urban area has continued to expand vigorously beyond the succesful banking of the latter date to join the "Urban Fringe" of Westminster township. Industry, in the shape of some sixteen firms has located in the "Fringe" since the 1930's.

Industrial Development

New industries have been slow to come into the township of Westminster. The growth that has been experienced, however, is attributed to the expansion of the existing ones. Suitable land for industrial purposes was not set aside until 1956 and this explains the slow industrial growth. The policy of the township was to refuse any industry permission to expand on a piece of land until that land was completely provided with the necessary services. However, earlier difficulties that existed between the township and prospective customers are being eliminated, thus adding to the already existing advantages for locating industries in Westminster township.

A plan has been promoted recently which will provide a new industrial zone in Westminster township, adjacent to Highway 401.

This area is completely outside the residential zone and therefore will be able to expand if necessary. The location of this industrial land is extremely favourable, since the Highway 401 and the London Port Stanley railroad will provide all nece-

ssary services. The plan to create this area did not originate in the township. It was planned by the city of London because of industrial interests located there. In the words of Municipal Board of London[1] "This land could be used as a show window of the city's industrial development."

This zone will be two miles square and thus give impetus to new industrial growth. In addition to this, the Ontario Government has tentative plans to develop a sizeable tract in the township. They will include Highways, Offices, Provincial Police, and a Driver Test Range.

Some of the Industries:

The industries in Westminster township fall into three classes:

Food and Agricultural
Constructional or Housing
Printing

Since there are some industrial establishments in the township there is a large variety, from plants producing wines, to The Robinson Company, Limited, which specializes in custom injection molding of plastic parts of lawn mowers, refrigerators and many other commodities.

This company employing approximately 100 people derives its raw materials from all over Canada. Its biggest source however, is the Dow Chemical Company of Sarnia. Ten percent of the raw materials come from U.S. and these are only those which are not available in Canada. The trade area of the products produced at this plant extends all over Canada. The greatest volume of the products, however, goes to Ontario and Western Quebec where there are factories that require plastic parts. Seasonal changes of

1 "The Globe and Mail" Dec 16, 1957.

The Robinson Company Limited

London Wines Limited

Modern Transformers prepare hydro-electric power for home use.

Ontario Hydro Electric transformer station

this factory are almost nil, because it changes production from one product to another, several times during the year. About 80% of the total production is transported to their destinations by truck. As far as the future operation of the plant is concerned, it will tend to move to an area which will be defined "industrial". This suggests that the plant will move to the new industrial site.

Another of the major industries is the "Wakefield Lighting Ltd." It produces lighting equipment of all kinds for new homes. The raw materials mainly come from Sarnia and the United States, while the finished products chiefly go to Ontario and W. Quebec. London is the best customer, however. About 50% of the transportation is done by rail and the other 50% is done by truck. The distance to the market dictates the means. Larger hauls are done by rail, while the short ones are carried out by truck. Seasonal changes in production are non existant, the nature of the product being such that they are in demand for twelve months of the year. "Lawson and Jones Limited" is the third main industry in Westminster township. The firm produces Calendars, labels for many articles, advertising specialties, printing equipment, folding cartons and does some lithographing.

The sources of the raw materials are the paper mills of Ontario and Quebec. The trade area is chiefly London and S W Ontario. The calendars however go to all parts of the Province. Transportation is carried out mainly by truck, although the calendars are shipped mainly by rail as they generally have to travel farther. Seasonal changes of employment and production are great. The months immediately before Christmas marking peak production periods.

London Wines Ltd. and Canada Dry Companies operate somewhat along the same pattern. The differences appear in the trade areas which are localized in the vicinity of the city of London. They are stable industries with no great seasonal changes of production, with the exception of the Canada Dry Company which experiences peak months in the summer.

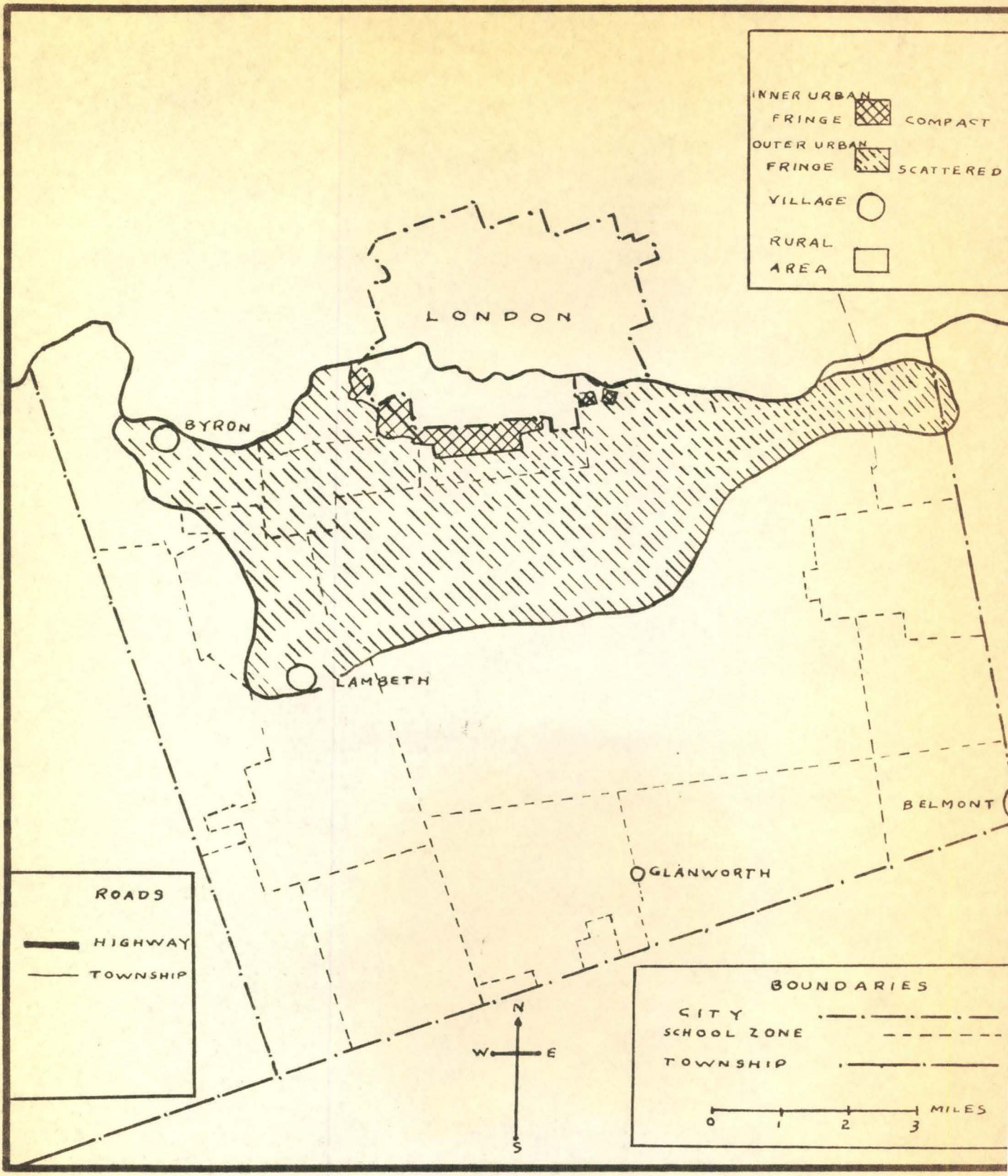
Since no fruit is grown on a large scale in Westminster township, the materials for wine production are imported in small amounts from other townships surrounding the city of London. The bulk however, is grapes, imported from the Niagara fruit belt.

The workers employed by the industries in Westminster township's "Urban Fringe" come mostly from the city of London, and most of the earned wages return there. The township therefore only benefits from the taxes paid by the plants located there. A tax differential, therefore, is perhaps the prime factor in locating industry in the township.

URBAN

In the urban fringe of Westminster Township the people are engaged in other activities than the direct use of land. The settlement includes not only residential areas, but also buildings of quite different aspect, where various economic activities are carried out. The urban functions of Westminster Township are essentially residential. However manufacturing and commerce is also a factor. The fringe is therefore a component of Metropolitan London and has no real connection with the township. Only in matters of taxation the township controls the urban fringe. Therefore the urban section of the township and its associated functions of manufacturing and commerce can only be fully understood in relation to the City of London.

As the city grew, expansion in all human fields took place. Eventually a stage was reached where all the available land in the city was taken up. The result was that people started to move to the outskirts. Westminster township did not escape this move; however, it was quite late. Only after the western, northern and eastern fringes were populated did people move across the natural barrier of the Thames river into Westminster township. This however did not take place until late nineteenth century. By 1890 the northern fringe of the township was so saturated with people, that it was incorporated in the city of London. By 1912 another large section was lost to the city. Since that time no changes in the townships boundaries have taken place. At present time the boundary between the city and the township runs along Emery



THE URBAN FRINGE IN WESTMINSTER

and Chester Streets, and then along Fanes' and Whelter roads.

Today the township has an urban fringe mile and a half wide, south of the city's boundaries. Along the highways towards Lambeth and Byron and along Wellington road, this fringe extends even further. The village of Byron is already connected with the city by continuous housing developments. If the urban expansion continues at the existing rate, in a few years time Lambeth will also be connected; and it is quite conceivable that the area between the city limits and highway 401 will be thoroughly urbanized. If that happens then the urban fringe will be spilled over on the till plain from the present location of Ingersoll moraine and the Thames Valley Spillway. With the exception of Commissioner's and Base Line roads where the buildings are old, the houses are generally new. The majority has been built since 1945. These buildings were built in clusters as new areas were opened up.

By building the urban part in such a manner, it is natural to expect that all the buildings would not fit in the same price category. Thus first, second, and third class housing developments are seen. As usual, the higher priced buildings are situated in more beautiful scenic spots, off the highways. Their locations are governed by the established North American rule: "The higher the income the higher the elevation." Thus also in Westminster these good homes are situated on the higher lands. The lower class buildings are grouped along the main traffic routes and near the industries.

The urban fringe

Main traffic arteries are surrounded by buildings.

Urban agglomerations perform various functions for the groups living in them and for the area that surrounds them. Thus an area which performs a special function is known as a functional area. The urban part of Westminster Township is precisely such a functional area. Ever since modern transportation made it possible for city people to have their dwellings further away from their place of work they have been moving into this urban fringe. Therefore it is primarily a residential function that this urban section serves. There are two industrial functions already discussed, and the next one is the commercial function. This commercial function, emerges from the primary one - residential.

Although there is no clear-cut shopping centre in the township, small commercial establishments are scattered throughout the urban fringe that serve the needs of the people living in the vicinity. It must be added however, that the existing zoning laws prohibit commercial establishments in the higher class residential areas.

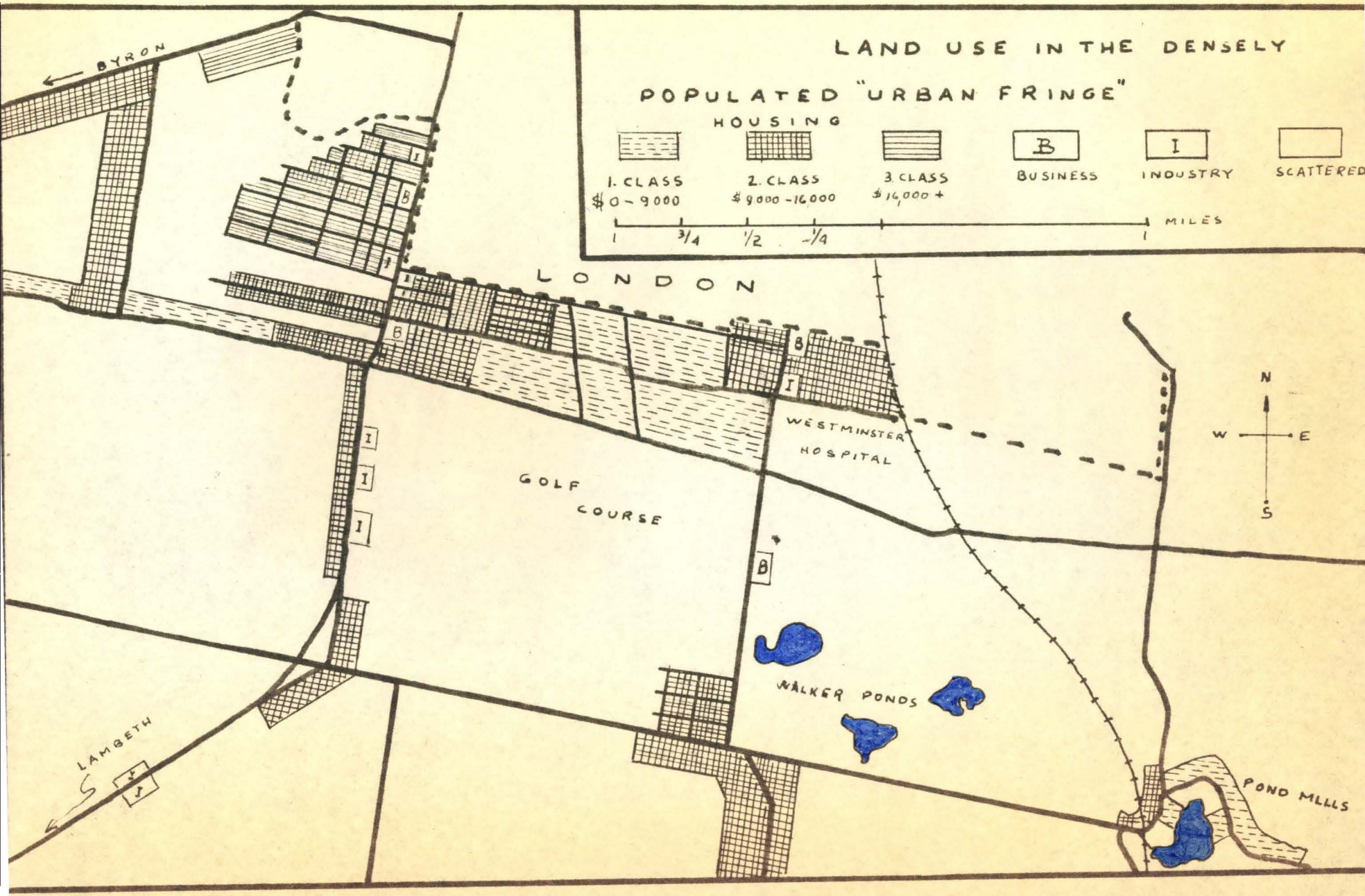
Conclusions. The urban fringe in Westminster Township is a well defined functional unit, imposed upon a township which was and still is essentially rural. It is natural that some difficulties or problems could, may, and in fact do arise in its administration and everyday life - commercial, industrial and agricultural.

RURAL VERSUS URBAN - INDUSTRIAL PROBLEMS

The population of London has overflowed into Westminster township increasingly in the second and third quarters of the twentieth century. Most of the land in the township is farm land, but people living on farms constitute less than one quarter of the total population of 21,000. The majority, 16,955 or 79.8 percent of its population live in suburban homes. These are concentrated in a narrow built-up zone adjacent to the city. There is a small remainder of the population which looks to the city for livelihood. This is scattered through an area extending five miles from the city boundary into the township. Lambeth and Byron acted as nuclei for the two largest groups of suburban homes outside the "Urban Fringe".

Three light industrial enterprises and a number of businesses have located in Westminster township along the main roads, particularly along the highway which branches at Lambeth towards Windsor-Detroit and St. Thomas - Port Stanley. The London and Port Stanley Railroad on the other hand, has not yet attracted industry. This may be due to the fact that it runs through no broad expanse of level land close to the city. The rolling land which makes the northern part of the township so suitable for homes, makes it less suitable for large-scale development of industry.

To the township of Westminster the "Urban Fringe" presents a two-fold problem - administrative and financial. The administrative problem is that of management, by officials who have been


LAND USE IN THE DENSELY
POPULATED "URBAN FRINGE"
HOUSING
1. CLASS
$0 - 9000
2. CLASS
$9000 - 16000
3 CLASS
$16,000 +
B
BUSINESS
I
INDUSTRY
SCATTERED
1
3/4
1/2
1/4
1
MILES
BYRON
LONDON
WESTMINSTER
HOSPITAL
GOLF
COURSE
WALKER PONDS
POND MILLS
LAMBETH
N
W
E
S

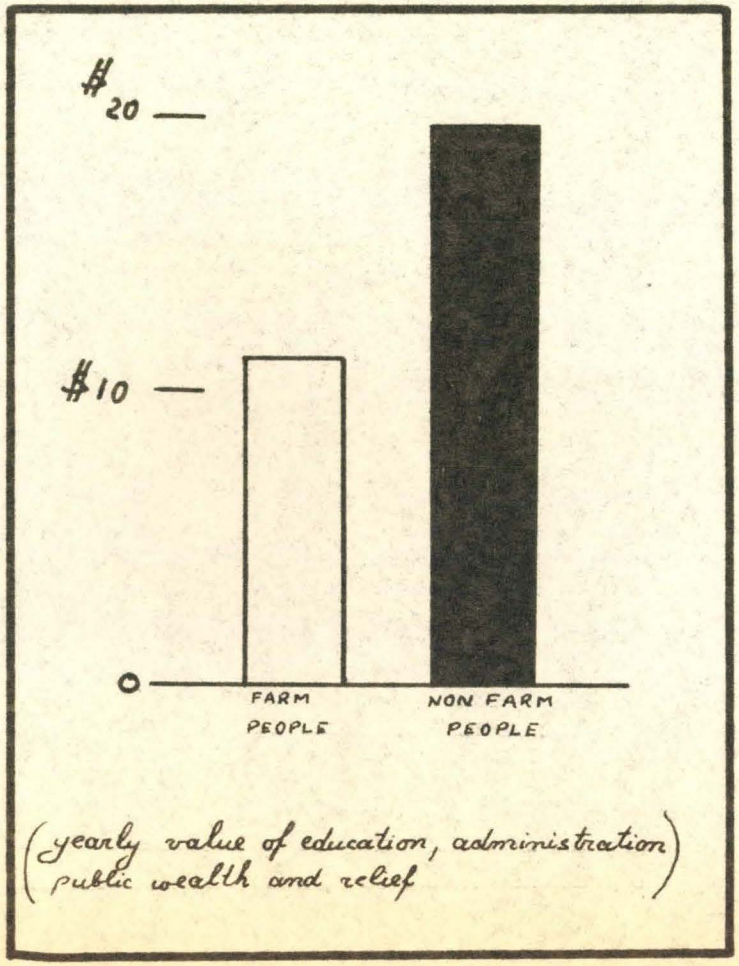
trained in rural government of a community whose residents are split into two interest groups, those dependent upon farming and those who work in the city.

The residents of the "Urban Fringe" are divorced from their place of employment by the city-township boundary. This gives rise to the existing financial problem. In the city of London the industries and commercial establishments bear the burden of taxes, including the sums received from private homes. The money received by the city from the latter does not cover the cost of services they receive. It is natural to expect that employers recognize that their own welfare and also the welfare of the city is furthered by their paying a larger share of the cost of education, health, relief and public recreational services.

But the city industries contribute nothing directly to the municipal services enjoyed by those of their employees who live in Westminster Township; especially so since the township itself has a very small amount of industry in comparison to its population. Therefore, the burden of taxation falls upon the farms, and the suburban homes themselves. The urban-fringe in the township is provided with complete municipal services, whereas the rural part is not. The taxes received from the urban sections are inadequate to pay for the services they receive. The farms on the other hand pay enough to cover their own services and also a large portion of these services received by the urban fringe.

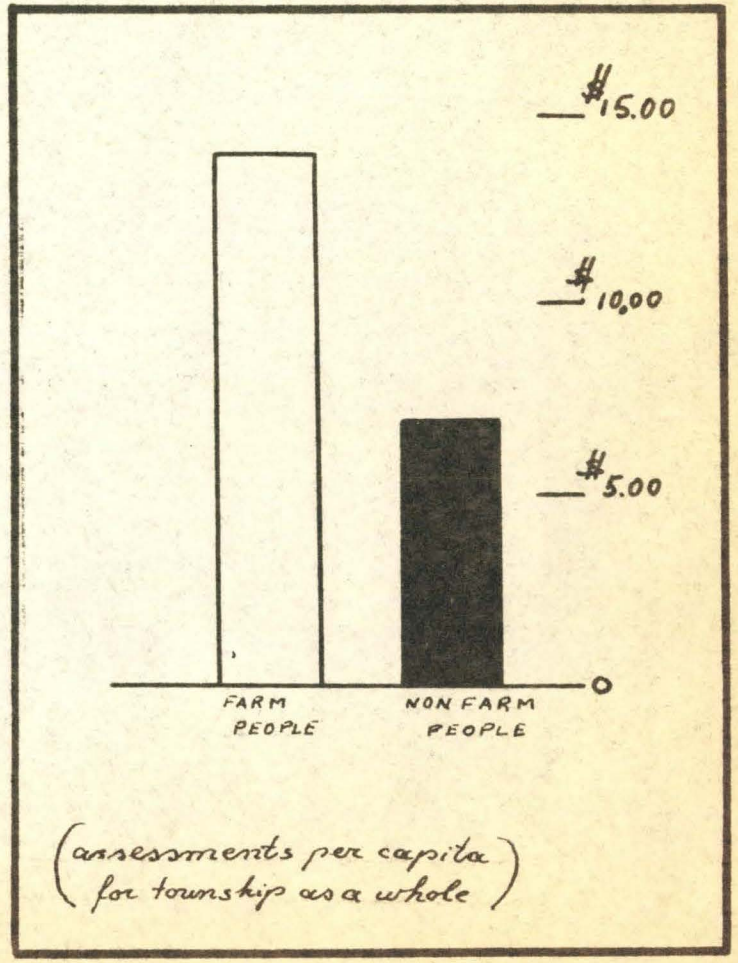
From this standpoint it would be better for the township to let the city of London annex the urban fringe. This is feasible because the city is faced with the problem of finding more room

SERVICES RECEIVED IN THIS PROPORTION PER CAPITA



(yearly value of education, administration public wealth and relief)

SERVICES ARE PAID FOR IN THIS PROPORTION PER CAPITA



(assessments per capita for township as a whole)

COMPARISON OF BENEFITS RECEIVED WITH PAYMENT FOR THEM AMONG FARM AND NON FARM POPULATION

for its growth. The built-up area has now expanded to its maximum, so that there is very little vacant land left. Thus to the city the "Urban Fringe" means additional land that could be obtained by annexation.

However, annexation of the "Urban Fringe" of Westminster township would not make for growth. It would merely incorporate land already built-up. This is a rationalization of a situation where the metropolitan built-up area has spread beyond the legal limits of the city. Therefore, if an annexation occurs, it should also include completely vacant land. A natural boundary would be Highway 401.

Prof. Allan J. Barker, professor of Economics at the University of Western Ontario has examined the urban-rural problem. He worked in conjunction with Dr. E. G. Pleva of the Department of Geography, University of Western Ontario. In his book "Urban Drones in Rural Hives" published in 1949 for The London and Suburban Planning Board, he discusses the townships and the city's view of the urban fringe.

He studied the problem from the economists point of view, which today is most important. He discusses the distribution of the benefits received from all the services rendered. Then he compares the benefits received and further discusses the incidence of the burden which he later balances with the benefit. From this examination he concludes that * "the average suburban person receives township services to twice as great a value as the average farm person, but pays only half as much as the average farm person towards the provision of these services".

* P40 L (15-17)

Mr. Barker goes further in his examination of this complex problem and suggests several remedies. They are:

1. Introduction of industry to balance the economy of the township.
2. Re-Assessment of the properties.
3. Improvement of the building standards.
4. Zoning of land uses.
5. Annexation.

These remedies are within the present constitutional framework of the township, yet next to nothing has been done about it.

No single solution of the ones mentioned can bring about a complete remedie of the situation. For the township to function properly and to adjust itself to the new trends of time, something has to be done in each of these remedial fields.

Conclusion. Westminster Township is a small part of a distinctive geographic region in southwestern Ontario, and therefore it must participate fully in order that it could be a functioning part. For this purpose the formation of a metropolitan area commission, would seem the most desirable remedie in a long run policy. This commission could then regulate the urban and rural life in the area. It could attract industry, provide all necessary services, as well as direct the agricultural life so that maximum benefits can be derived from a fully diversified pattern of land use. This solution may not sound so "far fetched" provided that the human elements are fully informed of the situation so that they can be brought to understand the existing problems.

After the first draft of this thesis was submitted, a press announcement was made in the "Globe and Mail" on 9

January 1958. It disclosed a plan by which the city of London intended to annex large tracts of land from the surrounding township. In this plan, which was prepared by the city of London, Westminster township would be the hardest hit, because the plan calls for the incorporation of the whole "Urban Fringe" plus the vacant land as far as Highway 401. This then would concurr with the conclusion reached in this study. A detrimental factor to this plan however is the fact that the plan was not made by a metropolitan area commission, because such does not exist yet. It was made by the city of London itself, and therefore the township governments, since they were not consulted, might resist such plans.

V

HUMAN

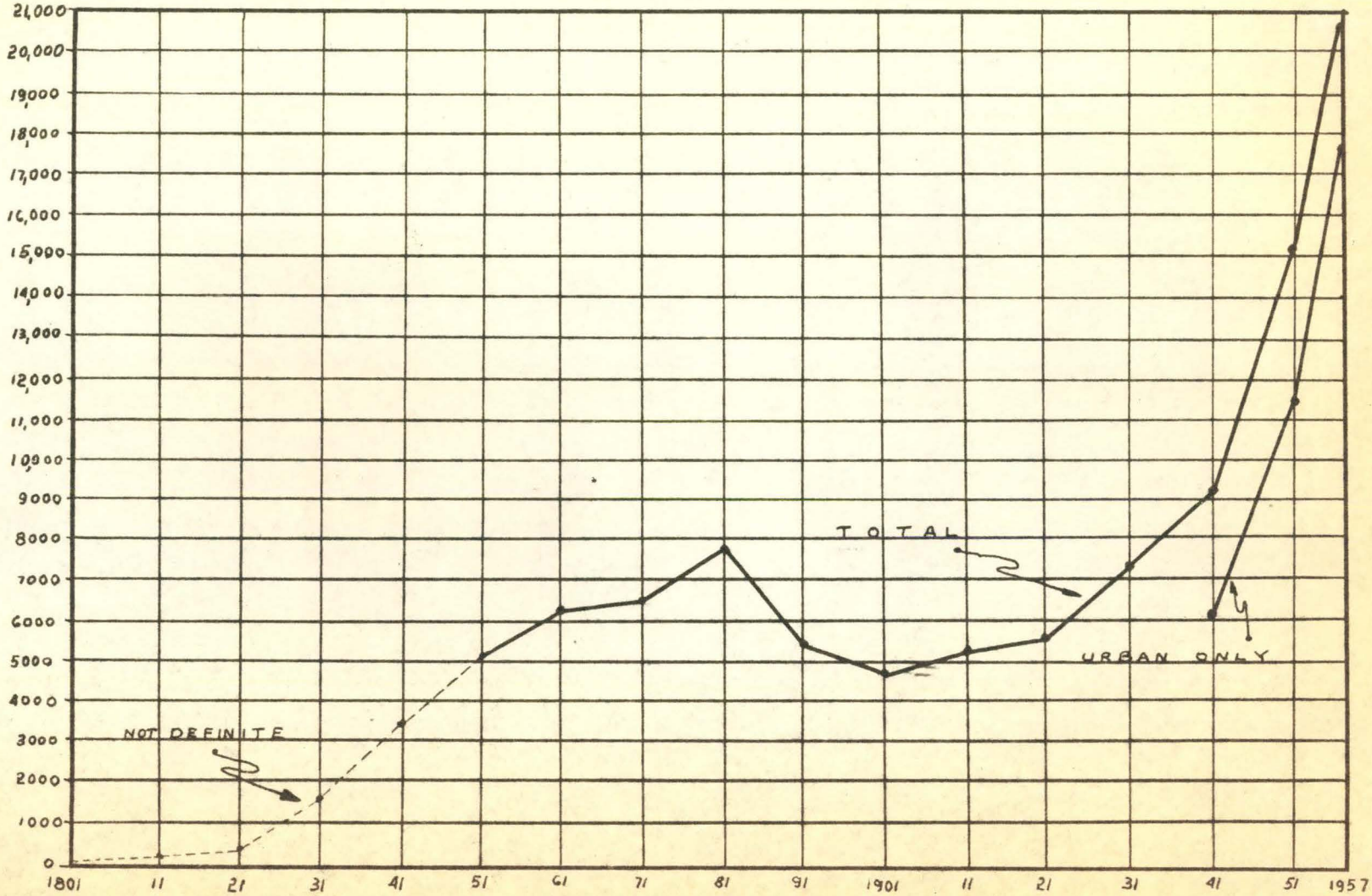
Population.

The first of the cultural elements of geography of Westminster Township is man himself. The numbers of people living in the township, and their distribution provide the answers for the changes that man has brought in the physical environment of the township. The nationality of the early settler may also be of importance, because it is generally known that certain peoples are more active in all aspects of life than others.

Population Trends in Westminster Township.

The year 1851 is selected as the basis for this study, because that was the first time when an official population census was conducted in Canada and therefore also in Westminster township. Before that time only an approximation can be given.

YEAR	TOTAL POP	MALE	FEMALE
1851	5069	2731	2338
1861	6285	3252	3033
1871	6386	3250	3136
1881	7892	4039	3853
1891	6335	3284	3051
1901	4730	2432	2298
1911	5019	2591	2928
1921	5687	2954	2733
1931	7153	3620	3533
1941	9068	5041	4027
1951	15168	8098	7070



POPULATION DIAGRAM

The early population of Westminster township was very small and the growth very gradual. This is illustrated by the fact that between 1800 and 1811 only 428 people moved into the township. In the main pioneer period between 1817 and 1851 the population of Westminster increased to 5069 persons. At this time the males outnumbered the females in the ratio of five to four. This increase may be attributed to the fact that the early pioneers has built a basic network of roads and set up facilities which made further inhabitation of the township easier, and in fact encouraged it. The years between 1851 and 1881 can be called the later pioneer period.

During this time the growth was gradual, the numbers rising to 7872. The increase averages 941 people every ten years. This small growth suggests that immigration during those thirty years was almost non existant and that the increase was due to natural causes. The percentage of males to females at that time was approximately hundred to ninety-four.

The next twenty years between 1881 and 1901 experienced a great decrease of the population in Westminster township. The numbers fell from 7892 to 6335 in 1891 and 4730 in 1901. There are two reasons for this phenomenon. The first is that the township lost some of its territory in the north to the city of London, which annexed the lands just south of the river Thames. This happened in 1896 and in 1912; the largest part immediately to the S of the city being annexed in 1912.

The other reason for the decrease in population may be sought in the agricultural depression that existed in Canada at the end

of the nineteenth century. People in Westminster township were also affected by this depression and therefore left the area when the economic burden grew to great. It was mostly the male population that left the area and therefore the ratio between males and females was almost equal.

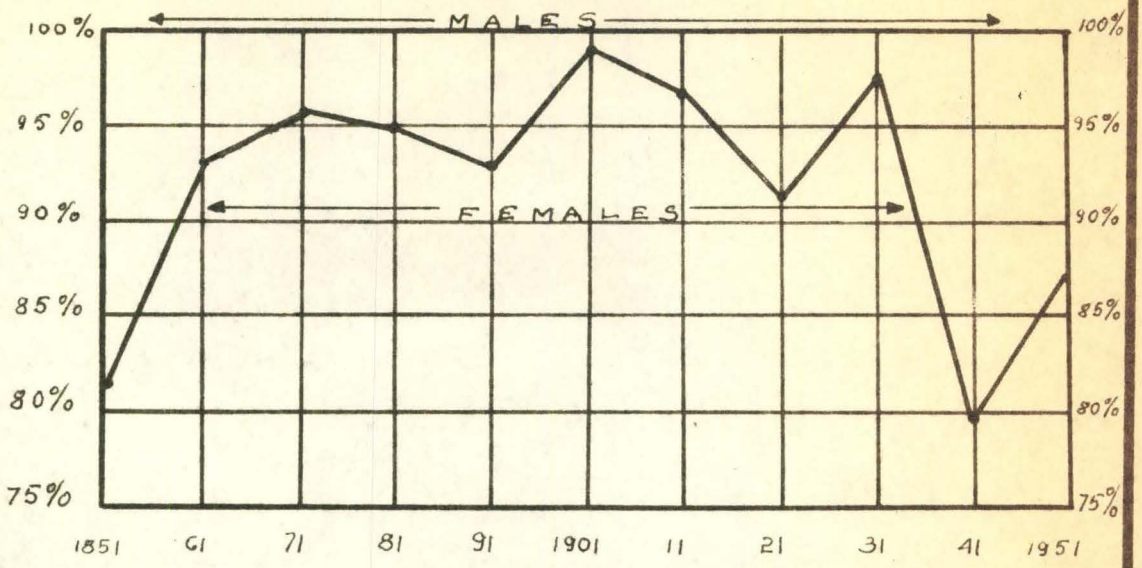
After the year 1901 a general recovery in the economic condition took place in the country, and therefore the population started to increase again in Westminster township. In the next forty years between 1901 and 1941 it was gradual, the numbers rising from 4730 to 9068. This was an approximate increase of 1084 persons every ten years. The general depression in the late nineteen twenties and early thirties did not affect the overall growth.

Between 1931 and 1941 many insurance companies and several light industries were established in the city of London. These required female labour. This explains the sharp decrease in the percentage between the male and female population, which dropped to an all time low of eighty females to every hundred men.

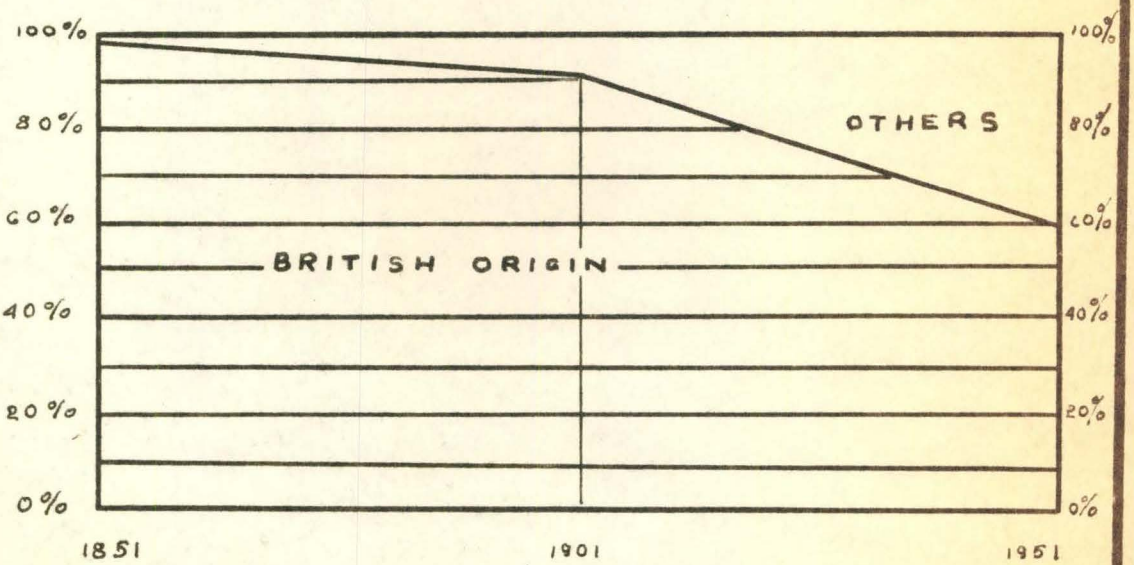
The urban period started in 1941 in Westminster township. In this year the population started to grow at an enormous rate. In the next ten years between 1941 and 1951 it grew from 9068 to 15168, an increase of 6100 persons. This growth has not stopped. In fact it has even increased, because between 1951 and 1957 an interval of six years, the population has risen to 21000. This is a growth of nearly a thousand persons per year. The growth has been almost exclusively in the urban part.

As the figures show, the percentage gap between the males

COMPARISON OF MALE AND FEMALE POPULATION



COMPOSITION OF POPULATION BY ETHNIC ORIGIN



and females is slowly decreasing, although it is still far from an equilibrium. At the present time the male percentage against the female percentage is 100 to 87.5, a difference of 12.5%. This is not usually the case in countries that have existed for a sufficiently long time so that they have become mature. Therefore the only conclusion that can be derived from this difference of the number in the two sexes, is that Westminster township is still a pioneer community and has not yet reached maturity. This is because in North America, and on every continent for that matter, the pioneer communities always have more males than females.

From this analysis it can be concluded that the population growth in the last seventeen years has accelerated enormously. Most of it is due to urbanization. At the same time the proportions of peoples of other than British origin is increasing. This may be partly attributed to immigration in recent years. Today peoples of British origin still form a majority, but this is being reduced by the influx of others, mainly northern and eastern Europeans. (Peoples living north of the Alps are included in the northern category.)

The excess ratio of males to females a "pioneer" characteristic of population, suggests that urbanization of London, and the resulting economy have not yet achieved an equilibrium in which male and female labour can be properly employed.

URBAN CENTRES

Westminster township has two communities which may be classified as being urban. These are Lambeth and Byron, long established as farm villages. Today their basic functions are changed and they are primarily residential communities where people have moved to escape from the noises and odours of the city of London.

BYRON

This is a small community of approximately 2500 persons, situated on the south bank of the Thames River in the north-west corner of the township, four miles west, south-west of London.* The village (it has not yet acquired the status of a town) is governed by a deputy clerk, who is a member of the council of the Township of Westminster.

Commerce. The community has a small shopping centre, situated on the main thoroughfare. The commercial establishments which serve the local population, do not exceed twelve in number. It is noteworthy that none of the stores are large ones. Most of them are either grocery stores or stores which can supply the inhabitants with articles they need from day to day. Furniture stores and large appliance firms are situated in London proper. The village also has a small library and three churches. These cater to the spiritual needs of the population.

Housing. The village is situated on a slope. Since the part nearer the river was opened up first, it features the older homes. Southward, where the slopes become steeper, new housing develop-

* It lies in the section of the large Thames spillway where it retreats in a great "U" shaped form away from the river and towards the south. The drainage there is good, but the soils are poor, However, this does not affect residential expansion.

Pond Mills - a scenic attraction

Byron in the Thames spillway from the Ingersoll moraine.

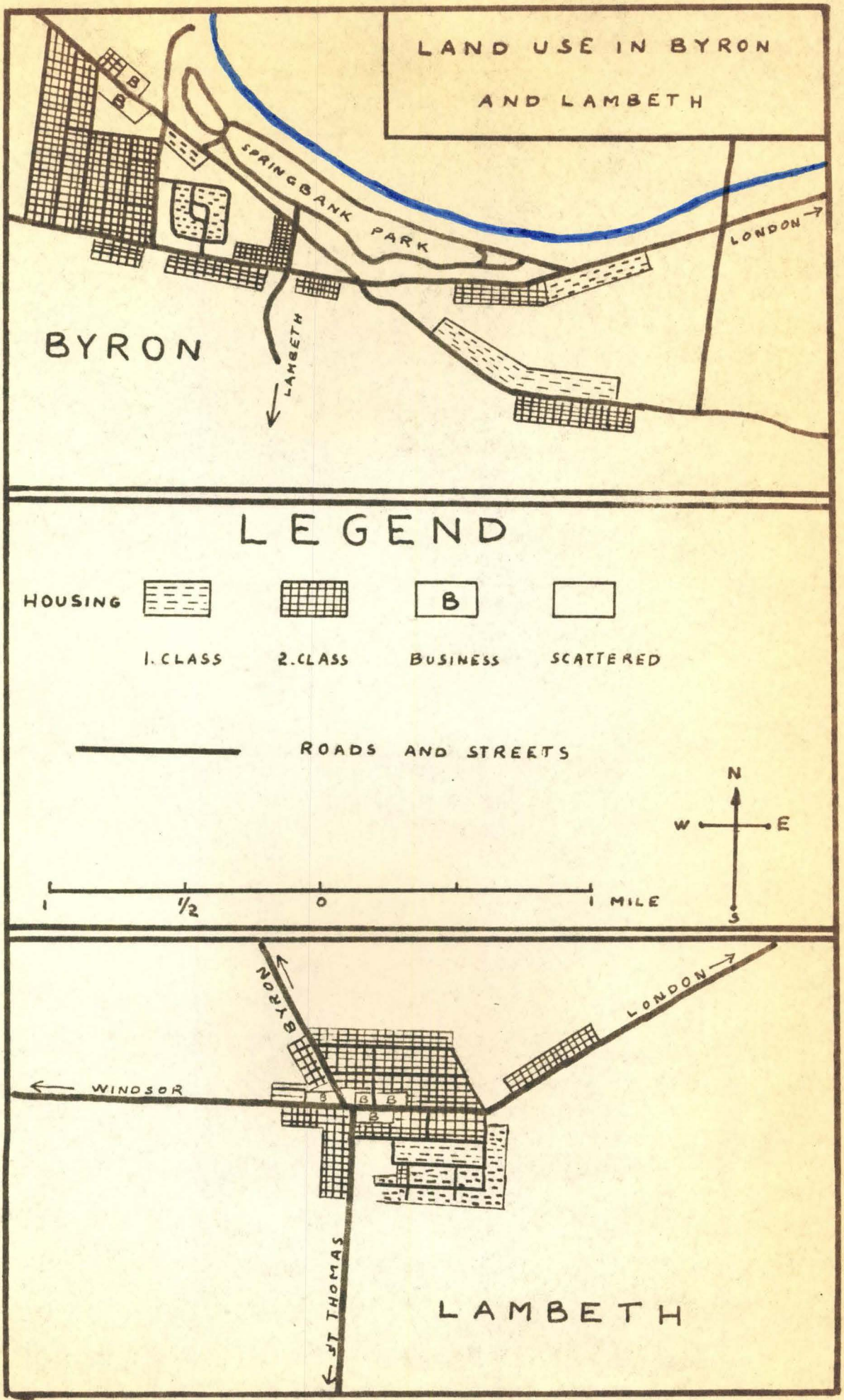
ments have come into existance. These are well planned, with a school in the centre or in a place where it is easily accesable. These houses have been built very recently and are therefore of modern design. Some sections in the southern part are so recent that the streets have not yet been paved nor streetlighting installed. Most of the houses can be classified in high second class category. This in turn indicates that the people that live in them are the "middle class bourgeoisie."*

The village has great natural beauty. It is surrounded on all sides by Ingersoll Moraine features, covered with trees. Immediately to the north of it, between the village and the River Thames is the Springbank Park, with its 325 acres it is another attraction that makes Byron more beautiful and more desireable to live in. Because of its natural situation and its function, the trade area of the village is restricted to the few farms immediately adjoining it.

Most of the farmers are directly to the south or southwest. In any case they are above on the Ingersoll moraine which in this region is steep, therefore in wintertime access to the village from the S is difficult.

Services. Byron is linked with London by the Springbank Bus Company which operates a bus service every hour. The village does not have its own police force. The Ontario Provincial Police and the London Police Department divide their duties among themselves. However, Byron has its own fire department,

* Term designates people who are wage earners in the high middle class income brackets. They are mostly white collar workers.


LAND USE IN BYRON AND LAMBETH
B
B
SPRINGBANK PARK
LONDON
BYRON
LAMBETH
LEGEND
HOUSING
B
1. CLASS
2. CLASS
BUSINESS
SCATTERED
ROADS AND STREETS
N
W
E
S
1
1/2
0
1 MILE
NORTH BYRON
LONDON
WINDSOR
ST THOMAS
LAMBETH

which is operated on a volunteer basis. Water is bought by the village from the city of London. Water storage tanks are provided by the village itself.

Future Growth. The city of London completely dominates the village of Byron. For all intensive purposes it is "part of the city." The expansion of Byron is quick, but it will stop when the steep slopes of the escarpment to the south is reached, since these slopes hinder housing developments. Byron is purely a residential village, removed from major highways. It even lacks a bridge across the Thames river, therefore possibilities for industries to establish there are eliminated. Its present function therefore will be maintained in the future.

LAMBETH

The village is situated at the junction of Highways Number 2 and 4. It is a crossroads site in the Dingman creek spillway which at this point is very shallow. From there Lambeth spreads over flat ground, of till plain, in all directions. It is five miles S W from the city of London, and has approximately 1900 inhabitants.

Commerce. The community has a small commercial centre, situated exactly on the cross roads. These stores are mainly general stores, carrying articles that are required on farms. One antique shop, catering to through traffic, two general stores, one grocery store, plus several drug and tobacco stores round out the commercial activity of the village. A number of service stations are situated along the highways. These cater mostly to the through going traffic and to the local farmers. Because Lambeth is sit-

uated on flat ground and in such an advantageous position from the point of view of communications, its trade are is considerably greater than that of Byron. It is safe to say, that is serves the entire S W section of the township, plus the adjoining region to the west outside the township.

Housing. The main thoroughfares are lined with old buildings; however, two entirely new subdivisions have sprung up, one at the north and one to the south of number two highway.* These subdivisions are entirely residential sections. The people who live there work in the city of London. They are mostly office workers, or army officers who can afford a country home. The new houses with four exceptions are exclusively single storey buildings. No deviation from the present day housing styles is evident. These subdivisions are provided with the necessary services, however, they lack street lighting, good sewer system and paved streets. It is expected that this situation will change soon. Except for the main thoroughfares, trees are lacking in the village of Lambeth. This detracts somewhat from its natural beauty. However, easy access to other points in the region makes Lambeth desireable to live in.

At the present time there are three churches that serve the spiritual needs of the villagers. Another, a Roman Catholic church will soon be built on the E side of Highway Number 4.

Also plans are in effect for a new subdivision on the south side of Highway 2, on the eastern fringe of the village. This indicates that the people of Lambeth are looking to the future with confidence.

*Dingman Creek to the west has stopped any residential expansion

Services. The village is governed by a trustee, who like his counterpart in Byron is responsible to the township council. The Grayhound Bus Company goes through the village. By doing so a public communication link with London is achieved. Ontario Provincial Police is responsible for law and order in the community. A volunteer fire department keeps the fire hazard at a minimum. This is facilitated by the fact that the village has its own water resources.

There are other very small clusters of buildings that might be called communities. These are Glanworth, Nilestown, Pond Mills, Scottsville, Tempo, Glendale, Westminster and Hubrey. All of these communities are situated on intersections of the township roads. They always feature a school, a church and a general store. In this sense they are small social and commercial centres for the local farmers. These places have obtained their names from people who originally owned the land on which the present communities are built. These clusters of buildings are so minute however, that they cannot be considered urban centres. In their character and way of life they completely blend into the rural pattern.

Urbanization is not restricted only to the small centres. There are urban developments along the northern fringe as well, which are connected by a continous row of houses with Lambeth and Byron. This phenomenon was described in the previous chapter. One thing however, becomes evident, and that is the fact that if a township is situated near a greater urban centre, urban

growth is almost inevitable; if the growth has a strong enough impetus even the small rural villages are bound to suffer from the disease "suburbia" and thus change their previous function and character.

CULTURAL LANDSCAPE

Westminster township has changed its appearance considerably since its early days. However, many features still exist as a reminder of the early pioneer period. The "old" and the "new" combine to give a definite characteristic that is unique for Westminster township alone.

The general landscape is that of an almost level land, with only two distinguishable rises of the land. These are the Ingersoll and Westminster moraines. They became apparent when the township is traversed in a north to south direction. The roads are well kept; gravelly lines of communication in a giant grid pattern, link all parts of Westminster township together.

A scattering of old and new buildings remind one that a continuous progress is taking place. Old, gray, somewhat mysterious looking stone churches stand in strong contrast to the new ones, which are for the most part fashioned according to the latest design. This contrast is particulary striking in Byron and Lambeth, where the old and the new churches stand almost side by side. The same can be said for school houses. Small, old, apparently slowly decaying buildings on diminuatively sized lots are still frequently encountered. However, more often one can see spacious play grounds in the middle of which stand modern, low, many sided school buildings where glass has been used generously.

Only on two occassions - in Nilestown and Lambeth two old

A first class home

A house in the high second class category.

An old nineteenth century house.

A modern home of the mid-twentieth century.

New housing development.

A house in the low third class category.

buildings were recognized as being former blacksmiths shops. These were not in use today, but they reminded one that the automobile has not always been in existance.

Only the farmhouses have retained their conservative appearances; nevertheless the "old" and the "new" can be distinguished even there. The old farm residences, built in the 1860's and 1870's are yellow or red brick rectangular buildings, rather small in size with steep roofs. The newer ones are larger, frequently covered with white plaster and have larger windows and substantial verandas in front of them. Both types of farms are generally surrounded by trees and lawns, but only around the older homes orchards or remnants of them are still visible.

The paved highways and the railroad represent the transition to a new era. This new stage of evolution can be seen as one approaches the northern limits of the township. The peaceful atmosphere here is disturbed by considerable motor traffic on the highways. Along these highways suburban homes have been built in clusters. These are modern buildings sometimes alike but more frequently different from each other. However, their architectual low designs with large "picture" windows indicate that they belong to the era of the late 1940's and 1950's.

In the near vicinity of these housing developments recreational sites are opened. This may take the form of parks as is the case in Byron where the beautiful Springbank Park is located, or a golf course which is near Walker Ponds. Small, childrens playgrounds, consisting of sand boxes and swings, are adjacent to, or in the middle of the residential sections

proper. This is particularly evident in Byron and the urban part of Westminster where homes are laid out in circular and semicircular manner.

Telephone and hydro electric power lines cross the country in all directions, indicating that scientific progress has also penetrated Westminster township. The four lane super highway Number 401 slashes across the township completely disregarding the present road pattern. Only the cloverleafs suggest that Westminster township has not been completely forgotten by the communication artery. This modern highway serves as an added reminder that life and scientific progress is continually going on.

The general feeling one gets when travelling through Westminster township is one of a struggle between a leisure and a dynamic progress. However, a conviction is gained that progress is gaining the upper hand.

MODE OF LIFE

The people who inhabit Westminster township earn their living in many different ways, and yet they have the same basic culture. It is true that this culture is in a process of change which is due to the great urbanization that is taking place at the present time. There are however some basic needs that are common to both the urban and rural peoples in the township. A short discussion of them therefore is in order.

Schools. Westminster township has 24 public schools the biggest of which are in Byron with an average of 500 students, Lambeth - 400 students, Kensil Park 400 students and Glendale 300 students. These are modern buildings, built in the last ten years. The remaining 21 schools are small rural schools which the remainder of the total average of 2200 students attend.

The students who have attained high school age, attend the high schools in the city of London, the two schoolboards having a working agreement.

Township Government. The township government of Westminster is directed by a number of committees: finance, legal, fire, property, welfare, and board of work. This government has maintained a reasonable standard of efficiency, but has fallen short in the planning for the future.

Health and Welfare. The health and welfare facilities are adequate in the township, the number of members of the medical profession is adequate, because access to the city is easy and fast. The township has one military hospital, "The Westminster Hospital",

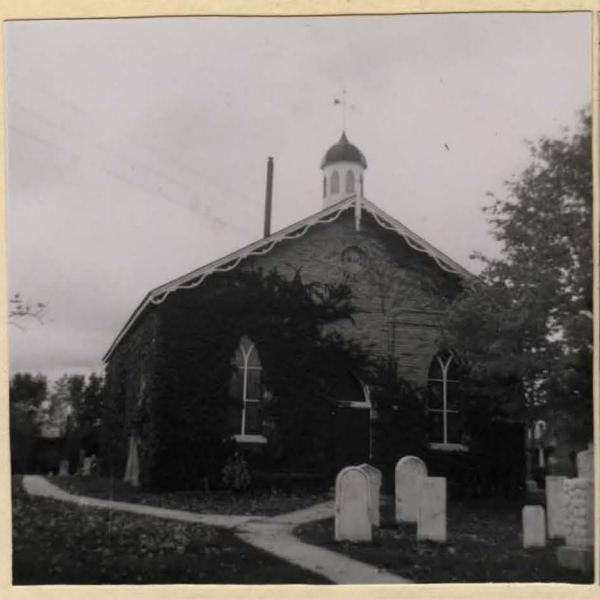
but that is not for private use. The hospitals of the city of London however, satisfy all the needs of the township.

Recreation. Recreation facilities within the township are ample, especially along the northern fringe. A small lack of the above is experienced in the southern parts, but it is not serious. The great "Springbank Park" along the Thames River is the great attraction for the people in Westminster township, as well as the inhabitants of the city of London. This park is maintained by London's Park Commission, and it offers excellent facilities for horseback riding, picnics and observation of wildlife. A small zoo and a simile of a botanical garden makes the latter passible. In addition to this Westminster township has four ponds for swimming in summer, and skating in winter. These are the three Walker Ponds and the Mill Pond. The total acreage of them is 76 acres of which Mill Pond alone occupies 34 acres. Small swimming holes are scattered occassionally along the course of flow of Dingman Creek, but they are generally private. A public golf course near Walker Ponds caters to people from Westminster, as well as London area.

Roadside picnic sites are found along the highways, some of which in themselves provide a type of recreation in that they have scenic drives. This is particularly true in the Byron area.

To add to the above types, all recreation facilities in London area are accessible to the people of Westminster township, thus providing them with all the necessary means for spending and enjoyable free time.

Churches - Old and New Sytles.

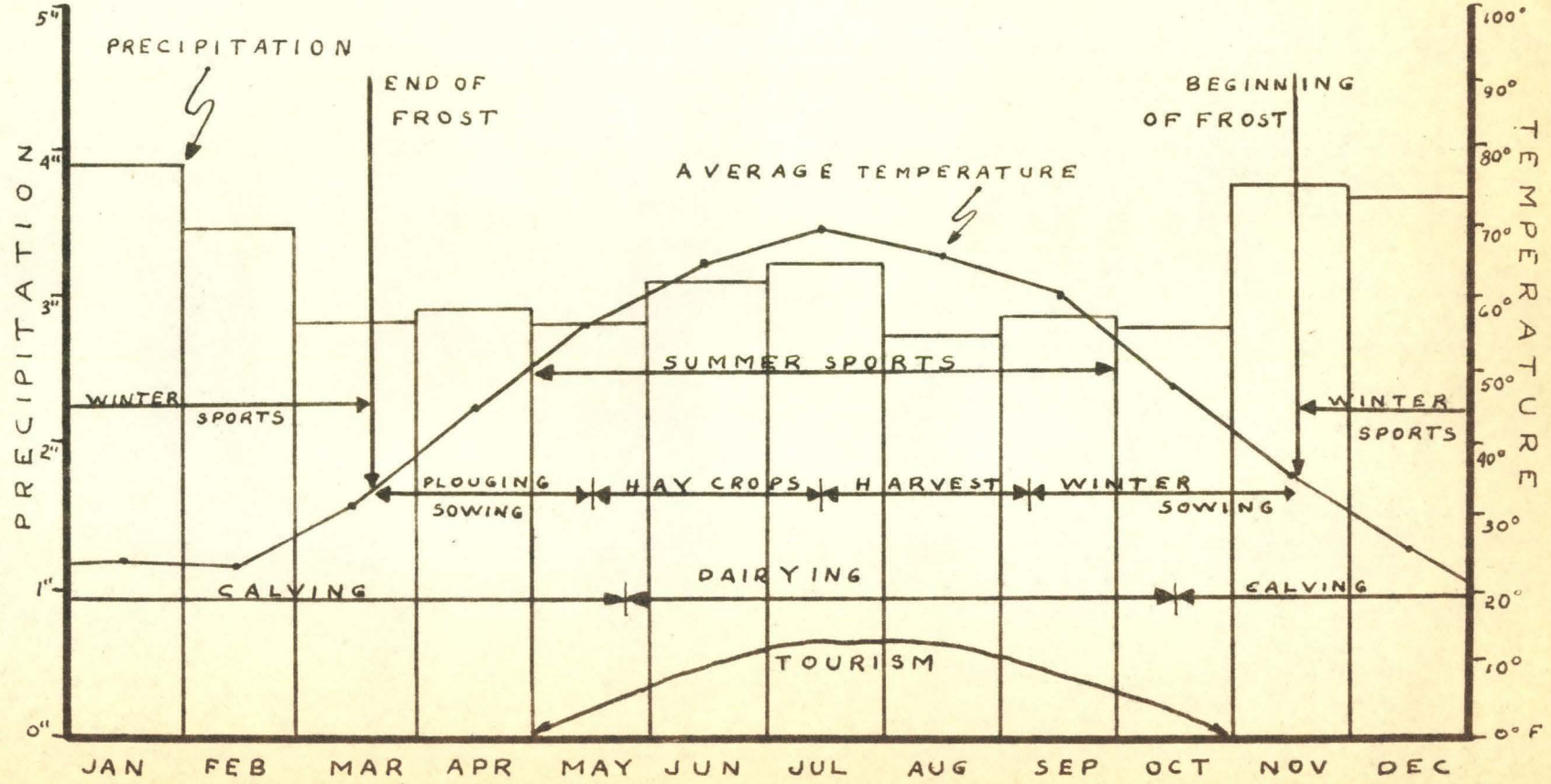


Springbank Park is the main recreational area in the township.

Clubs and Organizations. Numerous clubs and organizations for various purposes exist either in the township or the members belong to them in the city of London. It has become evident that the church groups are local, whereas the other service organizations are metropolitan, but to which people from Westminster township belong. This is a good sign because by belonging to an organization which is not strictly local, the more energetic people of the township will appreciate the townships problems and difficulties more and then try to solve them.

Natural facilities, numerous social activities, good homes, both rural and urban, a healthy climate and good recreational facilities make Westminster township a desirable one to live in at the present time. If proper steps are taken in the future, this state of affairs will remain.

WORK DIAGRAM



MODE OF LIFE

The attached diagram is constructed in an attempt to show the way of life of both rural and urban peoples in Westminster township. Of the two the activities of rural peoples are more varied than those of the urban parts. This is due to the great dependence of the farmers on the physical factors governing the area.

Crop farming depends entirely on the seasons. Since the frost free period in the township lasts for approximately seven and a half months, and since temperatures and precipitation are adequate in all seasons, farming is facilitated. Practices of cattle farming are such, that advantage is taken of the cold seasons when calving is emphasized, thus allowing more cattle to graze on the fields in the warm months.

Season of summer sports in the township lasts generally from beginning of May to the end of September, when autumn sports are emphasized. These last till the middle of November when with the advent of frost winter sports take over till the following spring.

For both rural and urban peoples this mode of life is permanent; however, a migratory stage can also be detected. This latter stage is represented by tourism which is practiced by peoples in the township and by peoples outside. In the first instance the vacationers leave the township boundaries to seek pleasure elsewhere and in the second instance township is entered by vacationers. Although the diagram does not show that, it is important to note

that by far a greater proportion of tourists leave the township than enter. For those tourists entering Westminster, the area is only a thoroughfare. In any case the peak season is in the months of June and July. It is progressively smaller in the months of May, August and September.

GENERAL CONCLUSION

The physical elements in Westminster Township ~~are~~ are such that human habitation is encouraged, and indeed carried out on an ever increasing scale. Due to this population increase and also due to the resulting conflict between the agricultural and urban cultures, the life pattern in the township is in a process of change. It has become evident from this study that an equilibrium will not be reached for some time, but when it finally will be approached it is safe to say that the urban culture will be the dominant one and that the agricultural belt will be pushed much further back than it is today.

APPENDIX "A" CLIMATE

CLIMATIC SUMMARIES

	YRS. OBSERVED	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	PER YEAR	MONTHLY & ANNUAL AVERAGES
LONDON	54	29	29	39	54	67	77	81	79	72	58	44	33	55	MAX TEMP
LONDON	54	15	12	22	33	44	53	58	55	50	39	30	20	36	MIN TEMP
LONDON	54	22	21	30	44	55	65	69	67	61	49	37	26	46	MEAN TEMP
LONDON	54	3.97	3.45	2.81	2.87	2.81	3.11	3.21	2.80	2.96	2.91	3.74	3.53	38.17	PRECIP IN INCHES
LONDON	54	23.3	22.3	11.3	3.8	0.1	-	-	-	-	0.9	10.8	19.1	91.6	SNOWFALL IN INCHES
LONDON	10	14	14	9	4	-	-	-	-	-	-	6	14	62	NO OF DAYS WITH MEASUREABLE SNOW
LONDON	10	18	17	16	12	12	11	10	9	11	13	15	19	163	NO OF DAYS WITH MEASUREABLE PRECIP OF ANY SORT
LONDON	57	66	93	126	164	221	257	281	243	180	142	80	56	1909	NO OF HOURS OF SUNSHINE

APPENDIX "A"

EXPLANATION OF CLIMATIC SUMMARIES

1. Monthly average of daily maximum temperature, average value of all days of maximum temperature for Jan in last 50 years.
2. Daily min temp - lowest temps reported each day over the period of record in manner explained in para above.
3. Daily max temp - the average of 24 equally spaced observations of temperature in a calendar day is sufficiently accurate for near approximation for that day, all really means for same days and months in successive yrs are taken.
4. Sunshine - indicates average duration in hours during each month and the year of bright sunshine as recorded by the Campbell Stokes Sunshine Recorder.
5. Measureable precip of any sort - refers to days with a measureable amt of rain, snow or the water equivalent of any other form of precip.
6. Measurable Snow - average no. of days with freshly fallen snow of 0.1 inch or more anytime during 24 hrs.
7. Precip in inches - rainfalls added to the water equivalent of the snowfall and all other forms of frozen precip. 10 inches of freshly fallen snow are considered as having an average water equivalent of 1 inch. Thus the total precip is the sum of the rainfall added to 1/10 of the depth of snowfall. It should be noted that the water equivalent of frozen precip other than snowfall, is added to the rainfall to the limit of accuracy of obs.

8. Averages of the extreme highest and extreme lowest temp - in each Jan there will be one extreme high temp and in 50 Jans 50 such extremes. The average of 50 such figures is the average extreme highest or simply the average monthly maximum.

A similar explanation applies to the average extreme lowest temperature or average monthly minimum. In any year the highest temp of the year may occur in any one of the summer months, and similarly the lowest temperature may occur in any one of the winter months. Therefore, the average annual highest temperature will generally be higher than the average highest temperature of the warmest summer months. Similarly the annual average lowest temperature will generally be lower than the average lowest temperature of the ordinarily coldest month of the year.

9. Snowfall measurements are made at all Canadian meterological stations one to four times daily. Measurements are made usually with a ruler and only the depth of snow freshly fallen since the last observation is measured. Snowfall depth is ordinarly the average of readings made by the observer over as large area as possible.

APPENDIX "B"

GROUNDWATER

The Cross Section From North to South.

Survey taken along Talbotville Road.

Place	Gals per min.	Static Level in Feet	Use of Water	Log of Remarks (Depths to which formations extend below the surface are given in feet.)
1. B.L. Lot 21	4½	15	D	Grey clay 59; gravel 60
2. CON I Lot 25	5	60	D	Clay 72, fine sand 108, gravel 113
3. CON II Lot 18	35	41	D	Clay gravel 4, clay 19, gravel, sand 144, gravel 153
4. CON III Lot 19	4	26	D	Topsoil 1, red clay 8, stony blue clay 42, sandy clay 55, blue clay 122, gravel 127
5. CON IV Lot 22	2	20	D	Hard yellow clay 15, soft clay, fine sand or silt 65, sand 75, sand gravel 104
6. CON VII Lot 18	5	50	D	Clay 30, sand 35, clay 70, gravel sand 87
7. CON VIII Lot 8	5	60	D	Topsoil 4; blue clay 60, very fine sand 130, clay stones 141, gravel 143

Explanation: "D" - Drinking water.

APPENDIX "C"

VEGETATION

Herbs and Weeds.

1. The Common Thistle
2. The Canada Thistle
3. Burdock
4. Yellow Dock
5. Wild Carrot
6. Ox eye daisy
7. Chamomile
8. The mullein
9. Ellecampane
10. Nights shade
11. Buttercup
12. Dandelion
13. Wild Mustard
14. Shepherd's purse
15. St. John's wort
16. Chick-weed
17. Purslane
18. Mallow
19. Plantain
20. Motherwort
21. Shamonium
22. Catnip
23. Gill
24. Blue weed
25. Stick seed
26. Hound's tongue
27. Henbane
28. Pig-weed
29. Twitch Grass
30. Darnel
31. Poison Hemlock
32. Hop clover
33. Yarrow
34. Wild Radish
35. Wild Parsnip
36. Chicory
37. Live forever
38. Toad flax
39. Sleep sorrel

APPENDIX "D" FAUNA

Present Day Species

The lists are extracted from more detailed information and records found in the Royal Ontario Museum of Zoology and published by W. E. Saunders and E. M. Dole, [*1] and by S. C. Downing. [*2]

Mammals.

Cinereous Shrew	Sorex cineus Kevr	A
Smoky Shrew	Sorex fumeus Moller	R
Pigmy Shrew	Microsoux Logi (Baird)	R
Mole Shrew	Blarina Brevicauda (Say)	C
Hairy-tooled Mole	Parascalops Brereori (Bachman)	R
Star-Nosed Mole	Condylura oustata (Linneens)	C
Little Brown Bat	Myotis lircofugers (Le Conte)	A
Long eared Brown Bat	Myotis Keenii (Mervam)	R
Silver-haired Bat	Lasionycteri Noctivagans (Le Conte)	R
Big Brown Bat	Eptencus fuscus (Beauvios)	C
Red Bat	Lamirusbrealis (Muller)	R
Hoary Bat	Lasicous cinereus (Beauvios)	R
European Hare	Lepus eropaeus (Pollar)	A
Snowshoe Rabbit	Lepus ameryeanus (Allen)	R
Cottentail	Sylvologus florictanue (Allen)	C
Black Squirrel	Saurus carolinenns (Gimelin)	A
Woodchuck	Marmota Meneck (Linnaleus)	A
Eastern Chipmunk	Tamisas stuatus "	C
Eastern Flying Squirrel	Glaucomp rolans "	C
Northern Flying Squirrel	Claucomp sabrinum (Shaw)	R
Deer Mouse	Peronyscus maniculatus (Wagner)	C
White-footed Mouse	Peronyscus leucopus (Refinesque)	C
Muskrat	Ondatra zibenthica (Linnaeus)	C
Meadow Mouse	Micratuspennsylvanious (Ord)	C
House Rat	Rattus nornegiais (Erxleben)	A
House Mouse	Mus Musculus (Linneaus)	A
Meadow Jumping Mouse	Zapirs Ludsoniers (Zimmermans)	C
Porcupine	Erethizen dorsatum (Linneaus)	R
Brush Wolf	Cams latrana (Say)	R
Red Fox	Vulpes fulva (Dermarest)	A
Raccoon	Procyon Lotor (Linnaeus)	A
Ermine	Mustela ernunea "	C
Long-tailed Weasel	Mustela frenala (Licttenstein)	C
Mink	Mustela vison (Schreber)	C
Skunk	Mephitis mephotis "	A
White-tailed Deer	Odocoileus inginanus (Boddard)	C
Red Squirrel	Tamiascicerus Ludsoniaus (Ercleben)	C
Cooper's Lemming Mouse	Synamptonup coopers (Baird)	R

Key A - Abundant C - Common R - Rare

*1 Saunders, W.E. and Dole, E.M.S. "A History and List of the Birds of Middlesex Country, Ont", Transactions of the Royal Canadian Institute, Vol. XIX,Part 2 Sep 1933.

*2 Downing S.C. "A Provisional Check List of the Mammals Of Ontario" (Misc. Publication #2, Royal Ont. Museum of Zoology, Toronto 1848.

APPENDIX "D" FAUNA

Birds.

This list is taken from Lil Snyder's "Ontario Birds", 1951. The Common birds of the township are included into the category of:

1. Permanent residents
2. Summer residents
3. Migrants
4. Winter Visitors

Permanent Resident (Nesting and Wintering)

Ruffled Grouse
Common Pheasant
Rock Dove
Horned Owl
Long-eared Owl
Short eared Owl
Pileated Woodpecker
Hairy Woodpecker
Downy Woodpecker
Blue Jay
Crow
Black-capped Chickadee
White-breasted Nuthatch
Brown Creeper
Winter Wren
Cedar Waxwine
Starling
House Sparrow
Cardinal
American Goldfinch
Slate Coloured Junco

Summer Residents

Pied billed Grebe
Great Blue Heron
Green Heron
American Bittern
Least Bittern
Mallard
Black Duck
Blue Winged Teal
Wood Duck
Killdeer
American Woodcock
Upland Plover
Spotted Sandpiper
Herring Gull
Mourning Dove
Yellow billed Cuckoo
Black Billed Cuckoo
Screech Owl
Whip-poor-will
Nighthawk
Chimney Swift
Turkey Vulture
Sharp Skinned Hawk
Cooper Hawk
Red Tailed Hawk
Bald Eagle
Marsh Hawk
Sparrow Hawk
Virginia Rail
Sora
Warbling Vireo
Black and White Warbler
Golden Winged Warbler
Yellow Warbler
Black Throated Green Warbler
Blackburnian Warbler
Cerulean Warbler
Chestnut sided Warbler
Pine Warbler
Oven-bird
Water-thrush
Mourning Warbler

Ruby Throated Humming bird
Belted Kingfisher
Yellow-shafter Flicker
Red-headed Woodpecker
Yellow-bellied Sapsucker
Eastern Kingbird
Crested Flycatcher
Least Flycatcher
Eastern Wood Peroce
Horned Lark
Tree Swallow
Bank Swallow
Rough winged Swallow
Barn Swallow
Cliff Swallow
Purple Martin
House Wren
Marsh Wren
Ledge Wren
Catbird
Brown Thrasher
Wood Thrush
Bluebird
Yellow Throated Vireo
Maryland Yellow Throat
American Redstart
Bobolink
Eastern Meadowlark
Red Wing
Baltimore Oriole
Grackle
Cowbird
Scarlet Tanger
Rose breasted Grosbeak
Indigo Bunting
Purple Finch
Towhee
Savannah Sparrow
Grasshopper Sparrow
Vesper Sparrow
Chipping Sparrow
Field Sparrow
Swamps Sparrow
Song Sparrow
Robin
Veery
Loggerhead Shrike

Migrants

Common Loon
Horned Grebe
Whistling Swan
Canada Goose
Cardwall
Pintail
Green winged Teal
Baldpate
Shoveller
Redhead
Ring Necked Duck
Canvas-back
Greater Scamp
Leaser Scamp
Buffle head
Olive Sided Flycatcher
Red-breasted Nut hatch
Hermit Thrush
Swanson's Thrush
Golden Crowned Kinglet
Ruddy Duck
Hooded Merganser
Red breasted Mergunser
Broad-winged Hawk
Rough legged Hawk
American Coot
Ringed Plover
Common Snipe
Solitary Sandpiper
Greater Yellow Legs
Lesser Yellow Legs
Pectoral Sandpiper
Least Sandpiper
Dunlin
Semipalmated Sandpiper
Cape May Warbler
Black throated Blue Warbler
Myrtle Warbler
Blackburnian Warbler
Ray breasted Warbler

Water Pipit
Solitary Vireo
Philadelphia Vireo
Ruby crowned Kinglet
Tennessee Warbler
Nashville Warbler
Parula Warbler
Magnolia Warbler
Black Poll Warbler
Palm Warbler
Wilson's Warbler
Rusty Blackbird
White Crowned Sparrow
White Throated Sparrow
Fox Sparrow

Winter Visitors

Common Golden eye
Old Squaw
Common Merganser
Snowy Owl
Great Shrike
Redpoll
Pine Siskin
Tree Sparrow
Snow Bunting

APPENDIX "D" FAUNA

Amphibians and Reptiles

The following species have been encountered in the London area, therefore, it is safe to assume that they also exist in Westminster township.

The species named follow those of "The Reptiles of Ontario" by E.B.S. Lagier (Royal Ontario Museum of Zoology Handbook). No. 4, 1939.

Mudpuppy	Necturus maculesus (Refinesque)	C
Newt	Trituris viridesceus "	C
Jesserson's Salamander	Ambystoma jeffersonium (Green)	C
Spotted "	" maculatum (Shaw)	R
Four-toed "	Hemidoctylium sartatum (Schlegal)	R
Red-backed "	Plethodon cinereus (Green)	A
Common Toad	Bure emericanus (Holbrook)	A
Swamp Tree Frog	Psendacris triseriata (Wild)	C
Pickering's Hyla	Hyla crucifer (Wood)	C
Common Tree Frog	" vericolor (Le Conte)	C
Bullfrog	Rana cateskerana (Shaw)	C
Green Frog	" clamitans (Lotreille)	C
Leopard Frog	" pipiens (Schreber)	A
Pickerel Frog	" palustris (Le Conte)	C
Wood Frog	" sylvatica (Le Conte)	C
Hog nosed Snake	Heteroden contortrix (Linne)	R
Smooth Green Snake	Opheodrys vernalis (Harlan)	C
Milk Snake	Lampropeltis t. triangulum (Lacepede)	C
Queen "	Natrix septemis Hata (Say)	R
Water "	Natrix s. sipedon (Linne)	R
Brown "	Storeria dekayi (Holbrook)	R
Red-bellied Snake	" occipitomaculata (Storer)	R
Ribbon Snake	Thamnaphis s. sauritus (Linne)	R
Garter Snake	" s. sirtalis (Linne)	A
Snapping Turtle	Chelydra serpentines (Linne)	C
Spotted "	Clemmys guttata (Schneoder)	R
Blanding's "	Emys blandingic (Holbrook)	R
Western-painted Turtle	Chrysemys belli margineuta (Agassiz)	A
Soft-shelled "	Amydra spinofers (Le Sueur)	R

Key R - Rare C - Common A - Abundant

APPENDIX "E"

LAND USE STATISTICS IN 1956 IN WESTMINSTER TOWNSHIP

Livestock

Total Cattle 10,462

Milk cows or cattle to be milked later	5,396
Sheep	836
Pigs	5,874
Hens	63,789

Crops Acreage

Wheat	3,614	acres
Oats	5,896	"
Barley	65	"
Rye	123	"
Mixed Grain	558	"
Thame hay	8,160	"
Corn for ennlage	2,770	"
Other	350	"
TOTAL	12,536	"

The total number of farms in 1956 was 495 farms of which:

401 are owned and occupied

11 are managed

32 are rented

51 are partly owned and partly rented

APPENDIX "F"

Forest Cover Types in Westminster Township

Ash Hickory	15%
Black Cherry	1%
Black Ash, White elm, Red Maple	6%
Beech, sugar maple	18%
Beech	1%
Red Oak, Basswood, White Ash	4%
Sugar Maple, Basswood	9%
Sugar Maple	8%
Silver Maple, White Elm	22%
White Oak, Black Oak, Red Oak	10%
White Oak	1%
White Elm	3%
Willow	1%
Yellow Birch	1%

APPENDIX "F"

Acreages and Numbers ofWoodlots of Specific Tree Types

Type of Tree	Number of Lots	Acres
Aspen	4	20
Ash, Hickory	59	471
Beech	58	51
Beech, Sugar Maple	57	636
Black Cherry	14	22
Black Ash, White Elm, Red Maple	26	42
Black Locust	47	6
Bur Oak	45	1
PaperBirch	6	2
Red Oak, Basswood, White Ash	51	83
Silver Maple, White Elm	60	385
Sugar Maple, Beech, Yellow Birch	12	5
Sugar Maple, Beech, Basswood	13	102
Sugar Maple	14	283
Tamarack	25	1
White Pine	9	1
White Pine Hemlock	10	2
White Cedar	24	15
White Oak, Red, Oak, Black Oak	49	251
White Oak	50	32
White Elm	60	139
Willow	88	65
TOTAL	440	2815

APPENDIX "G"

Manufacturing in Westminster Township (July 1957)
(in the urban fringe)

	Company	Products Manufactured or Handled	Number of Employees Male	Female	Total
1.	Acme Farmers Dairy Limited	dairy products	42	3	45
2.	Acme Neon Signs	neon signs and cold cathode flue. lighting	11	1	12
3.	Canada Dry Bottling Company Limited	soft drinks	23	2	25
4.	Lawson and Jones Ltd	general printing and lithographing, calendars, novelties greeting cards, gummed tape, cheque books and allied lines, folding cartons, labels	164	113	277
5.	London Cheese Products Ltd.	manufactures of processed cheese and cream cheese	6	3	9
6.	London Winery Ltd	Ontario Wines	41	20	61
7.	Massey Harris Ferguson Ltd (Warehouse and garage)	farm machinery	46	10	56
8.	Munro Boats and Motors Ltd.	fiberglass boats, mastercraft boat trailers, Mercury outboard motors, sporting goods & marine accessories	17	19	36
9.	Robinson Industrial Crafts Ltd	plastic floor tile, plastic wall tile, advertising specialties, custom moulded and entruded plastic, industrial parts, engineered and produced	45	65	110
10.	Sintzel Cleaners	cleaning, pressing, tailoring, storage	7	6	13
11.	Tilbest Foods Ltd.	ready mixed foods, ie-cake mixes, pie mixes, etc, peanuts and other nut products	20	20	40

	Company	Products Manufactured or Handled	Number of Employees Male	Female	Total
12.	Wakefield Lighting Limited	fluorescent lighting fixtures luminous ceiling and lighting equipment	10	2	12
13.	Young Selby Printing Company	printing and lithographing	14	8	22
14.	Ballentine Co. Ltd.,	construction equipment	22	1	23
15.	Bathgate and Chapman	heating contractor	3	1	4
16.	F.E. Dayus Co. Ltd	roofing	3	-	3

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