SETTLEMENT AND RURAL OUT MIGRATION IN EASTERNMOST ONTARIO 1783 to 1956

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Thesis presented to the Institute of Geography of the University of Ottawa as partial fulfillment of the requirements for the degree of Master of Arts

Degree granted Senate October 10, 1961
[illegible]
Secret. of the Graduate Division

Ottawa, Ontario, 1961

ACKNOWLEDGMENTS

Considerable help has been received in preparing this thesis. H. Page and Dr. Kasahara of the Dominion Bureau of Statistics provided population and life table data, references and help in preparing the survival ratio formula. P. Sefton, of the University of Ottawa Computing Centre, examined the statistical validity of the formulas used and arranged for the computations to be done on the University's IBM 650. H. Noble and Dr. Patterson of the Ontario Department of Agriculture and V. Gilchrist of the Federal Department of Agriculture studied and discussed the results and provided further references. H. Grinnell, Ontario Department of Lands and Forests, the county agricultural representatives, local farmers, high school students, teachers and principals provided valuable information. The Federal Archives made maps and photostats available. Capt. Aston organized two flights over Easternmost Ontario.

The writer is also indebted to Dr. Lloyd, Professor of Geography, McGill University and W. A. Black, research geographer, Department of Mines and Technical Surveys, for helpful comments and criticisms on the thesis objectives and techniques.

Thanks are due to Dr. Zaborski, Director of the Institute of Geography, who, as thesis director, gave encouragement and help, and permitted freedom of choice of subject, methods of research and manner of presentation.

CURRICULUM STUDIORUM

David Michael Ray was born December 25, 1935, in St. Austell, England. He received the Bachelor of Arts degree with 2nd Class 1st Division Honours in Geography in 1956 and the Graduate Certificate in Education in 1957 from Manchester University, England. The title of the B.A. thesis was, Watford, A Study of Geographical Position

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INTRODUCTION

Easternmost Ontario comprises Ontario's four most easterly counties-Russell, Prescott, Stormont and Glengarry. The boundaries are administrative but the area does possess a broad geographic homogeneity. Physically, Easternmost Ontario is part of the Ottawa-St. Lawrence Lowland; economically it belongs to the Eastern Ontario Dairy Belt; demographically it is distinguished from the remainder of Southern Ontario by a population which is predominantly French Canadian.

The thesis is concerned with the European settlement of, and rural outmigration from Easternmost Ontario. Chapter one, "The Settlement, 1783 to 1891", is a compilation undertaken, as a secondary objective, to complete the study of the European occupance of Easternmost Ontario, and to add perspective to the following period of outmigration. The factors that affected settlement are discussed separately and the main stages of settlement summarized, adding clarity though at the expense of some repetition. Chapter two discusses the statistical techniques used to compute net migration from 1891 to 1956 and gives the results obtained. Chapter three describes the emerging pattern of net migration and makes a preliminary analysis of the causal factors.

The literature on the history of the area does not satisfy the geographer's requirements. No complete analysis has been made of the

maps in the Federal Archives. Only two authors, Mackay and Jones[1] discuss in any detail the advance of settlement across Easternmost Ontario and the factors that influenced it.

There is very little literature on migration. There are no enumerations of population migration on a county basis in Canada. Statistical techniques of computing net migration from census data and life tables have been dev eloped and the theory of the survival ratio method, which gives the most detailed results. is discussed in a number of publications.[2] There are as yet, no published accounts of either the precise manner of adjusting life table data for the survival ratio method, or of the county variations in net migration during the present century in any part of Canada. Only one detailed regional study of migration in Canada has been published - Levitt's study of population movements in the Atlantic Provinces.[3]

Levitt's study has just one paragraph (pp. 87-88) describing how the survival ratios were determined. This deficiency makes it difficult to judge the probable accuracy of the basic data and reduces

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1. J. Ross Mackay, Regioanl Geography of the Lower Ottawa Valley, Ph. D. Thesis, University of Montreal 1949
   L. J. Jones, History of Agriculture in Ontario 1613 to 1880. University of Toronto Press 1946.
2. See the annotated bibliography at the end of Chapter two p. 182.
3. Kari Levitt, Population Movement in the Atlantic Provinces. Atlantic Provinces Economic Council, Halifax 1960.

its value as a guide to similar research elsewhere.

Moreover, Levitt's[4] study concerns itself primarily with the period 1941 to 1956 for the preceding period is, in the author's words, "of historical interest only". This statement is open to serious dispute for the force of push and pull factors weakens in effect as adjustment to them takes place by population migration. Any assessment of likely future migration must, therefore, be firmly based on a knowledge of the entire period during which these forces have been operative and migration has occurred.

This thesis attempts to avoid these deficiencies. By discussing the problems of adjusting Canadian Life tables data, it can aid in computing migration elsewhere in Canada. By describing the migration pattern and by assessing the causal factors for the entire period of general rural outmigration it should help in orientating detailed future studies.

More research must be done on rural outmigration in Canada because of the magnitude of the movement because of the economic problems of the rural areas that it reflects and augments and because of the large contribution that it makes to the urban working force. This work should be done now while there are farm people still alive who have witnessed the whole course of rural outmigration and who can provide unique information.

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4. K. Levitt, op. cit. p.12.

Chapter One

The Settlement of Easternmost Ontario 1783 to 1891

1. Introduction

Settlement and migration in Easternmost Ontario can be divided into two major periods, the first 1783 to 1891, the second 1891 to 1956.

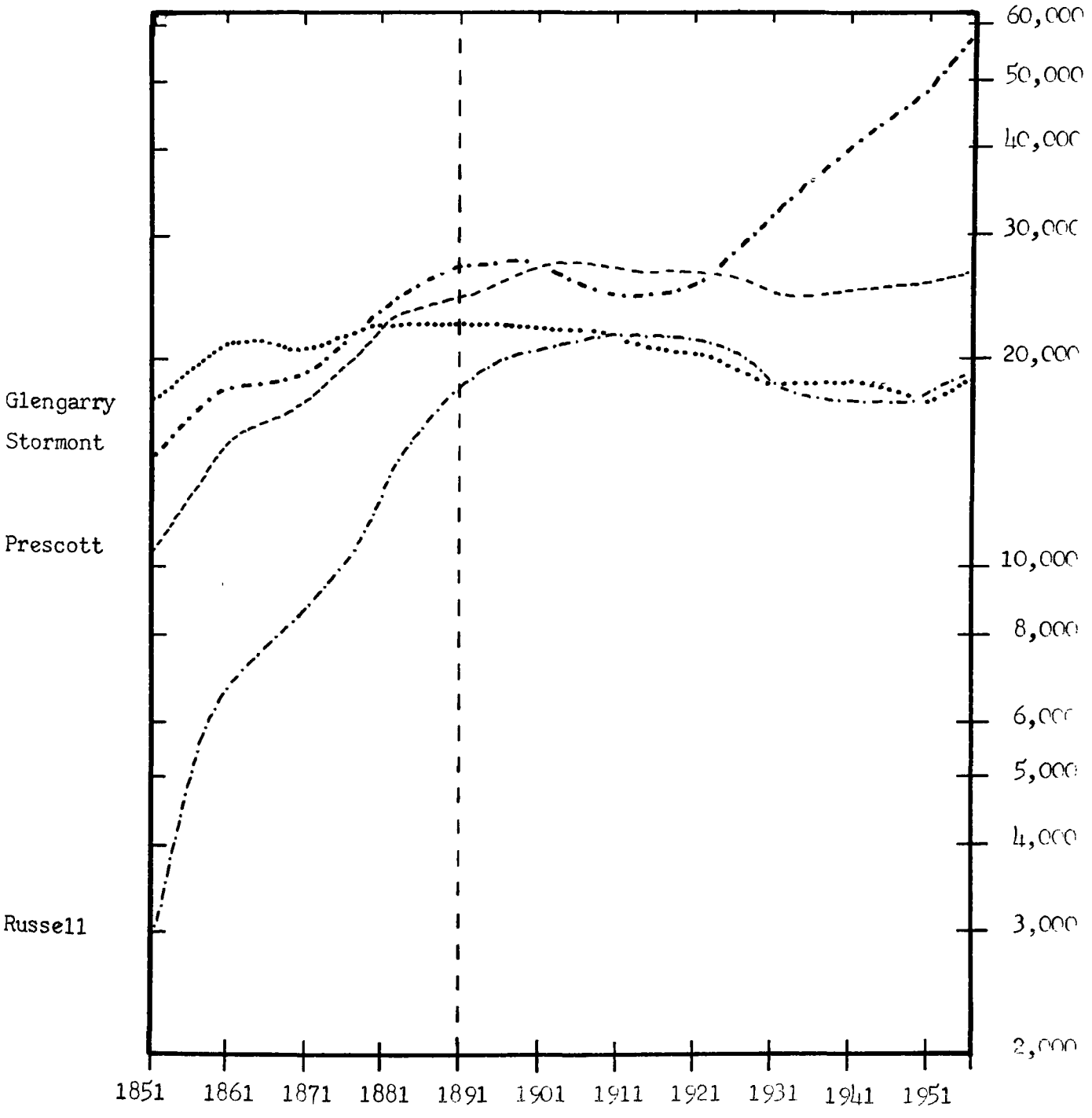
1783 to 1891 was a period of population growth though some outmigration did occur even in areas where good land remained uncleared and unsettled. The population growth of Easternmost Ontario, therefore, represented the balance of a considerable inflow over some outflow. In the second period inmigration was stemmed to what were probably negligible proportions.

The second period is characterized by continuous and heavy net outmigration of rural population from all four counties of Easternmost Ontario. Before 1891 there were decades of net outmigration from some of the counties and in the case of Glengarry this net outflow was continuous by 1851, but 1891 to 1901 was the first decade in which net outmigration occurred in all four counties at once and the net outflow of rural population has continued to the present.

The importance of the year 1891 in dividing European settlement of Easternmost Ontario into two periods- the first of net population growth, the second of heavy net outmigration - is in no way coincidental for it corresponds approximately to the completion of settlement of all

Graph of County Population Changes 1851 to 1956

Diagram 1.1 semi-logarithmic scale.



land capable of supporting the present agricultural economy. By and large, rural settlement was free to expand in Easternmost Ontario until the late 19th century, and outmigration was in response to 'pull' factors. Since the late 19th century the lack of suitable land for new settlement has represented an added and quite different factor leading to outmigration.

There was, therefore, a time relationship between the start of substantial settlement, the attainment of maximum rural population and the beginning of heavy outmigration. This sequence of events commenced first in Glengarry and Stormont, and later in Prescott and Russell.

Our present knowledge of the first period 1783 to 1891 is incomplete, but a study of it does reveal the factors that determined the timing and the expansion of settlement. These factors were, in apparent order of importance, political, economic and physical.

Political factors were responsible for the arrival of the first large group of settlers. The American Revolution was the direct cause of the migration of some of the Union Empire Loyalists to Easternmost Ontario. It was also indirectly responsible for the arrival of many later settlers. For strategic reasons the Loyalists were located along the St. Lawrence and the expansion of settlement in Easternmost Ontario was largely northward from the St. Lawrence. This expansion was affected by the progress in surveying and granting the land.

Settlement was considerably influenced by accessibility and quickly progressed along rivers and roads. In the Ottawa Valley the timber industry played a major and direct role in the growth of agricultural settlement. The timber industry also encouraged migration to Canada generally, as ships carrying timber to Britain offered cheap

fares on the return voyage for immigrants. Physiographic variations within Easternmost Ontario were less important, though coarse sandy areas were never successfully settled, and poorly drained areas were avoided until the second half of the 19th century.

After a brief statement on early exploration, settlement will, therefore, be discussed under those headings.

2. Early Exploration.

The delay in the start of settlement was not due to ignorance of the area. Easternmost Ontario was explored by the French at the beginning of the 17th century, that is nearly two hundred years before settlement began.

In 1613 Champlain sailed up the Ottawa River to Allumette Island. Two years later, in 1615, he returned and continued up the Ottawa River to reach Georgian Bay via Lake Nipissing. The Ottawa Valley became the established route to the west for other explorers, fur traders and missionaries. The Ottawa River route remained more important than the St. Lawrence for nearly two centuries. During the 17th and 18th centuries the St. Lawrence was used only during the occasional periods when the Ottawa River was closed by Iroquois attacks.

There were good reasons for preferring the Ottawa route to the Great Lakes. Iroquois attacks were more serious along the St. Lawrence. The St. Lawrence was not suitable for the birch bark canoes used. The Ottawa River was more sheltered and the route shorter.

Despite the importance of the Ottawa Valley as a routeway in the 17th and 18th centuries there was no settlement as more accessible land was available to the east. Furthermore, the fur trade and Indian settlements discouraged European settlers. The only Ontario

settlements until 1783 were the Detroit River settlement begun in 1701, Fort Cataraque (Kingston) founded in 1673, Fort Niagara founded in 1678 and Fort Rouille (Toronto) founded in 1749.

When agricultural settlement began along the St. Lawrence the emphasis of the Canadian economy was shifted from the Canadian shield to the Lowlands and from fur to agriculture and lumbering. Indian attacks had stopped and birch bark canoes were replaced by the larger Durham boats. The St. Lawrence became the main routeway to the west and the Ottawa River declined to secondary importance. Thus in Easternmost Ontario the expansion of settlement was from the St. Lawrence northwards to the Ottawa, and the settlement of the southern counties was completed first.

3. Early Settlement

The first major European settlement of Easternmost Ontario started in 1783, after Britain had wrenched control of Canada from the French but had lost the United States. The first settlers were Union Empire Loyalists from the Mohawk Valley of New York State, and consisted of the disbanded men and their families of the Kings Royal Regiment of New York and the 84th Royal Highland Emigrant Division. Most of them were Highland Scots, though there was also a substantial number of Germans.

The Scots had emigrated to the Mohawk Valley only a short time before. They had left Scotland for political and economic reasons. The migration from Scotland began when the Jacobite rebellion was crushed in 1745 and it continued as the land use changed in the Highlands from crofting to sheep farming and displaced many families.

Their new settlements in the Mohawk Valley proved fairly successful and many of them were well established when the American

Revolution started in 1775. But as a result of their active support of the British they were badly treated by the Americans and petitioned the British Government in 1779 for assistance to migrate to Canada. Four years later in 1783 they were moved to townships numbers one to five, which bordered the St. Lawrence west of Soulanges.

The St. Lawrence Valley was chosen for two reasons. In the first place they were among the last of some 60,000 Loyalists to arrive in Canada, and the Maritimes and Quebec were already being overcrowded. Secondly, their location along the St. Lawrence was governed by strategic considerations. Simcoe expected these Loyalists to serve as a safeguard and defense against possible future aggression. They were later to fulfill this role in the War of 1812.

On arrival at the St. Lawrence they were sent to two centres. The main centre and supply base was called New Johnstown but later re-named Cornwall. The second depot was Williamstown. Here they were given farm equipment, animals, seed, some building materials, food and clothing. Assistance was continued over a period of three years, and food was provided again later, when local crops failed in the "Hungry Year" of 1788 to 1789.

The Loyalists were also given fairly generous land grants, the precise location of which was determined by the drawing of lots. These land grants were:-

Field Officers	5,000 acres
Captains	3,000 acres
Subalterns	2,000 acres
Non-commissioned	200 acres
Privates	50 acres

Wives and each child were granted fifty acres, and on coming of age a Loyalist's child was to receive 200 acres. In 1787 some of these grants were increased, non-commissioned officers receiving an extra 200 acres, privates an extra 150, while a further 200 acres was given to every family which had settled and improved its lot. With the granting of this land the Loyalist occupied approximately the first three concessions, or one third of the five river front townships. However, north east of Cornwall their settlement extended along the Raisin River to the sixth and seventh concessions. This reflected the importance of rivers as lines of communication and sources of water power to early settlers, and the more rapid advance of settlement along the river valleys was a trend that continued until the late 19th century. It also reflected the proximity of Cornwall and Williamstown - the two supply bases.

The Government assistance given to the Loyalists contributed much to the success which they achieved. The Loyalists were also helped by their previous pioneering experience in the Mohawk Valley; by their proximity to good markets at Montreal, at the garrisons and among new immigrants; and by their freedom from Indian attack.

The Loyalists were soon joined by other immigrants. In 1786 500 Highlanders reached Easternmost Ontario direct from Scotland. In the following years other groups arrived, not only from the Highlands, but from other parts of the British Isles as well. By 1800 there was hardly a Scottish clan not represented along the St. Lawrence, and settlement had extended from the front five townships to the back townships of Finch, Roxborough, Kenyon and Lochiel. By 1800 settlement was also beginning along the Ottawa River in the townships of Clarence, Longueuil, and Hawkesbury.

The Government granted free land to later settlers until 1827, but, unlike the Loyalists, they had to pay survey and patent fees. Nor were later settlers given free supplies of farm equipment, food or clothing. After 1827 free grants of land were made only to soldiers, Loyalists' children, and along certain colonization roads. With these exceptions the New South Wales System was used by which Crown Land was sold on credit.

4. The Procedure of Land Surveying.

The procedure of land surveying was of considerable importance in the settlement of Easternmost Ontario. It largely determined the shape of farms, and the road pattern. It established the township boundaries and laid out the sites and street pattern for future towns expected to develop. Furthermore the progress in surveying Easternmost Ontario determined the rate at which, and the areas in which, land became available for settlement.

The systematic surveying of Easternmost Ontario was begun in 1781 in preparation for the arrival of the Loyalists. The only area surveyed before this time was Longueuil on the south shore of the Ottawa. Longueuil was a French seigniory granted in 1710 to the Baron of Longueuil and it was the only one within the present boundaries of Ontario. The western part of the seigniory was divided up into long lots but like most of the other seigniories granted in the 18th century it was not settled. In 1796 N.H. Treadwell bought and subdivided the remainder of the seigniory into irregular lots. Some settlement began soon after this although he did not receive a patent for the property until 1827.

Apart from Longueuil, Easternmost Ontario was surveyed after 1780 and followed the British rectangular lot system. Detailed instructions were given on how the survey was to be done. In areas of probable value for settlement, townships were to be laid out, for, "It has been found by experience that the settling planters in townships had very much redounded to their advantage".[1] The instructions added that townships should include, "a necessary part of the River St. Lawrence", which had become the major communication route. Townships fronting navigable water were to be nine miles wide, and twelve deep. Inland townships were to be ten miles square. Many townships do conform to this shape - such as Cumberland, Clarence and North Plantagenet. Modifications were necessary to allow for the eastward narrowing of Easternmost Ontario and other townships were given a rhomboidal shape. Town plots were to be laid out, covering one mile square at the centre of inland townships, but along the middle of the waterfront for river townships. Actually few of these planned towns ever developed, though Cornwall is a notable exception. The township was also to be divided up into ranges or "concessions", and the concessions into lots. The concession lines were to be surveyed at $1\frac{1}{4}$ mile intervals from the township baseline, with road allowance at each concession line and at two or three mile intervals across the concessions.

In practice the surveying of the townships was a gradual process. Between 1781 and 1784 the survey of the first few concessions between Kingston and Montreal was completed. By 1800 the survey had been extended back to the inland townships of Stormont and Glengarry and also along

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1. Series Q. Dominion Archives 62A p. 114., quoted in Patterson, "Land Settlement in Upper Canada 1783-1840, Ontario Archives 1920.

the first two concessions bordering the Ottawa. The survey and subdivision of Easternmost Ontario was finally completed during the first quarter of the 19th century. None of the townships were completely surveyed, as had been hoped, before settlement of the first concessions began, and in a few instances in the Ottawa Valley settlement preceded the survey. Thus while most farms houses border the concession roads, the location of some farm houses bears no relation to the roads.

5. Political and Administrative Changes.

Even though these townships were laid out by the British Government in quite a different pattern from the earlier French subdivision they were at first subject to French law, called seigneuries, not townships, and numbered in the French system.

Growing discontent and political pressure from the Loyalists and other British settlers soon brought about a number of changes. First the numbered townships were given names. From east to west they were Lancaster, Charlottenburg, Cornwall, Osnabruck and Williamsburg. While the Scots predominated in numbers and in public life there was a substantial number of Germans. This may explain the German township names as well as the German names at first used for the administrative districts created in 1788. An alternative explanation is based on the German origin of British royalty. When the Ontario settlements were divided into four districts in 1788, Easternmost Ontario came within the "District of Lunenburg". The name was changed to "Eastern" in 1792. These administrative divisions became defunct in the mid 19th century.

The second and most significant change was the division of Canada into two provinces, "Upper" and "Lower" in 1791 by constitutional act. This act stated that, "All lands which shall be hereafter granted

within the said province of Upper Canada shall be granted in free and common soccage, in like manner as .... in that part of Great Britain called England." Those already holding land grants in Upper Canada were to surrender their old certificates, receiving in return new ones according them free soccage. Thus the legal problem of land tenure in Ontario was solved.

One year after this act, another was passed establishing the first nineteen counties in Ontario. Easternmost Ontario was divided, in 1792, into two counties, Stormont and Glengarry, stretching from the St. Lawrence to the Ottawa Rivers. Land boards were created to facilitate the granting of land, and the board for Stormont and Glengarry had five members. In 1798 an act for the redivision of Upper Canada counties was passed, proposing the subdivision of Stormont and Glengarry to form two new counties, Russell and Prescott. This reflected an expected growth of population and the establishment of the towns along the Ottawa River. The Act was given royal assent and the new counties established in 1800.

While the 1791 Constitutional Act solved the problem of land tenure in Upper Canada the problem of the method of granting land remained. First, the specified plan for riverside townships reserved a substantial water front area for the town's needs and as crown reserves, thus, reducing the number of land grants that could be made in the first and second concessions. It was only in the third concession that twelve farms could be established. This served only to add to the transportation problems facing the settler.

Second, the practice of giving 200 acres to a Loyalist's child reaching maturity proved unsuccessful. A girl could not consider

clearing and setting a fresh tract of land by herself. Many of the boys remained on their father's farm to take it over on his retirement. Sometimes too, these grants were too remote from the family farm. The result was that these grants of land were often sold and "Loyalist Rights" became an accepted article of commerce. But they were worth little since any immigrant could receive 200 acres of free land on application, payment of very low fees and making the oath of allegiance. Thus prices for "Loyalist Rights" ranged from a gallon of rum to £6 per 200 acre lot.

These "Loyalist rights" were often bought up by land speculators who began to appear in Upper Canada after 1791. Before this time there had been little interest in land speculation, but, as settlement extended and the economy changed from fur trading to agriculture and lumbering, attention was increasingly focussed on the land.

Land speculation became more severe after the introduction of the "leader and associates" system of 1792. Large grants were made to individuals who promised to bring in settlers to occupy the lands granted. In October of that year ten petitions for townships were considered at one meeting. Six were granted and four held over for further consideration. The leaders and associates each received a land grant of up to the 1,200 acres maximum allowed, with 200 acres being reserved for each settler to be brought in. The leaders were under obligation to bring in two hundred families.

The scheme was a failure. Many leaders wanted to hold onto the land and then sell it later at a profit. Others brought in only a few families and considered the remainder of the township as their own property. Thus the Government was forced to reappropriate many of the townships granted. At one meeting in 1796 twelve township grants were

rescinded and the Governor reported as follows:

> Be it known, therefore, to all concerned that it was this day resolved in Council, that all persons claiming to hold land by virtue of an Order in Council to receive His Majesty's grant in and for the townships herein after named have forfeited the same. That the townships of Osgoode, Wolford, Montague, Russell, Kitley, Loughborough, Huntingdon, Rawden, Murray, Clarke, Whitby and Windham, are, and they are hereby declared, vacant, and free for the admission of such persons as shall be desirous of occupying and settling the same agreeably to the terms and the conditions of the proclamation aforesaid.[2]

A year later, in 1796, the practice of granting townships was discontinued. While this did much to relieve the land speculation problem it did not remove it. Federal Archives maps of Easternmost Ontario suggest that as late as 1825, some land granted on the Ottawa south bank was not yet settled and was impeding settlement in the concessions beyond.

Land speculation was not as bad in Upper Canada as in the United States and probably did little to reduce colonization, at least until 1815.[3] But it may well have played a significant role in directing and shaping the spread of settlement in Upper Canada, and it may well help to explain why settlement developed so much later in Russell and Prescott than in Stormont and Glengarry. It certainly helps to explain why the solid spread of settlement hoped for was not achieved.

The third serious problem of the land grants was the crown and clergy reserves. In 1789 it was finally agreed that the two-sevenths of

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2. Ontario Archives 1906 p. 186. Report of John Graves Simcoe for the 26th May 1796.
3. After 1815 when immigration became substantial the practice was normally to purchase land, sometimes cleared, from private land agents or small-scale-land speculators, for most of the better locations had already been granted.

land that was to be reserved for the crown and clergy should be laid out on a chequerboard plan. The clergy reserves were sometimes rented but on the whole these reserves remained for decades as barriers to clearing the land and improving the roads.

For the immigrant arriving in Easternmost Ontario the procedures of making the land survey and the land grants were of prime importance. The land survey determined how much land as officially available for settlement, though some immigrants squatted on unsurveyed land. The procedure of granting land determined how much of the surveyed land remained open for further settlement.

6. Agriculture and Lumbering in the St. Lawrence 1783 to 1850.

Once settled, the economy which the immigrants were to develop depended on their ability and inclinations, on the resources of the land and the technical knowledge and capital to develop those resources, and on the market available for their products, which in turn depended heavily throughout the period 1783 to 1891 on British tariff policy.

The settlers arriving in Easternmost Ontario encountered a thick, predominantly deciduous forest vegetation. Sugar maple and beech were the dominant species, with white and red pine, hemlock, balsam, basswood, red oak and white birch in association. The vegetation varied with soil and drainage conditions. The sandy soils of Prescott and Russell supported white pines. The poorer drained clay soils were covered with white elm, soft maple and ash. On the margins of the bogs grew black spruce and tamarack. Pioneers soon learnt to judge the soil from the vegetation. Land covered with beech and maple was considered as second class but

satisfactory. Poorly drained land, or land covered with pine was thought hardly worth accepting.[4]

For the first ten years, from 1783 to 1804, after settlement along the St. Lawrence had begun, there was no market for timber. The land was cleared, the trees felled, cut into logs, and then burnt. This work was done in winter with each family clearing about an acre of land a year, and then organizing logging bees to carry the logs into piles for burning. The progress was slow but yielded one export, potash, which could bear the transportation costs to Europe. Thus potash was the first export of these early pioneers and it remained of some importance until 1850.

The land could not be ploughed until the roots of the felled trees had rotted, which took about five years. During this period cultivation was limited to hoeing and harrowing, and little could be done to stop the growth of seedlings and weeds.

Farming was general and largely subsistence. However, wheat became an important cash crop because of the market in Britain, and later the U.S.A. and because of its high value to bulk ratio and good keeping qualities.

On freshly cleared land wheat would be grown in combination with oats, corn, vegetables, grasses, and legumes. In the following years wheat might be the main crop and was sometimes grown continuously until the soil was exhausted; although the importance of crop rotation was

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4. Quoted in R. L. Jones, "History of Agriculture in Ontario 1613 to 1880". 1946 Toronto p. 20. from Talbot.
"Five Years Residence". Vol. I, p. 159

recognized by some farmers, particularly the wealthier English and Lowland Scots, and the Pennsylvania Dutch, who had the best reputations but were few in number in Easternmost Ontario. The rotations practised varied and after wheat, another grain or potato crop was grown, or else the land was used for hay or pasture. Summer fallows were sometimes employed instead of a rotation.

The Highland Scots were not the most successful farmers in Upper Canada. They were well established by 1800 and normally had wheat for export but the St. Lawrence townships where they predominated were not as prosperous as some other parts of the Province, such as the Bay of Quinte region near Kingston.

Some of the Highland Scots preferred the role of pioneer to farmer and once they had cleared part of their land, they sold it and moved to the backwoods. The profit made clearing the land provided their livelihood. Further substantial outmigrations occurred because some farmers sold out to buy larger farms further west or were forced to leave when they were unable to meet mortgage payments. By 1820 most farms in the older areas had lost their original owner.

Agriculture has always been the basis of the St. Lawrence rural economy. After 1804, however, timber too was exported. The establishment and growth of lumbering in Easternmost Ontario after 1804 was a direct consequence of the continued British need for timber imports, and the insecurity of Baltic supplies due to the Napoleonic Wars. Britain could not build and repair the ships of the Royal Navy without timber imports. Not only were domestic supplies of oak inadequate, but there was a critical shortage of large pines for masts and spars as no suitable pines grew in the British Isles. In the mid 17th century Britain

had imported masts from New England, but with the beginning of the Revolutionary War in 1775 the St. John Valley had become the main source. In 1804 the centre of this industry shifted to the St. Lawrence and Ottawa Valleys, when Britain gave out a large contract for timber from this area.

Freight costs were three times higher for St. Lawrence than for Baltic timber, and Britain had to introduce correspondingly high tariffs against Baltic timber to permit the Canadian industry to develop. The differential duties introduced by Britain enabled Canadian timber to compete on equal terms with that of the Baltic and for the first sixty years of the 19th century Canada was the major supplier of timber. Prices were variable in Britain, however, and the industry was somewhat risky.

The basis of the timber industry was broadened in the early 19th century, and as well as masts, squared timber and deals were exported. Squared timber is pine trees on which four flat edges have been cut by axe. These were usually exported to Britain for finishing. Where water power was available the squared timber was sometimes cut into deals, or soft wood planks. By 1812 there was a sawmill at Plantagenet on the South Nation River, and 1817 one at Hawkesbury. Saw milling was the basic industry at Hawesbury in the beginning, though at present its main products are wood pulp, plastics and cellulose.

While the basis of the timber industry was broadened, pine remained the most valuable tree. Spruce, oak, elm and ash were also valuable but beech and maple continued to be burnt for potash. The selective cutting of trees for timber, the growth of the industry and the damage caused by fires produced a fairly rapid shift of the industry.

By 1820 rafts were being floated down from Eastern Lake Ontario, and by 1840 from Lake Huron. Lumbering expanded along the Ottawa River and tributaries as far north as the Bonnechere by 1812, and had reached Deep River by 1830. Timber was coming from Lake Temiskaming by 1837, and by 1850 from the headwaters of all the Ottawa tributaries. This expansion was facilitated by improvements in transport and communications. By 1833 the first Carillon and Grenville canals on the Ottawa River had been completed. After 1830 steamboats were used to tow the timber rafts. At the same time dams and timber slides were being constructed to overcome the rapids on the Ottawa River and its tributaries.

The timber industry in the St. Lawrence and in the Ottawa Valleys had many points in common. But there were significant differences between the two valleys in its importance and organization, and in its relationship with and influence on settlement.

Settlement along the St. Lawrence predates the timber industry and lumbering continued to follow the frontier of agricultural settlement and the clearing of the land in the southern counties. Large quantities of timber were exported but lumbering remained secondary to agriculture.

The reverse was true in the Ottawa Valley. Here settlement of the land lagged behind the advance of the timber industry. Agriculture was secondary to lumbering, and dependent upon it for a market for its produce, and for a supplementary source of employment for its workers.

The organization, too, was different. Along the St. Lawrence the settlers cut their own lumber. In the early 19th century when the timber industry of the Ottawa Valley was still concentrated in Carleton, Russell and Prescott, some of the St. Lawrence settlers migrated

annually to the timber shanties on the sand plains and along the South Nation Valley, but they were principally farmers and much of their lumbering was done individually on their own land. They usually sold their timber at the St. Lawrence waterfront where it was rafted to Quebec in large drams by specialized firms.

Thus lumbering did not directly affect the advance of settlement along the St. Lawrence. Though it supplied a major source of income agricultural exports, notably wheat, were more important. On the whole the timber industry was a doubtful benefit. The slow progress in clearing the land was further retarded where settlers spent their winters lumbering in the Ottawa Valley. The effects of the timber industry were decidedly diletereous where they lost precious summer time in selling their timber or rafting it down themselves to Quebec.

There is little evidence to support Campbell's assertion that by the late 18th century the Glengarry settlers, "did not fall short of having as much land cleared as the adjacent French who have been more tha than a hundred years in possession" [5] According to Lord Durham, "a very small proportion (perhaps less than a tenth) of the land granted to Loyalists, former soldiers, government officials and mere favourites had been put under cultivation or even settled," by 1838.[6]

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5. Campbell. "Travels in the Interior Inhabited Parts of North America" p. 23, quoted in L. R. Jones Op. Cit. p. 123.
6. L. R. Jones, Op. Cit. p. 64.

In 1843 it was written that,

> If farmers of the Eastern District (Dundas, Stormont and Glengarry) in general and more particularly those of Highland Scotch descent (who perhaps are the most numerous class) would pay but a little more attention to the speculative undertakings of the lumber business, many a good farm would be released from the death grasp of a mortgage.[7]

Maps dated 1867 show that even at this late time much of the land of Stormont and Glengarry remained uncleared and census data shows that in 1871, 40 to 50 per cent of the land in these two counties remained wooded.

7. Lumbering and Agriculture in the Ottawa Valley 1783 to 1850

While the timber industry was a mixed blessing to settlement along the St. Lawrence the reverse was true along the Ottawa. In the Ottawa Valley lumbering was the first big incentive for settlement and agriculture. Without the lumber industry settlement would have been still further delayed. For with the beginning of settlement and the start of an agricultural economy along the St. Lawrence, the Ottawa Valley lost its importance as a through routeway. Its significance was partially and temporarily revived with the canalization of the Ottawa and Rideau Rivers and with the introduction of the steam boat. But in the early 19th century the Ottawa became a virtual cul-de-sac.

The pioneers along the Ottawa Valley were the lumbermen and lumbering was a distinct industry by itself and not a by-product of clearing the land. The most famous of these lumbermen was Philemon Wright who settled in Hull in 1800 and floated his first timber rafts to Quebec in 1806. Others included Mear and Hamilton who settled not long after at Hawkesbury. The timber was rafted down the Ottawa in "cribs", which were

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7. L. R. Jones, Op. Cit. p. 115. Written in the Cornwall "Observer" and quoted in the Montreal "Transcript", 1843

smaller than the St. Lawrence "drams". These cribs could be quickly taken apart and reassembled when passing rapids and waterfalls. The lumbermen did their own rafting and there was no division of cutting and rafting as there was along the St. Lawrence.

The industry was organized on a small scale for the first few decades. Capital requirements were not large and the lumbermen were financed by the timber buyers or the middle-men, at the seaports. Their labour requirements were met by poor immigrants who had to work out to acquire enough money to buy and equip a farm, and by farmers and farmers' sons from the St. Lawrence and Ottawa Valleys who supplied teams of oxen. Of the three, the lumbermen, poor immigrants and farmers, the farmers were the least numerous and never the typical figures of the industry. These men worked together in small bands of perhaps four or five at first. It was only towards the middle of the century that the big operators, running several shanties and employing several hundred lumberjacks, took control of the industry.

During its early stages when the industry was organized on a small scale and important in Easternmost Ontario, the timber industry did not attract any substantial settlement. This was partly due to physical conditions. The poorly drained clay soils were avoided by settlers until the seond half of the 19th century. Some settlement occurred on the sandy soils when these were exploited for their pines. However, the soils became exhausted after a few good crops and settlers had difficulty in selling their farms when they left, to follow the advancing timber industry.

Location and transportation were more decisive than physical factors. The stimulus which the timber industry gave to the growth of

local agricultural settlement was proportional to the size of the industry and the difficulty and cost of shipping in supplies. It was easy enough to bring in supplies to Russell and Prescott, but as the industry expanded in size and progressed up the Ottawa River and its tributaries the problem became more serious and the lumber operators found it advantageous to actively encourage agricultural settlement.

Settlers, in their turn began to find that farming near the lumber shanties was very attractive. It gave them an assured and sheltered cash market as well as the opportunity for off-farm work. In 1820 when hay prices had reached £4 a ton in the Upper Ottawa Valley - itself a relatively high figure - hay was selling at £10 a ton in the Upper Madawaska Valley. Transportation costs were, in fact, double or treble the original cost of the hay.

It was not only a question of price advantage. The Ottawa Valley was the only part of Upper Canada with a large market for farm produce. Moreover the farmers of the Ottawa Valley could sell their produce for cash, while in other parts of the Province farmers had to exchange at least a large part of their surplus produce for merchandise.

Thus agricultural settlement in the Ottawa Valley was as rapid during the first half of the 19th century as it had been slow in starting. This settlement largely by-passed Russell and Prescott, and while it had begun in all the townships of Russell and Prescott by 1840 the rapid growth of population here occurred in the second half of the century.

Not only did the timber industry promote active agricultural settlement in the Ottawa Valley, with the exception of Prescott and Russell, it also gave this region added distinctiveness by modifying the type of agriculture throughout the Valley.

By 1830 the Ottawa Valley was no longer able to produce all the food supplies needed by the timber shanties. Agriculture was, therefore, concentrated on those products with a high bulk to value ratio, primarily hay and oats. Pork was imported mainly from Cincinnati. Wheat and flour were supplied from western Upper Canada and the Lake States. Even Russell and Prescott were not self-sufficient in wheat and had to be supplied from the Bay of Quinte and beyond.

Farmers living in Carleton, Russell and Prescott were some distance from the lumber shanties by 1830 and had to portage their products upstream. During the three winter months they could make two round trips as far as Lake Temiskaming. Some took a single load to the shanties and worked there for the winter. Others carried produce only as far as Arnprior, Pembroke or other depots.

While lumbering promoted and stimulated agricultural settlement in the Ottawa Valley, it was not without drawbacks. Recession in the timber industry brought depression to local agriculture. Moreover local agriculture depended on poor transportation facilities for its monopoly of the market for hay and oats and as the roads became improved by the middle of the century, and railways were built, they began to lose this monopoly. This was all the more serious because much of the land had not been particularly suited to agriculture in the first place. Location, not real agricultural worth, had been the determinant of settlement. The result was inevitable. Land abandonment started. Rural depopulation occurred in Lanark and areas further north after the 1850's and despite the building of colonization raods through the Ottawa-Huron tract after 1840 little new settlement occurred.

The period in which agricultural settlement could take place in the Ottawa Valley irrespective of its true agricultural potential was over. The timber industry promoted agricultural settlement in the Valley but it could, in the final analysis, only survive where it was based on good soil.

8. Population and Agriculture in Easternmost Ontario 1850 to 1891.

By 1850 the growth of the Camadian population by natural increase and immigration was putting pressure on accessible areas of good soil. By 1850 the rural overflow of population had started in the more densely settled counties of Quebec and in Glengarry and was spreading to the front townships of Stormont and the eastern townships of Prescott.

The large unsettled areas of fertile soil in Russell and Prescott now began to be occupied, and rural population growth was rapid in contrast to the decline further up the Ottawa Valley. In 1849 Mgr. Guigues, Bishop of Ottawa, founded a Colonization Society which aided the migration of French, particularly from the Quebec counties of Two Mountains, Soulanges and Vaudreuil to Russell and Prescott. French settlers also migrated into Glengarry, and later Stormont.

The French settlers moving into Russell and Prescott occupied mainly the poorly drained clay areas since they had been avoided by earlier settlers and were still available for settlement. The 1866 Municipal Drainage Act and the 1872 Provincial Drainage Act financially assisted the drainage of these soils.

As the French approached and reached a majority the out-migration of the English speaking people was accelerated by clashes in local government and the desire to move to English areas further west. In Easternmost Ontario the French rapidly became the dominant element of

the population.

At this period, the second half of the 19th century, the rural economy of Prescott and Russell was changing. The change was not due in any way, however to the influx of new settlers. It was caused by the loss of the market for hay and oats at the timber shanties.

In the St. Lawrence too, changes were taking place in the agricultural economy. Wheat which had been the main cash crop was declining in relative acreage and absolute importance. The decline of wheat as a cash crop in Upper Canada in the second half of the 19th century, followed earlier declines in New York State. Wheat had begun to decline in importance in the Mohawk Valley of Eastern New York in the 1830's. The causes were soil exhaustion, insects, rust and competition from Virgin land to the west. By the 1840's the decline was spreading to Western New York State and by the 1860's to Upper Canada. The 1860's were a period of transition in Upper Canada agriculture.

The reasons for the decline of wheat as major cash product in Upper Canada were much the same as in New York State. There were two differences. The rust problem had been partially solved by the introduction of Red Fife wheat after 1838. The abrogation of the 1854 Reciprocity Treaty with the United States in 1866 largely deprived Canadian farmers of the American wheat and cattle market.

As in New York wheat was replaced by dairying. Cheese factories were opened in New York in the 1850' and were introduced to Ontario in 1865. Butter factories followed in 1873. The first cheese factory in Easternmost Ontario was opened by De Bellefeuille McDonald three miles east of Cornwall in 1867. In 1871 D. M. MacPherson opened a cheese factory on his farm in Bainsville and formed the Allengrove Association.

It was made up of 13 factories in Glengarry and Huntingdon Counties. In 1882 he was operating 34 factories. He acquired the McFarlane and Switzer groups in 1884 and by 1889 the Allengrove Association had about 80 factories. MacPherson was the chief salesman and opened an office in Montreal. He sold direct to the United Kingdom carrying out his transactions by cable. Outstanding cheese makers were hired to run the factories. Frank Herns who worked for the Allengrove Association became Chief Instructor for Western Ontario. In 1873 the Hawkesbury Dairy Co., was founded and opened a factory between Hawkesbury and Vankleek Hill.

The cheese factory associations began to break up in the 1890's. The Allengrove combination lasted until 1803. They had done a great deal to organize production and marketing in the cheese industry.

Associated with the rapid growth of dairying and cheese production in Easternmost Ontario came changes in the land use pattern. Wheat acreage declined relative to total crop acreage and the area in pasture increased. Land use still continued to vary between the Ottawa and St. Lawrence Valley even though the new agricultural economy established in each was the same. The differences were the inevitable reflection of broad physiographic dissimilarities between the two Valleys.

By the end of the first period the rural economy and land use pattern of Easternmost Ontario had assumed the elements of its present pattern. The change in the rural economy in both valleys after 1850 is not the reason for the growth of population in Russell and Prescott. This population growth represented an overflow of French from the more densely settled counties of Quebec. Conversely the growth of dairying was not due to the influx of French Canadians.

There is no relationship between the French settlement in Easternmost Ontario and the development of dairy farming in the first period. It will be shown that there is some connection between changes in dairy farming and rural outmigration in the second period.

9. Summary of the Stages of Settlement and Population Growth in Easternmost Ontario 1783 to 1891.

The growth of population and the expansion of settlement in Easternmost Ontario during the period 1783 to 1891 may be divided into three stages. These three stages are:-

(a) The establishment of the first substantial settlement along the St. Lawrence.1783 to 1804.

(b) The expansion of settlement north from the St. Lawrence 1804 to 1850.

(c) The Completion of Settlement. 1850 to 1891.

(a) Establishment of the first substantial settlement along the St. Lawrence 1783 to 1804.

Easternmost Ontario was first explored by Champlain who sailed up the Ottawa River in 1613 and 1615. There was no European settlement until 1783, however, for three reasons. There was unoccupied farm land more accessible to the east. The fur trade and scattered Indian settlement discouraged European settlement in Easternmost Ontario.

During and immediately after the American Revolution from 1775 to 1783 some 60,000 Union Empire Loyalists migrated to Canada. Most of them were settled in the Maritimesand Quebec but some one and a half thousand were moved to Easternmost Ontario.

The three factors which had prohibited European settlement in Easternmost Ontario in 1613 were no longer operative in 1783. Accessible farm land in the east was largely occupied with the arrival there of

many Loyalists. In Easternmost Ontario Indian fighting had stopped. The fur trade declined in relative importance with the coming of the Loyalists and start of agricultural settlement.

The Loyalists in Easternmost Ontario were settled along the St. Lawrence in the five townships of Lancaster, Charlottenburgh, Cornwall, Osnabruck and Williamsburgh.

They occupied the first three concessions in all these townships. In Charlottenburgh and Cornwall their settlement spread, along the Raisin River and its tributaries to reach the sixth and seventh concessions. This illustrates the importance of rivers for communications and as sources of water power for the grist and saw mills. Equally significant is the fact that the two Loyalist supply depots, from which they were provided with farm equipment animals, food and clothing were in these two townships. New Johnstown, later renamed Cornwall, was the main depot and situated on the river front of Cornwall Township. Williamstown, the second depot was near the mouth of the Raisin River in Charlottenburgh Townships. Thus, while Loyalist settlements occupied only a third of the other three townships, in Cornwall and Charlottenbugh it occupied two thirds.

The Loyalists were settled along the St. Lawrence rather than along the Ottawa River for strategic reasons, and this one of the major factors influencing the advance of settlement in Easternmost Ontario. It is largely responsible for the fact that from 1783 to 1850 the main advance of settlement was northwards from the St. Lawrence towards the Ottawa River, and one of the main reasons why the settlement of Stormont and Glengarry counties was completed long before the settlement of Prescott and Russell.

The second major factor that explains the northward advance of settlement in Easternmost Ontario, and the later settlement of Prescott and Russell, was the decline in importance of the Ottawa Valley routeway after 1783. The Ottawa Valley routeway to the Gt. Lakes and the West had been much more important than the St. Lawrence from 1615 to 1783. Its main advantages were that it was both shorter and safer than the St. Lawrence.

There were a number of reasons why the Ottawa routeway became so much less important than the St. Lawrence after 1783. The beginning of settlement in 1783 changed the emphasis of the economy from fur to agriculture, from the Canadian Shield to the Lowlands, and thus from the Ottawa River to the St. Lawrence. The end of Indian hostility and the introduction of larger boats, made the St. Lawrence as safe as the Ottawa. The Ottawa River became a virtual cul-de-sac thus further retarding the settlement of Russell and Prescott.

Other factors influencing the advance of settlement were associated with these two main factors. Stormont and Glengarry had the momentum of an earlier start. The frontier of settlement progressed where Loyalists' children kept and settled the 200 acres they were granted on coming of age though this was partially off-set by the out-migration of Loyalists to cheaper land further west. More important was the arrival of groups of immigrants from the Scottish Highlands and other parts of the British Isles after 1786. Most immigrants settled on land grants adjacent to the Loyalists and the wealthier immigrant often bought cleared land from the Loyalists.

The advance of settlement in Easternmost Ontario was reflected in, but was also influenced by, the progress in surveying the area. The

surveying of Easternmost Ontario was started by the British Government in 1781 along the St. Lawrence. The only part of Easternmost Ontario surveyed before 1781 was part of the Seigniory of Longueuil. By 1800 the survey of Stormont and Glengarry was largely completed, but the Ottawa River only the first two concessions had been surveyed. The survey of Russell and Prescott was completed during the first quarter of the 19th century.

Parts of Russell and Prescott were settled by squatters before the land was surveyed. Organized settlement could not, however, precede the survey. For example, the front of Hawkesbury Township was not settled until it had been surveyed in 1800 though it was granted in 1788.

At the end of the first stage of settlement in 1804, settlement had begun in all the townships of Stormont and Glengarry except Finch. The first settlement in Finch was in 1805. In Russell it had begun in Clarence Township, and in Prescott in the townships of Hawkesbury, Longueuil and Clarence.

(b) Expansion of Settlement 1804 to 1850.

The expansion of settlement in Easternmost Ontario from 1804 to 1850 continued to be influenced by the same two main factors noted in the first stage. A third factor, the timber trade, was added.

In Stormont and Glengarry lumbering was secondary to agriculture. The economy was based on general mixed farming with wheat as the main export. As land was cleared for agriculture during this second stage valuable species, particularly pine, were exported. Other lumber not required for local use continued to be burnt and the potash produced, exported. In Stormont and Glengarry the timber industry did not directly

affect the advance of settlement.

The timber industry in the Ottawa Valley surpassed and outlived that of the St. Lawrence. From 1804 to 1850 lumbering was the main industry in the Ottawa Valley and it had a considerable influence on settlement and agriculture.

The amount of settlement attracted by the timber industry depended on the scale of the industry and the cost of bringing in food supplies. As the industry grew in size and advanced up the Ottawa River and its tributaries, it attracted an increasing amount of settlement.

The timber industry organized on a small scale, was important in Russell and Prescott during the first three decades of the 19th century.

After 1830 the timber industry was dominated by the large timber "operators" with groups of two or three hundred lumberjacks now working in the more remote parts of the Ottawa Valley. The high cash prices paid for farm produce in these shanties encouraged the rapid growth of local agricultural settlements.

The effect of the timber industry in the Ottawa Valley was to encourage settlement after 1830 in the less accessible parts of the Ottawa Valley and Russell and Prescott were largely by-passed.

There were also two secondary reasons why settlement in Russell and Prescott was delayed between 1804 and 1850. These were land speculation and lack of roads, both of which impeded access to farm land. By 1826 Glengarry and Stormont had a relatively good network but only one road extended northwards to the Ottawa River. This was the military road from Lancaster to Hawkesbury. This joined a road at Hawesbury which followed the south shore of the Ottawa from Vaudreuil to L'Orignal.

The road was not extended from L'Orignal to Ottawa until 1850. There were four other important roads before 1850. Two extended a few miles so south from Cumberland and Clarence on the Ottawa River. The other two were longer and stretched from the Hawkesbury Military road west to the South Nation River.

By 1850, some settlement had commenced in all the townships of Russell and Prescott. The land adjacent to the roads was occupied with the exception of the road to L'Orignal where, as noted, it was still held by speculators. Settlement was also advancing up the South Nation River from Jessops Falls in the second concession of Plantagenet North, and downstream along the tributaries of the South Nation River from Carleton and Stormont.

In 1851 the combined population of Russell and Prescott was a little over 13,000. In Stormont and Glengarry it was over 32,000 and most of the land was settled.

The factors responsible for this differential expansion of settlement and growth of population were:-

(1) Momentum gained along the St. Lawrence through early Loyalist settlement.

(2) The much greater importance of the St. Lawrence than the Ottawa routeway.

These two factors were important during the first two stages of the growth of settlement in Easternmost Ontario.

(3) The timber industry in the Ottawa Valley during the second period.

Secondary factors were:-

(4) Slower progress in surveying the Ottawa Valley than the St. Lawrence Valley.

(5) Paucity of roads in Russell and Prescott until 1850.

(6) The land speculation along the Ottawa River.

(c) Completion of Settlement from 1850 to 1891.

The main factors which had been influencing settlement up to 1850 were no longer operative after that date. The momentum gained by the St. Lawrence settlement was spent. The fact that the Ottawa Valley was not the through routeway to Western Ontario was no longer of any consequence. The land along the St. Lawrence was settled, and French Canadians migrating to Easternmost Ontario were mainly occupying the vacant land in Russell and Prescott. The timber industry in the Ottawa Valley was declining and the operators were moving to the Ottawa Huron tract. In any case it no longer offered a sheltered market for farm produce since improved communications permitted supplies to be brought in relatively cheaply.

The major factor affecting the expansion of settlement in Easter nmost Ontario between 1850 and 1891 was the growing pressure on farm land in Quebec. The immigration of French Canadians from Vaudreuil, Two Mountains and Soulanges into Prescott reached substantial proportions even before 1850. By 1851 Prescott's population was more than three times greater than Russell's. The first townships of Russell and Prescott in which settlement was completed were Hawkesbury East (1875) Hawkesbury West (1840) Longueuil (1875) and Alfred (1850). These are the four river front townships in Prescott immediately west of Vaudreuil, Quebec. Thus after 1850 the expansion of settlement in Easternmost Ontario was increasingly westwards from Quebec rather than northwards from the St. Lawrence.

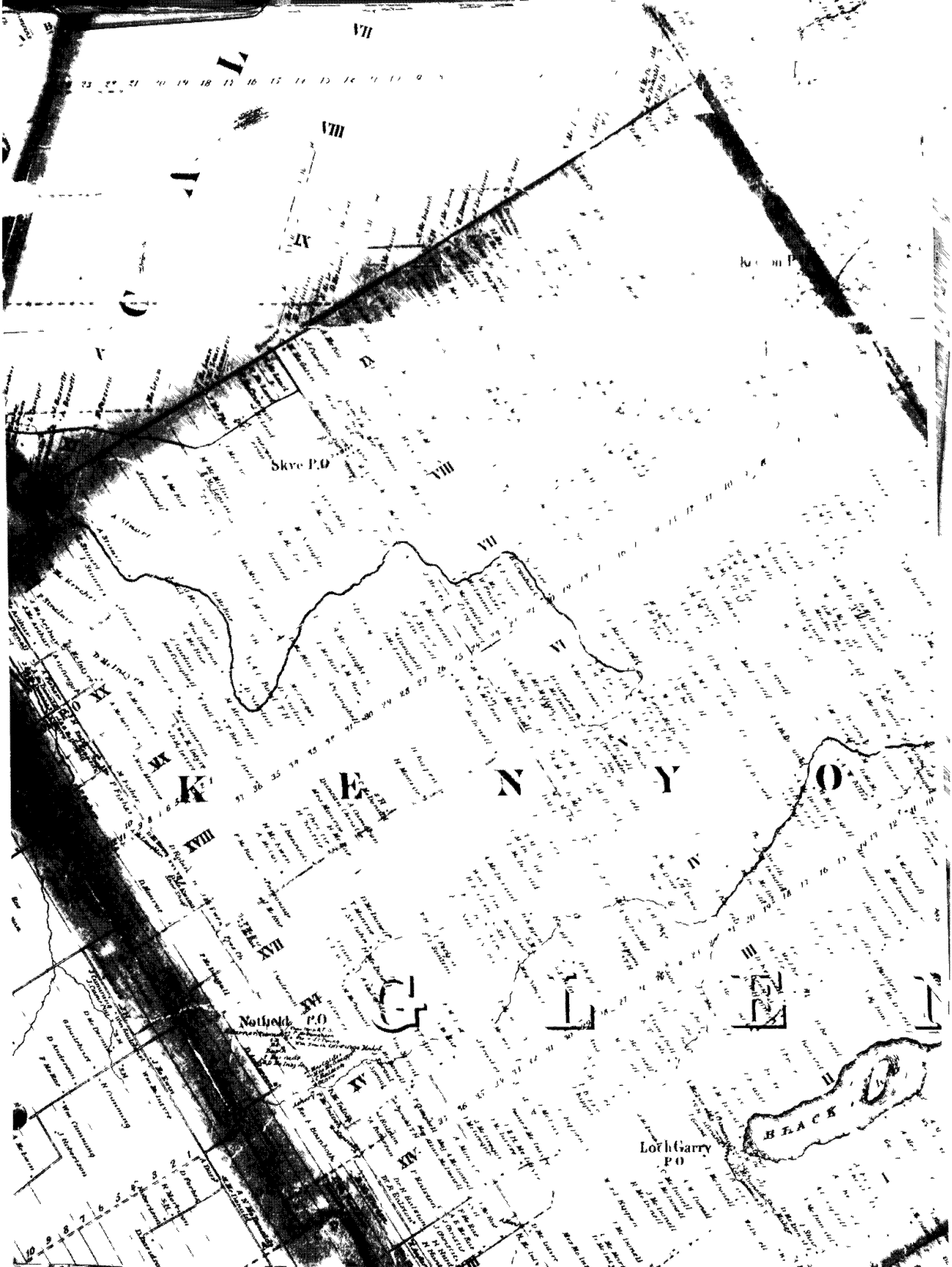
Skye P.O
Nothfield P.O
Loch Garry P.O
BLACK
K E N Y O

Diagram 1.4

Southward continuation of Diagram 1.3
Courtesy of The Dominion Archives, Ottawa.

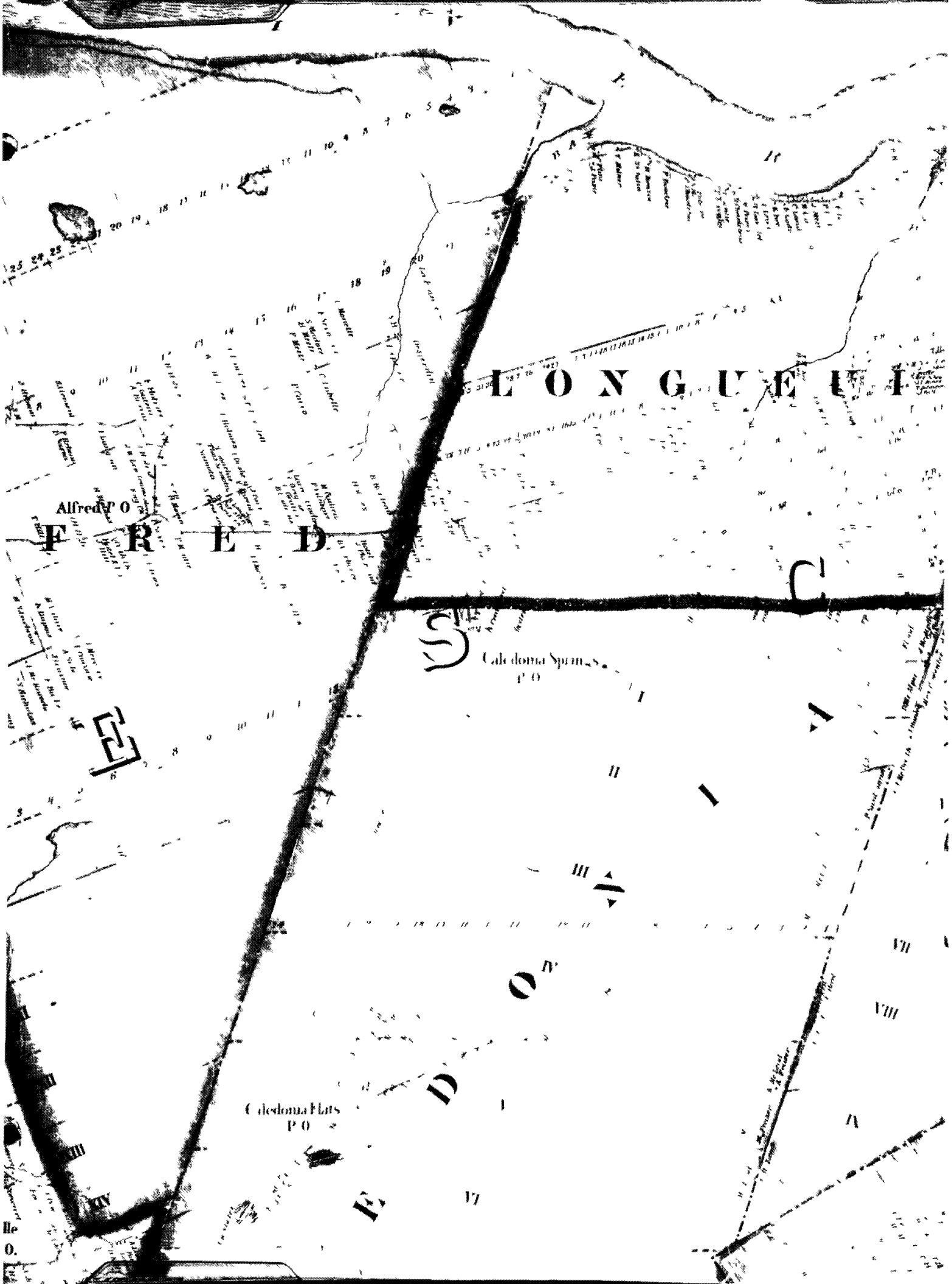
LONGUEUIL
Alfred P O
FRED
Caledonia Springs
P O
Caledonia Flats
P O

Diagram 1.3
Part of the:-

"Map of the Counties of Stormont, Dundas, Glengarry, Prescott and Russell, Canada West from actual survey under the direction of H.S. Walling."

Published by D. P. Putnam
Prescott 1862.
No Scale.
Courtesy of The Dominion Archives, Ottawa.

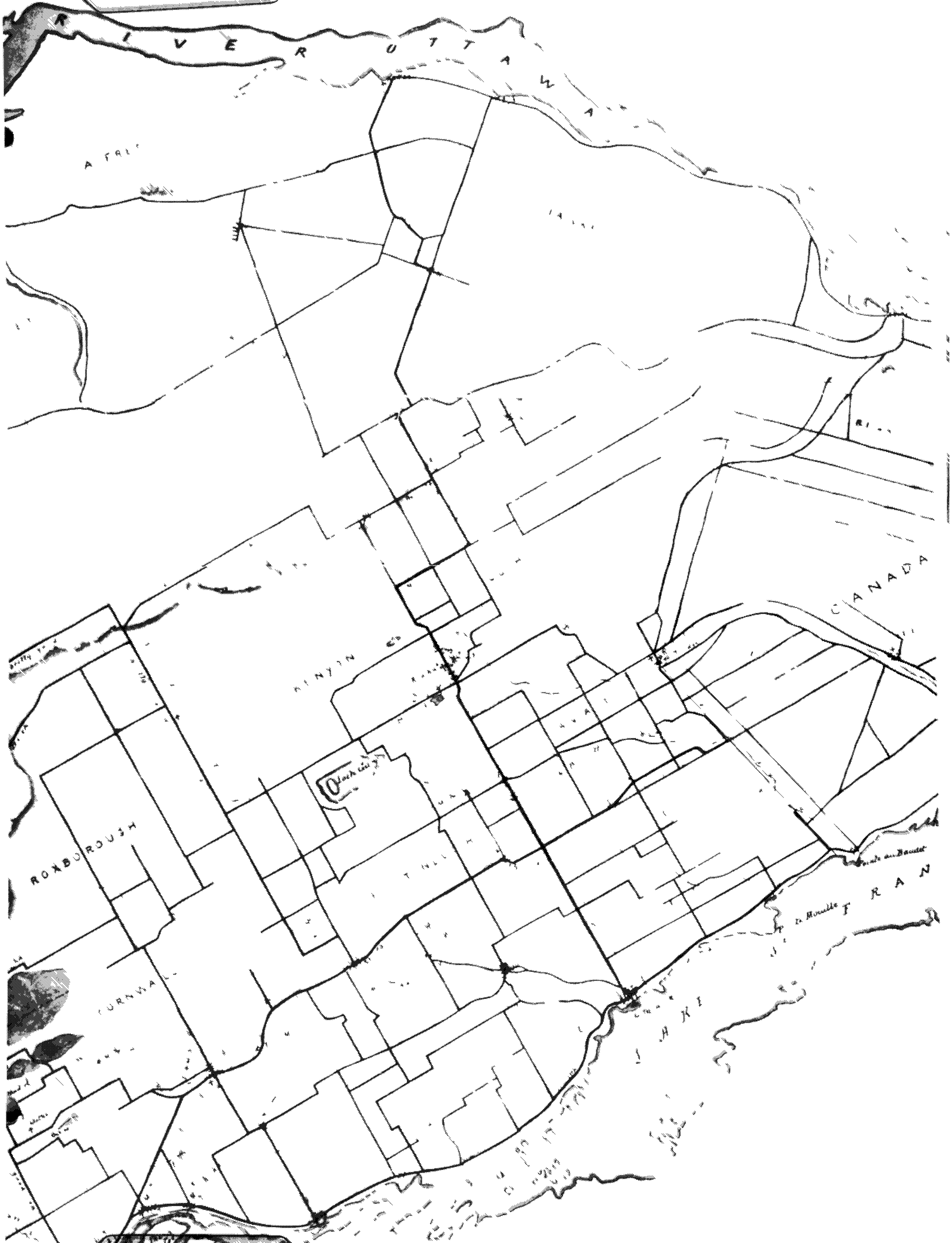
RIVER OTTAWA
ROXBOROUGH
CANADA
Pointe au Baudet

Diagram 1.2
Part of the:-
"Map of Principal Counties in Canada West Compiled from the most authentic sources and actual survey, district maps etc. by Major Baron de Rottenburg Quarter Master General." 1850.

Original Scale 2 miles to 1 inch.
Courtesy of The Dominion Archives, Ottawa

The immigration of French Canadians completed the settlement of Easternmost Ontario. It also changed the racial composition of the population, and by 1891 the French Canadians were the largest element of the population of Easternmost Ontario.

By 1891 the settlement of Easternmost Ontario was largely completed. Stormont and Glengarry had reached their maximum rural population figures. Prescott followed in 1901 and Russell in 1911. The first period, the expansion of settlement and population growth, was ending. In the first period from 1783 to 1891 net migration was sufficient to change the major settlement of the population from English speaking to French speaking. In the second period 1891 to 1956 net outmigration was sufficient to reduce the rural population. In none of the counties was the 1956 rural population greater at the turn of the century. In Glengarry it was little more than that recorded at the first census in 1951.

This first chapter has been concerned with the growth of European settlement in Easternmost Ontario and the factors that influenced it in the first period from 1783 to 1891. Attention in the second period from 1891 to 1956 will be focused on the pattern of net outmigration and on the factors that led to this outflow.

A Summary of Information in Appendix B of the Ontario Agricultural Commission 1881.

	Date of First Settlement	Percentage Settled in 1881	Population in 1880	Total Acreage	Acreage Cleared in 1880	Percentage of Brick-Stone or 1st Cl.Frame	Bldg's of Log or Frame	Cheese Factories	Creameries
RUSSELL									
Cambridge	1838	25	1337	60,000	4,665	5	95	-	-
Clarence	1810	75	2506	74,227	13,337	25	75	-	-
Cumberland	1780	67	3863	70,000	14,480	0	All	-	-
Russell	1840	80	2786	47,000	14,405	25	75	-	-
PRESCOTT									
Alfred	1830	All	2500	44,200	13,550	0	All	-	-
Caledonia	1815	67	1429	45,290	8,165	0	All	-	-
Hawkesbury E.	1780	All by 1884	4001	54,905	26,110	25	75	1	1
Hawkesbury W.	1800	All by 1840	1965	24,375	12,000	50	50	3	1
Longueuil	1800	All by 1875	997	16,823	9,603	12	88	-	-
Plantagenet N.	1815	67	3500	49,641	15,341	12	88	-	-
Plantagenet S.	1820	75	2159	48,615	11,118	7	83	2	-
STORMONT									
Cornwall	1776	87	3910	64,400	40,000	50	50	3	-
Finch	1805	All	2879	53,945	21,149	33	67	1	-
Osanbruck	1784	All by 1860	4790	62,011	33,205	67	33	4	-
Roxborough	1805	75	3763	7,554	21,120	50	50	4	-
GLENGARRY									
Charlottenburg	1783	All by 1883	5474	81,044	31,139	75	25	5	2
Kenyon	1790	All by 1874	4171	77,826	25,400	25	75	4	-
Lancaster	1786	All by 1870	4082	56,845	42,500	25	75	5	-
Lochiel	1794	All by 1834	4355	71,730	29,000	25	75	3	1

Bibliography

Books

Alexis, Rev. P. — Histoire de la Province Ecclesiastique d'Ottawa et de la Colonisation dans la Vallee de l'Ottawa. La Cie d'Imprimerie d'Ottawa 1897 two volumes.

Caron, I. — La Colonisation du Canada. Quebec 1916

Creighton, D. — The Empire of the St. Lawrence. Toronto, Macmillan 1956.

Guillet, E. C. — Early Life in Upper Canada. Toronto. The Ontario Publishing Co. Ltd., 1933.

Harkness, J. G. — Stormont Dundas and Glengarry. A History 1784-1945. Oshawa, Mundy-Goodfellow Printing Co. Ltd., 1946.

Historical Atlas of the Counties of Stormont, Dundas and Glengarry. Toronto. H. Belden and Co., 1879.

Jones, L. J. — History of Agriculture in Ontario 1613 to 1880. University of Toronto Press, 1946.

Lower, A. R. M. — Settlement and the Forest Frontier in Eastern Canada. Toronto, Macmillan 1936.

MacDonald, N. — Canada 1763 to 1841. Immigration and Settlement. Toronto, Longmans 1939.

Ruddick, J. A. — English, R. E., Drummond, W. M. and Latimer, J. E., edited by H. A. Innis. "The Dairy Industry in Canada". Toronto, Ryerson Press 1937.

Thomas, Cyrus — History of the Counties of Argenteuil, Quebec and Prescott, Ontario. Montreal, John Lovell and Son 1896.

Government Publications

Census of Canada — 1931 Vol. 1, pp 99 to 133
1951 Vol. 10, pp 11 to 33

Ontario Agricultural Commission 1881 Appendix B. Toronto, C. Blackett Robinson 1881.

Patterson, G. C. Land Settlement in Upper Canada 1783 to 1840. Ontario Archives Report Toronto 1921.

Articles

Landon, F. "The 1860's A Period of Transition in Upper Canada Agriculture". Ontario Agricultural College Review April-May 1937.

Ontario Department of Lands and Forests. "The History and Status of Forestry in Ontario". Canadian Geographical Journal Vol. XXV No. 3, pp 110 - 145. Sept. 1942.

Shortt, Georges "The Ottawa River". Canadian Geographical Journal No. 2 pp 115 - 134. Feb. 1931.

Taylor,G "Towns and Townships in Southern Ontario". Economic Geography Vol. 21 No. 2 pp 88 to 96. April 1945.

Weaver, W. F. "Ontario Surveys and the Land Surveyor". Canadian Geographical Journal Vol. XXXII No. 4 pp 181 - 191. April 1946.

Zavitz, E. J. "Reforestation in Ontario". Canadian Geographical Journal Vol. XXXIV No. 4 pp 156-180. April 1947.

Unpublished

Mackay, Ross Regional Geography of the Lower Ottawa Valley. Ph.D. Thesis University of Montreal 1949.

Dominion Archives Maps

Plan of Part of the New Settlements 1786. Patrick McNiff.

Plan of Part of the Grand (or Ottawa) River fronting the Townships of Chatham, Hawkesbury, Grenville and Carmarthen 1788. Scale 20 chains to an inch.

Plan of the Province of Upper Canada divided into counties by order of His Excellency John Graves Simcoe, Esq., 1793.

A Map of Part of the Province of Upper Canada showing the Proposed Route for a canal to unite the waters of Lake Ontario with the Ottawa River 1825.

Ontario Province by Chervett 1826. Scale 10 miles to an inch.

Plan of the Country between the Rivers St. Lawrence and Ottawa and the Rideau Canal 1841. Scale one mile to one inch.

Road from Caledonia Springs to Van Cleek's Hill to Rigaud Village 1846. Scale 2 miles to an inch.

Map of Roads in Upper Canada 1850. Baron de Rottenburg.

Map of Canada West 1762 surveyed under the direction of H. F. Walling.

Map of Cleared Land and Roads in part of Upper Canada 1867. Scale 1 inch to a mile. Halton Turner for the Army Engineers.

Chapter Two

Computing Net Migration - Theory and Results

A. Survival Ratio Method

i) The Theory with Examples

A Study of net migration from Easternmost Ontario, from 1891 to 1956, is hampered by an almost complete lack of data. Fortunately, the deficiency of data on population migration can be partially overcome by many methods of which two are standard, namely the survival ratio method and the vital statistics method.

The survival ratio method is based on the reasoning that a cohort, that is a group of people belonging to the same age group, can be traced from census to census, increased in age at each successive census by the length of the preceeding intercensus period. The initial size of the cohort is determined by the total number of births occurring in the period of the first age group, minus the total number of deaths, infant and others, which the cohort suffers during the same period.

For example, the top left hand figure in Table 2.1 indicates that there were 1,599 Russell males in age group 1 in 1921. This figure is the balance of males born between June 1911 and June 1921 minus all deaths which this cohort suffered in the same period. By 1931, this cohort was ten years older and, as indicated by the age group 3, was reduced to 1,242. Similarly, at each succeeding census, the size of the cohort was 762(1941), 522(1951), and 552(1956).

Once a cohort has passed through the first period and its initial size has been established, no further increase in its size can occur through births, and all further changes are the results of deaths and migrations. Unless, therefore, the cohort is augmented by net immigration, the cohort is largest at the end of the first period, after which it becomes successively smaller.

The losses which a cohort suffers due to deaths can be computed using the Canadian Life Tables.[1] Using death rate figures applicable to each five year age group for each sex, during each particular inter-census period, every age group can be projected from one census to the next. Then net migration simply equals the difference between the projected size of the age group and the actual size, as recorded in the census. Stated as an equation for any one age group: -

Net migration = Projected Population - Population at 2nd Census

where -

Projected Population = Population at 1st Census - total deaths between the two censuses.

Where the projected population is larger than the actual population, the result will be positive and will indicate a new inflow of population in that age group. Conversely, a negative result will indicate a net outflow.

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1. a) "Canada Abridged Life Tables 1871, 1881, 1921 & 1931". Ottawa 1931
   b) "Life Tables for Canada and Regions 1941 & 1931". Ottawa 1947
   c) "Provincial and Regional Life Tables 1950 to 1952 and 1955 to 1957" Ottawa 1960 Cat. No. 84 - 510 Occasional
   d) "Canadian Life Tables 1950 to 1952 and 1955 to 1957". Ottawa 1960 Cat. No. 84 - 510.

For example, the Russell male cohort age group 3 in 1931 was 1,242. In 1941, it was 762. As will be seen later, the estimated number of deaths 1931-1941 was 23. The projected population for 1941 is 1,219 and the actual population in 1941 was 762. Therefore, net migration = 762 - 1,219
= -457

It is thus estimated that there was between 1931 and 1941 a net outflow of 457 Russell males aged 15 to 20 years in 1931. This result can be given as a net migration rate by dividing net migration by the projected population. The formula used is:-

$$\text{Net migration rate for intercensus period} = \frac{\text{net migration} \times 1{,}000^2}{\text{Projected population}}$$

In the example above for Russell males,

$$\text{Net Migration rate} = \frac{457 \times 1{,}000}{1{,}219}$$
$$= 374.88 \text{ for intercensus period}$$
$$\text{or } 37.49 \text{ per year}$$

The survival ratio method cannot be applied to the age group or groups born in the intercensus period. It can be used only for those cohorts established by the time of the first census. Net migration of cohorts born during the intercensus period can be approximately computed by other methods but they are very lengthy and complicated and have not been attempted here.

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2. D. J. Bogue in "The Study of Population" edited by P. M. Hauser and O. T. Duncan, Chicago 1959, suggests on p. 491 that total mid-interval population be used. However, demographers make use of all three base figures, initial total population, mid-interval population and final projected population. There were no reliable mid-interval figures for the Eastern Ontario Counties and this explains the use of final projected population. As the number of net migrants was very large compared to number of deaths, the difference in results would be very small.

The great advantage of the survival ratio method compared to the vital statistics method is that it permits a very detailed study of both net migration and net migration rates. The vital statistics method gives more reliable figures for total net migration, but does not make a break-down of these figures possible.

2) Sources of Error in the Survival Ratio Method

The numbers of net migrants computed by the survival ratio method is affected by error in the census data, in the life tables and in the application of the life tables.

(i) Census Errors: Errors in population data in the Canadian censuses are probably very small. We can expect a certain amount of underenumeration together with limited false reporting of age. Lee states that underenumeration varies with age, sex race, socio-economic group and rural and urban residence.[3] The most important of these is the socio-economic group with enuneration being more complete with groups such as in Easternmost Ontario. More serious is the possibility of variations in underenumeration from census to census since this affects the compatability of figures for the cohorts. Errors in reporting age result from the fact that "People have rather marked preferences in reporting their ages to the census taker"[4] The Canadian Life Tables for 1950-52 and 1955-57 states in the introduction that "Deficiencies for the 1956 tables are much less than in previous tables. Birth

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3 Everett S. Lee, "Migration Differentials" Vol. I Preliminary Revision of Research Memorandum Philadelphia 1953. p. 50

4 Quoted by E. S. Lee, op. cit. (3) p. 50 from Warren Thompson "Research Memorandum on Internal Migration during the Depression" New York 1937. p. 54

and death registration is considered virtually complete while mis-statements of age and "unstated" ages were rectified by graduation of ages"[5]. Errors in population data are considered greatest for ages under five and over eighty-seven. Census data is not used for computing mortality data of these age groups. For ages under five registration data is used while for ages over eighty-seven "q_x" is extended algebraically [6].

(ii) Weaknesses in the Canadian Life Tables.

The census enumeration of population by sex and age groups may not be perfect but there is no count at all made of deaths by sex and age group on a county basis. Therefore, while error is not absent in the census data, the major sources of error result from weaknesses in and the use of the Canadian Life Tables to estimate the number of deaths.

Hamilton and Henderson have outlined a method of overcoming weaknesses in life tables by recomputing mortality figures from census data[7]. Unfortunately this method cannot be applied to Canada because external immigration has been substantial and significant. Since the Canadian Life Tables must be used, their weaknesses must be considered. The least satisfactory Canadian Life Tables are the earlier ones for the years 1871, 1881 and 1921.

The life tables for 1871 and 1881 were based on single year death data collected as part of the Census enumeration data of 1871 and 1881.[8]

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5. Canadian Life Tables 1950-1952, 1955-1957. p. 3 (op. cit. 1d)
6. Canadian Life Tables 1950-1952, 1955-1957. pp. 4-5 (op. cit. 1d)
7. Hamilton, C. H. and Henderson, F. M. "Use of the Survival Rate Method of Measuring Net Migration". Journal of American Statistical Association XXXIX, 1944 pp. 197-206
8. See Table 2, columns 1 and 2 for actual figures. Comments on these tables are given in "Canada Abridged Life Tables" (1a) and also in Canadian Life Tables. (1d)

This data has three disadvantages. (a) As the data is based on knowledge of only one year, it is likely to be unduly influenced by annual fluctuations in death rates. The 1921 data is also based on only a single year's figures, in this case obtained from the Registration System of 1921. Later, life tables were based on a three year period, centred on the census year in this way reducing the influence of short-term fluctuations. (b) The 1871 and 1881 tables are based on data from Ontario, Quebec, Nova Scotia and New Brunswick and are not broken down for the provinces. British Columbia, Manitoba and the territories were not considered, even though they had joined the Federation by 1871.[9] Moreover, within the Provinces considered, a larger number of people than in later censuses, did not state their age. The precise figures of the number of people enumerated in these two censuses is as follows:[10]

in 1871	3,689,257	people enumerated which equalled 94.5% of the total Canadian population.
in 1881	4,044,060	people enumerated which equalled 93.5% of the total Canadian population

(c) The third disadvantage of the 1871 and 1881 tables is that the figures are at five year age intervals commencing with age seven. The same is true of the 1921 tables. The result is that the median figure for each age group must be applied to the whole age group. For later tables in which figures are given for each year of age, average figures for the age group were calculated. These averages can be expected to give better results than a simple median figure. The absence of data for ages younger than seven makes computations impossible for cohorts

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9 British Columbia joined in July 1871, too late to be included in the 1871 census.

10 "Canada Abridged Life Tables" op. cit. (1a) p. 1.

aged 0 to 4 at the first census and 10 to 14 at the terminal census.

Despite these weaknesses the life tables were not considered unreliable. This judgement was based on a careful comparison of the 1871 and 1881 male and female figures with each other and with similar tables for the United States and Great Britain.[11]

The 1921 and later life table are much more satisfactory. The data is more complete and is broken down on a regional basis, so that figures for Ontario can be used rather than those for Canada as a whole. It is specifically stated that they are adequate for population projection work.[12]

> The kind of calculation to which the tables are adapted may be very simply indicated. If among the large group of whose age we know, we wish to calculate the number that will be alive one year from now, we multiply the number at each age by the P_x[13] for that age. This process is frequently used in estimating the future population of a country though it takes no account of possible migration. For most purposes, estimates of population in five-year age groups are sufficiently accurate.

It follows that, using five-year age groups and these tables, estimates of net migration, determined when later population figures became known, would also be sufficiently accurate for most purposes.

The weakest data used has been for the period 1891 to 1931. The data for the period 1931 to 1956 is more detailed, more complete and more reliable. Even for the earlier years the data is considered reliable enough to make it well worth using and the results obtained from it accurate enough to make them worth careful analysis.

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11 Canada Abridged Life Tables. op. cit. (1a) p. 4
12 Life Tables for Canada and Regions 1941 and 1931. op. cit. (1b)
13 P_x is the probability of a person age "x" of surviving one year to age "x - 1".

(iii) Weaknesses in the application of the Life Tables

The application of the life tables in the survival ratio method introduces further errors which require careful consideration. The first problem is whether the "q_x" ratio should be used, or whether a special ratio should be calculated from the "l_x" data. The "q_x" ratio is officially defined as "The probability of dying within a specified age interval of a person of a specified age "x" ". In the Canadian Life Tables, "q_x" applies to a person at his xth birthday for the following one year. Strictly speaking then, "q_x" cannot be applied to the census age group "x", for in the census each age group includes those who reached age "x" in the year preceeding the census date. It may, therefore, be assumed that the average age of census group denoted as "x" is actually "x + $\frac{1}{2}$" years. This problem can be overcome by determining special mid-year death ratios from the "L_x" data. "L_x" is the aggregate number of life-years lived by the survivors of the cohort during each age interval, or, in the artificial population, the number of persons age "x" at any given moment of the year. Special death ratios can be calculated from "L_x" figures using the formula:

$$\text{mid-year death ratio for age "x"} = 1 - \frac{(L_x + 1)}{L_x}$$

Similarly, mid-year death ratios for ages "x" to "x + 4"

$$= 1 - \left\{ \frac{L_{x+1} + L_{x+2} + L_{x+3} + L_{x+4} + L_{x+5}}{L_x + L_{x+1} + L_{x+2} + L_{x+3} + L_{x+4}} \right\}$$

However, the differences between the two ratios is always small and sometimes insignificant. For example, the "q_x" for Ontario males aged 25 in June 1956 is .00156.[14] The corresponding "L_x" and "$L_x - 1$" figures are 94,657 and 94,511 respectively.

$$1 - \frac{94,511}{94,657} = .00154$$

Thus the difference between the two ratios in this example is .00002. Before this difference would affect the result of the net migration computations, the size of the age group would have to be above 5000. But in no county of Easternmost Ontario did the actual male population in this age group in 1956 exceed 500. Therefore, for the purposes of this thesis the accuracy of the "q_x" figures was considered adequate. In fact, while "L_x" data should be used in studies of very large population groups, "q_x" is sufficiently accurate for studies of smaller groups on, for example, a county basis.[15]

There are more serious errors in the application of the life tables that apply both to "q_x" and "L_x" In the first place, tables constructed for Canada as a whole (for migration computations from 1891 to 1921) or for Ontario province (1931 to 1956) are applied to a number of Ontario counties individually. However, even age-specific mortality rates vary within an area as large as a province.

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14 "Provincial and Regional Life Tables 1950 - 1952 - 1955 - 1957. op. cit. (1a) p. 34.

15 Note that Kari Levitt in studying migration in the Maritimes used "q_x". See Kari Levitt, "Population Movements in the Atlantic Provinces". Atlantic Provinces Economic Council. Halifax, 1960.

Lee [16] found that in the United States these area variations were greatest in the case of infant mortality and mortality at the upper ages. Comparison of provincial and regional Canadian life tables indicates that the same is probably true in Canada, and that the smallest area variations occur for ages 5 to 45, the largest for ages above 90. No correction to the life tables can be made since the extent of the variation within the province is not known.

A second source of error, not generally recognized, is that in applying mortality data by the Survival Ratio method, it is assumed that all migrants survived the intercensus period in which they migrated and that all deaths were among those who did not migrate. This is clear when we recall the formula: net migration = census population - (previous population - deaths). Correction could be made for this but the difficulty of doing so is not justified by the magnitude of the error. In the earlier example of 1,242 Russell males aged 15 to 19 in 1931, there was a net migration of 457 compared with 23 deaths. If the mortality rates were the same for migrants as for non-migrants, then approximately a further 8 migrated but died giving a total net migration of 465, a difference of two per cent. In most cases, the error would be smaller than this, since migration rates are lower for most other age groups. However, in every case, whether net migration is inwards or outwards, this error will cause the estimates to be slightly too small since in every case they will be for only those who migrated and survived the respective intercensus period.

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16 Everett S. Lee, Migration Differentials Vol. I "Preliminary Revision of Research Memorandum". Philadelphia 1953.

There is a third and inevitable source of error in the application of the life table data. Mortality rates vary by year of age and from year to year. Therefore, the five year age groups should be broken down into one year age groups and separate death ratio applied each year to each one year group. But on the one hand, it is not possible to break down the five year age groups on a one year basis, and on the other hand, Canadian Life Tables have only been constructed for the years 1871, 1881, 1921, 1941, 1951 and 1956. This causes three problems:

1. the problem of interpolating mortality data for the missing census years between 1881 and 1921.
2. the problem of determining a single "q_x" factor to be applied to a five year age group.
3. the problem of adjusting these single "q_x" factors to take account of broad variations in the age-specific mortality rates as well as the increasing age of each cohort during the intercensus periods.

These problems have been met and partially solved in the following manner.

Problem 1: Interpolating Mortality Data from 1881 to 1921

The 1881 and 1921 life tables give only the median figure for each five year group. This has been multiplied by five to give a figure comparable with the sum of each group of five "q_x" factors in later years. This was a necessary first step in processing the "q_x" data. The decennial differences between the corresponding 1881 and 1921 "q_x" figures were calculated to the nearest five hundred thousandth and the "q_x" figures for the missing years interpolated

on a straight arithmetic basis. In view of the total lack of information for these years there seemed to be no justification for employing more complicated methods - such as a geometric progression - while attempting to fill in the missing data using graphical methods appeared too arbitrary. The results of this work are given in Table 23.

Problem 2: Determining a single "q_x" factor for each five year age group

There are several ways of determining single "q_x" factors to be applied to five year age groups. The simplest is to use the intermediate or "median" figure.[17] The best method would be to use weighted averages, but this would require the population numbers in each year of age which is not available. In this thesis, therefore, a simple arithmetic average is used, and each group of "q_x" ratios added together as the first step in doing this.

Problem 3: Adjustments of "q_x" ratios for changing ages and changing death rates

The adjustments for changing ages and changing death rates has been applied in a single step. The sum of the five "q_x" ratios for each age group has been added to the sum of "q_x" ratios for the ages which that age group had reached by the next census, and the total divided by ten. For the example of the Russell males age group 3 in 1931, the "q_x" was determined as follows:-

Ontario Males age group 3, 1931
sum of $q_{10 - 14}$ = .00769

Ontario Males age group 5, 1941
sum of $q_{20 - 24}$ = .01100

total of the sums divided by ten = .001869

17 Kari Levitt used a simple median figure in "Population movements in the Atlantic Provinces" op. cit. (10)

This value is given in table 2.4 for males, age group 3, 1931.

While this adjustment is only approximate, it does provide a much better result than that gained by using the mortality rates in the life tables. The accuracy of the method is greatest where there is only a small range in the values of "q_x" within the cohort and during the intercensus period. In the first age group and in later ones where the range is large, the error increases.

One final point has to be considered. While the "q_x" values have been adjusted in Table 4 to apply to each age group, both sexes, at every intercensus period, the size of these age groups is diminished at each intercensus year by the number of deaths in the preceeding intercensus year. The number of deaths in each age group cannot therefore be found by multiplying the number in the age group by the appropriate "q_x" value, times the number of years in the intercensus period. Instead, a geometric applies and must be used. The formula used in this thesis for computing net migration is:

$$nM = Py_2 - Py_1 (1 - q_x)^n$$

where

- nM = net migration
- Py_2 = population of given age group, given sex, given census year, given county.
- Py_1 = corresponding cohort at preceeding census
- q_x = mortality rates as given in Table 4
- n = length in years of intercensus period

In conclusion to the discussion on the survival ratio method, let it be admitted that the method is approximate. There are inevitable sources of error, errors in the census, errors in the life tables, and errors in the application of the tables. Greater refinements could have been used that are not employed here. But it is submitted that every refinement has been made that could produce

noticeable improvement in the results. Only those refinements that would have yielded insignificant changes have been discarded. What Smith[18] has said about the life tables applies equally to the use of them.

> (The Life Tables) suffer from the defects that arise when highly refined mathematical techniques are applied to observations or measurements which themselves are sadly lacking in precision. Until we get better data, less involved procedures based merely on approximations will yield fully as accurate results.

The results of the computations using the survival ratio method are given in Tables 2.6 and 2.7. A check on these results using the more accurate vital statistics method indicates that nowehere could the error be large enough to negate or reverse the trends and patterns of net migration in Easternmost Ontario, which emerge from an analysis of this data. Moreover, much of the error that has occured will be for the youngest and oldest age groups, for it is in these age groups that mortality is highest proportional to net migration. Accuracy is greatest for those age groups with which we are principally concerned, ages 15 to 65, within which is found the labour force.

B. Vital Statistics Method of Measuring Net Migration

3, The Theory

The value of the vital statistics method of measuring net migration in this thesis is that it provides a check on the results obtained by the survival ratio method. For while it is not possible to break down net migration by age group using the vital statistics

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18 L. Smith, "Population Analysis
McGraw-Hill Publications in Sociology
McGraw-Hill 1948

method, the total for all net migration that it provides is more accurate than that obtained using the survival ratio method. This accuracy springs from the method itself. The population at one census year (Py_1) is projected by adding to it the natural increase occuring in the intercensus period. The natural increase is calculated by subtracting from total births (ΣB) total deaths (ΣD) Thus, the projected population = $Py_1 - (\Sigma B - \Sigma D)$. Net migration equals the difference between the census population figure at the end of the intercensus period (Py_2) and the projected population figure. The formula thus reads:

$$nM = Py_2 - Py_1 - (\Sigma B - \Sigma D)$$

This corresponds to the survival ratio formula.

$$nM = Py_2 - Py_1 (1 - q_x)^n$$

As with the survival ratio formula a positive answer indicates a net inward migration movement and a negative answer shows a net outward movement.

4. Sources of Error

No estimates are used in the vital statistics method, all the data being provided by the censuses and registrations of births and deaths. The only errors that can distort the result are errors in the basic data itself and a slight difference in period to which vital statistics and census data applies. Errors in the enumeration of population can be considered of negligible importance. Registrations of births and deaths are virtually complete. However, between 1931 and 1943, births and deaths were registered according to place of occurance and only since that time have they been registered by place of residence. The 1931 to 1943 county registration data does not entirely cover or apply

to the respective county populations. Consider, for example, the fact that many Russell expectant mothers attend maternity wards in the Ottawa Hospitals in Carleton County or in the Winchester Hospital in Dundas county. Where this happened between 1931 and 1941, the births were accredited to Carleton and Dundas Counties respectively.

Error also occurs because natural increase for a number of calender years is applied to census data for census years. This error can be approximately corrected by taking $\frac{7}{12}$ of the births and deaths for the first year, and $\frac{5}{12}$ for the last year of the intercensus period, though this was not done. Even so, the accuracy of the vital statistics method remains greater than that of the survival ratio method. Thus a comparison of the two provides a check on the accuracy of the detailed survival ratio migration estimates.

C. Differences between the Two Methods

Before comparing the results obtained using the two methods, with their different formulas, it must be emphasized that the two methods are not in fact, measuring quite the same thing and are not therefore strictly comparable.

The most obvious difference is that the vital statistics method measures total net migration. The survival ratio method cannot measure migration among those who were born during the intercensus period. With five year censuses only one age group is ommitted, but for inter-census periods between 1921 and 1951 two age groups out of twenty are ommitted, and between 1891 and 1921, three. Since these groups are known to have a high migration rate this represents a severe disadvantage when gross totals are compared.

The calculations necessary for the estimation of net migration by the vital statistics method are given in Tables (2.8) and (2.9). These estimates cover the period 1931 to 1956, the only years for which vital statistics were available on a county basis. Bearing in mind the differences between the two methods the results can be compared with those obtained by the survival ratio method in Table 2,10.

The major cause for differences in the two estimates is the gap in survival ratio estimates of net migration for age groups one and two. In the case of Russell, the largest proportional difference is for the period 1951 to 1956 and yet here it is less than the amount of net migration for age group 2. The difference could be eradicated if net migration for age group 1 approached in magnitude that for age group 2. In the case of Glengarry, the survival ratio estimates are consistently too high, in Prescott and Stormont consistently too low, but in all three cases, there is some indication of net migration among the younger age groups sufficient in size to off-set the differences.

If allowance is made for missing data, the two sets of estimates come close to agreement. If it is accepted that on theoretical grounds most of the small error that must be present is concentrated in age groups 2 (where computed) 3, and 14 and a bove, then it must be accepted that the survival ratio estimates for age groups 4 to 13 are reliable enough to be analysed in detail with confidence.

Table 2.1 Easternmost Ontario Population by County, Year, Five Year Age Group and Sex, 1891 to 1956

Note:

1. As a result of boundary changes the Russell county figures for 1891 to 1911 are not comparable with the the 1921 to 1956 figures. No adjustments could be made to the earlier figures so they were not used and are not given here.

2. Instead of giving the actual ages of each age group, age group identification numbers have been employed throughout the thesis as follws:-

No.	Age	No.	Age	No.	Age	No.	Age
1	0 - 4	6	25 - 29	11	50 - 54	16	75 - 79
2	5 - 9	7	30 - 34	12	55 - 59	17	80 - 84
3	10 - 14	8	35 - 39	13	60 - 64	18	85 - 89
4	15 - 19	9	40 - 44	14	65 - 69	19	90 - 94
5	20 - 24	10	45 - 49	15	70 - 74	20	95 -

These ages apply at the beginning of the intercensus periods. By the end of each period the age of the group will have increased by the length of the intercensus period.

3. Source of data. Figures for 1891 to 1921: Dominion Bureau of Statistics

1931 to 1956: Census of Canada

Easternmost Ontario Population by County, Year, Five Year Age Group and Sex.

Russell Males

Group Identification No.	1921	1931	1941	1951	1956
1	1,599	1,206	1,008	1,259	1,385
2	1,627	1,261	979	1,188	1,318
3	1,340	1,242	1,060	1,017	1,181
4	1,130	1,144	1,014	781	866
5	811	787	762	548	548
6	678	552	660	528	498
7	605	469	527	522	543
8	556	449	460	574	552
9	482	471	414	450	564
10	466	385	405	401	449
11	363	361	399	370	391
12	322	336	332	310	341
13	283	253	289	308	276
14	237	258	292	267	284
15	173	184	187	221	226
16	105	118	153	167	146
17	67	47	65	76	103
18	7	23	30	36	28
19	4	8	10	7	10
20	3	1	2	1	3

Russell Females

	1921	1931	1941	1951	1956
1	1,549	1,143	989	1,228	1,263
2	1,510	1,332	980	1,140	1,315
3	1,318	1,187	1,068	978	1,121
4	1,099	935	940	745	801
5	788	642	571	520	532
6	688	530	559	577	510
7	604	451	474	505	583
8	528	496	456	505	524
9	427	434	390	438	476
10	398	372	426	380	434
11	324	308	358	334	374
12	261	290	296	310	316
13	254	235	280	290	295
14	214	191	227	245	268
15	159	175	178	197	193
16	80	119	103	133	136
17	37	60	68	71	87
18	17	21	29	31	39
19	3	7	8	7	13
20	5	2	0	1	2

Prescott Males

	1891	1901	1911	1921	1931	1941	1951	1956
1	1,850	2,105	2,000	1,833	1,530	1,389	1,675	1,764
2	1,799	1,862	1,861	1,754	1,609	1,390	1,641	1,610
3	1,651	1,747	1,727	1,701	1,503	1,551	1,413	1,668
4	1,350	1,523	1,451	1,487	1,348	1,405	1,203	1,307
5	1,114	1,250	1,134	1,055	1,090	1,132	931	825
6	829	980	871	889	830	931	819	754
7	678	729	786	710	693	838	791	750
8	594	685	696	689	629	742	809	783
9	529	606	602	651	564	623	748	754
10	445	522	552	577	551	608	637	704
11	391	444	484	505	536	515	543	608
12	316	360	379	408	465	462	467	480
13	274	361	356	371	389	457	402	418
14	211	253	277	294	334	371	375	376
15	148	175	226	215	261	289	315	301
16	120	123	135	147	163	196	203	228
17	54	55	72	92	77	116	112	123
18	27	28	35	33	35	55	53	48
19	8	4	6	9	8	6	12	16
20	4	7	1	3	1	0	3	3

Prescott Females

	1891	1901	1911	1921	1931	1941	1951	1956
1	1,798	1,936	1,958	1,822	1,477	1,333	1,633	1,632
2	1,691	1,744	1,873	1,784	1,583	1,386	1,572	1,571
3	1,492	1,639	1,580	1,684	1,466	1,423	1,264	1,546
4	1,425	1,543	1,390	1,455	1,286	1,330	1,120	1,094
5	1,047	1,212	1,131	1,004	942	969	874	822
6	822	959	937	833	808	858	824	732
7	635	753	747	744	608	736	780	821
8	567	681	710	685	607	717	748	768
9	497	582	618	573	557	584	642	701
10	416	501	516	539	545	532	628	601
11	347	463	425	464	454	522	485	575
12	322	316	391	388	413	449	443	442
13	222	300	346	316	365	367	405	412
14	173	234	213	287	319	335	348	364
15	121	163	203	202	254	265	267	299
16	78	91	131	113	143	209	206	186
17	64	52	83	87	109	100	102	130
18	19	26	28	41	33	52	68	54
19	9	8	8	17	8	14	12	17
20	4	0	3	6	1	4	3	4

Stormont Males

	1891	1901	1911	1921	1931	1941	1951	1956
1	1,717	1,611	1,363	1,381	1,821	2,115	3,274	3,640
2	1,652	1,530	1,337	1,367	1,865	2,039	2,654	3,351
3	1,660	1,535	1,387	1,335	1,728	2,138	2,299	2,689
4	1,553	1,447	1,283	1,247	1,626	2,025	1,950	2,261
5	1,309	1,285	1,011	1,031	1,453	1,716	1,718	2,046
6	1,054	1,075	831	879	1,211	1,635	1,818	2,164
7	837	844	723	773	1,081	1,557	1,604	2,087
8	735	741	743	736	976	1,338	1,641	1,824
9	642	663	666	690	896	1,181	1,535	1,805
10	537	611	613	689	799	1,038	1,248	1,635
11	486	579	545	604	753	910	1,169	1,279
12	398	421	435	512	675	737	862	1,112
13	344	323	426	437	500	652	747	783
14	232	313	321	346	445	575	621	677
15	209	216	243	288	369	416	491	525
16	127	142	191	184	203	285	310	343
17	76	79	102	85	127	133	181	218
18	35	40	29	51	53	53	79	100
19	13	17	11	7	11	10	19	21
20	3	3	5	1	2	2	2	3

Stormont Females

	1891	1901	1911	1921	1931	1941	1951	1956
1	1,613	1,539	1,381	1,380	1,847	2,047	3,106	3,642
2	1,629	1,490	1,320	1,308	1,813	2,088	2,522	3,256
3	1,563	1,508	1,320	1,245	1,639	2,134	2,182	2,629
4	1,563	1,527	1,305	1,234	1,582	2,114	2,011	2,250
5	1,388	1,333	1,148	1,067	1,389	1,802	1,965	2,004
6	1,111	1,030	916	954	1,151	1,642	1,958	2,046
7	870	824	759	766	981	1,488	1,672	2,037
8	781	764	748	742	934	1,256	1,686	1,786
9	687	718	649	669	901	1,061	1,477	1,734
10	560	663	640	643	777	970	1,193	1,456
11	471	533	571	564	666	849	1,019	1,195
12	351	432	480	522	575	742	891	997
13	323	361	400	432	486	594	718	824
14	230	291	320	355	421	508	661	672
15	172	222	220	265	353	409	504	595
16	119	129	161	168	220	275	333	379
17	55	87	106	102	118	170	204	226
18	32	50	36	41	58	76	89	111
19	14	13	14	13	12	15	36	44
20	2	8	5	0	3	6	9	6

Glengarry Males

	1891	1901	1911	1921	1931	1941	1951	1956
1	1,386	1,358	1,285	1,306	993	930	1,089	1,163
2	1,532	1,332	1,324	1,177	1,133	974	1,988	1,211
3	1,247	1,257	1,313	1,144	1,120	975	896	1,157
4	1,249	1,223	1,122	1,064	983	994	750	750
5	991	940	834	849	774	860	512	487
6	784	751	687	733	612	658	518	453
7	646	586	587	575	603	623	524	513
8	543	664	575	591	532	581	528	533
9	442	543	543	540	485	554	515	552
10	431	476	492	536	482	488	506	514
11	387	376	461	416	459	455	442	479
12	326	359	359	402	401	416	398	429
13	343	303	286	375	323	384	379	368
14	298	271	270	318	340	366	359	367
15	198	190	180	175	283	259	299	306
16	135	179	134	141	160	167	204	206
17	75	92	83	75	56	117	92	118
18	39	39	42	44	29	44	38	36
19	6	15	11	12	10	7	16	15
20	5	7	7	6	1	2	2	1

Glengarry Females

	1891	1901	1911	1921	1931	1941	1951	1956
1	1,363	1,310	1,283	1,162	965	911	1,100	1,139
2	1,479	1,240	1,251	1,214	1,015	908	1,010	1,174
3	1,158	1,273	1,263	1,157	990	969	861	994
4	1,146	1,179	1,041	948	859	838	643	687
5	1,098	989	860	791	588	608	471	391
6	890	817	717	634	530	565	495	468
7	687	675	641	520	523	522	491	544
8	564	615	563	570	495	462	485	523
9	534	503	546	515	451	495	438	485
10	463	475	465	436	423	444	391	426
11	460	432	447	470	430	399	408	414
12	372	365	366	367	364	365	403	378
13	406	365	332	349	376	367	341	364
14	269	301	289	304	291	321	319	320
15	195	267	240	242	271	301	312	306
16	128	161	155	177	162	196	186	204
17	95	96	117	102	91	133	119	136
18	44	34	41	53	45	50	57	59
19	12	23	19	13	14	18	13	21
20	6	4	5	4	3	6	4	2

Table 2.2 q_x Ratios for Males and Females 1881 to 1956

Note:

Table 2.2 gives q_x values for males and females, 1881, 1921, 1931, 1941 1951 and 1956. q_x is the probability of a person of specified age and sex dying within one year. The 1881 and 1921 figures are general figures for that part of Canada for which data was available. 1931 and later figures are for the Province of Ontario. Data is given for each year of age, except where not available (N.A.) The sum of the probabilites of dying is given for each five year age group. These sums were used in determining the q_x to be applied in the computations of net migration.

Table 2.2 Canadian Life Tables Male q_x

Age	1881	1921	1931	1941	1951	1956
0			.07211	.04718	.03569	.02819
1			.00853	.00416	.00252	.00190
2	N.A.	N.A.	.00411	.00251	.00160	.00116
3			.00296	.00203	.00137	.00107
4			.00228	.00173	.00102	.00094
0-4			.08999	.05761	.04220	.03326
5			.00215	.00152	.00086	.00082
6			.00206	.00135	.00082	.00072
7	.00722	.00303	.00193	.00123	.00081	.00068
8			.00179	.00114	.00075	.00057
9			.00164	.00107	.00072	.00053
5-9	.03610	.01515	.00957	.00631	.00396	.00327
10			.00152	.00102	.00071	.00052
11			.00145	.00099	.00072	.00054
12	.00509	.00200	.00145	.00101	.00076	.00055
13			.00155	.00109	.00083	.00065
14			.00172	.00125	.00092	.00079
10-14	.02545	.01000	.00769	.00536	.00397	.00305
15			.00194	.00145	.00104	.00096
16			.00216	.00164	.00115	.00112
17	.00334	.00308	.00235	.00179	.00125	.00126
18			.00250	.00192	.00134	.00136
19			.00266	.00203	.00144	.00145
15-19	.01670	.01540	.01161	.00883	.00622	.00615
20			.00280	.00213	.00153	.00153
21			.00292	.00221	.00160	.00158
22	.00539	.00376	.00303	.00225	.00164	.00162
23			.00313	.00224	.00163	.00162
24			.00317	.00217	.00159	.00160
20-24	.02695	.01880	.01505	.01100	.00799	.00795

Table 2.2 cont'd — Canadian Life Tables — Male — q_x

Age	1881	1921	1931	1941	1951	1956
25			.00321	.00209	.00154	.00156
26			.00325	.00202	.00149	.00152
27	.00708	.00398	.00328	.00200	.00147	.00151
28			.00331	.00202	.00148	.00152
29			.00331	.00205	.00151	.00154
25-29	.03540	.01990	.01636	.01018	.00749	.00165
30			.00332	.00211	.00155	.00158
31			.00334	.00219	.00161	.00162
32	.00654	.00371	.00341	.00231	.00169	.00168
33			.00353	.00247	.00178	.00175
34			.00367	.00266	.00188	.00182
30-34	.03270	.01855	.01736	.01174	.00851	.00845
35			.00385	.00287	.00200	.00190
36			.00404	.00310	.00215	.00201
37	.00620	.00463	.00424	.00334	.00235	.00216
38			.00445	.00358	.00258	.00232
39			.00467	.00382	.00285	.00250
35-39	.03100	.02315	.02125	.01673	.01193	.01089
40			.00491	.00407	.00316	.00271
41			.00517	.00435	.00350	.00298
42	.00748	.00554	.00547	.00567	.00389	.00332
43			.00579	.00499	.00432	.00374
44			.00613	.00531	.00477	.00422
40-44	.03740	.02770	.02747	.02339	.01964	.01697
45			.00650	.00568	.00527	.00477
46			.00692	.00613	.00584	.00537
47	.00844	.00726	.00742	.00672	.00647	.00603
48			.00799	.00748	.00717	.00673
49			.00861	.00837	.00792	.00749
45-49	.04220	.03630	.03744	.03438	.03267	.03039

Table 2.2 cont'd — Canadian Life Tables — Male — q_x

Age	1881	1921	1931	1941	1951	1956
50			.00930	.00935	.00874	.00831
51			.01006	.01038	.00965	.00920
52	.00982	.00972	.01090	.01142	.01066	.01017
53			.01182	.01242	.01177	.01120
54			.01279	.01341	.01298	.01227
50-54	.04910	.04860	.05487	.05687	.05380	.05115
55			.01385	.01446	.01427	.01343
56			.01500	.01561	.01567	.01472
57	.01366	.01509	.01625	.01694	.01717	.01620
58			.01756	.01842	.01877	.01786
59			.01891	.02003	.02049	.01969
55-59	.06830	.07545	.08157	.08546	.08637	.08190
60			.02038	.02177	.02230	.02166
61			.02205	.02366	.02420	.02374
62	.02071	.02163	.02398	.02572	.02616	.02592
63			.02615	.02790	.02811	.02816
64			.02850	.02019	.03007	.03049
60-64	.10355	.10815	.12106	.12924	.13084	.12947
65			.03109	.03266	.03214	.03293
66			.03396	.03538	.03443	.03554
67	.03249	.03286	.03714	.03843	.03707	.03837
68			.04052	.04167	.03991	.04140
69			.04404	.04506	.04288	.04459
65-69	.16245	.16430	.18675	.19320	.18643	.19283
70			.04193	.04879	.04617	.04798
71			.05239	.05307	.05001	.05158
72	.04394	.05582	.05762	.05810	.05460	.05540
73			.06373	.06397	.05998	.06027
74			.07058	.07055	.06603	.06559
70-74	.21970	.27910	.29225	.29448	.27679	.28082

Table 2.2 cont'd — Canadian Life Tables — Male — q_x

Age	1881	1921	1931	1941	1951	1956
75			.07802	.07769	.07266	.07143
76			.08590	.08528	.07979	.07786
77	.06266	.08677	.09408	.09418	.08732	.08492
78			.10235	.10118	.09531	.09259
79			.11080	.10938	.10383	.10081
75-79	.31330	.43385	.46670	.46671	.43891	.42761
80			.11976	.11808	.11278	.10966
81			.12954	.12758	.12209	.11919
82	.09082	.12773	.14046	.13818	.13165	.12946
83			.15254	.14989	.14154	.14043
84		.16557	.16557	.16251	.15181	.15206
80-84	.45410	.63865	.70786	.69624	.66987	.65080
85			.12952	.17603	.16237	.16442
86			.19438	.19045	.17313	.17755
87	.14901	.19408	.21014	.20577	.18402	.19153
88			.22681	.22200	.19508	.20631
89			.22439	.23912	.20638	.22186
85-89	.74505	.97040	.98524	1.03337	.92098	.96167
90			.26286	.25714	.21783	.23822
91			.28222	.27605	.22934	.25547
92	.34697	.24740	.30246	.29583	.24083	.27367
93			.32357	.31651	.25235	.29277
94			.34555	.33805	.26397	.31273
90-94	1.73485	1.23700	1.51666	1.48358	1.20432	1.37286
95			.36838	.36047	.27559	.33361
96			.39206	.38375	.28713	.35548
97	.56423	.28062	.41658	.40789	.29850	.37839
98			.44193	.43289	.30977	.40231
99			.46811	.45874	.32098	.42720
95-99	2.82115	1.40310	2.08696	2.04374	1.49197	1.89699

Table 2.2 cont'd — Canadian Life Tables — Female — $_nq_x$

Age	1881	1921	1931	1941	1951	1956
0			.05793	.03713	.02790	.02237
1			.00755	.00354	.00199	.00184
2			.00345	.00198	.00122	.00093
3			.00242	.00165	.00101	.00088
4			.00201	.00115	.00081	.00062
0-4			.07336	.04545	.03293	.02664
5			.00165	.00095	.00068	.00049
6			.00146	.00086	.00060	.00044
7	.00743	.00262	.00132	.00078	.00054	.00042
8			.00123	.00073	.00050	.00038
9			.00117	.00070	.00047	.00036
5-9	.03715	.01310	.00683	.00402	.00279	.00209
10			.00115	.00068	.00046	.00035
11			.00117	.00069	.00046	.00035
12	.00485	.00188	.00122	.00071	.00047	.00036
13			.00129	.00076	.00048	.00037
14			.00141	.00084	.00049	.00039
10-14	.02425	.00940	.00624	.00368	.00236	.00182
15			.00155	.00091	.00051	.00042
16			.00170	.00098	.00053	.00045
17	.00472	.00268	.00186	.00104	.00055	.00047
18			.00203	.00110	.00058	.00049
19			.00223	.00116	.00061	.00051
15-19	.02360	.01340	.00937	.00519	.00278	.00234
20			.00243	.00121	.00065	.00053
21			.00262	.00128	.00068	.00055
22	.00593	.00372	.00277	.00135	.00071	.00058
23			.00288	.00143	.00073	.00061
24			.00296	.00151	.00074	.00064
20-24	.02965	.01560	.01366	.00678	.00351	.00291

Table 2.2 cont'd — Canadian Life Tables — Female q_x

Age	1881	1921	1931	1941	1951	1956
25			.00302	.00160	.00076	.00068
26			.00307	.00168	.00078	.00072
27	.00781	.00414	.00313	.00178	.00081	.00075
28			.00318	.00185	.00086	.00078
29			.00322	.00190	.00092	.00079
25-29	.03905	.02070	.01562	.00881	.00413	.00372
30			.00326	.00196	.00099	.00081
31			.00332	.00203	.00108	.00084
32	.00798	.00450	.00342	.00213	.00118	.00088
33			.00357	.00226	.00129	.00094
34			.00376	.00242	.00142	.00100
30-34	.03990	.02250	.01733	.01080	.00596	.00447
35			.00397	.00259	.00157	.00108
36			.00417	.00276	.00172	.00118
37	.00764	.00554	.00434	.00293	.00188	.00130
38			.00444	.00306	.00203	.00144
39			.00450	.00317	.00217	.00161
35-39	.03820	.02770	.02142	.01451	.00937	.00661
40			.00456	.00329	.00233	.00179
41			.00465	.00344	.00252	.00199
42	.00787	.00583	.00483	.00365	.00274	.00222
43			.00511	.00395	.00301	.00247
44			.00545	.00425	.00333	.00273
40-44	.03935	.02915	.02462	.01858	.01395	.01120
45			.00584	.00462	.00366	.00303
46			.00626	.00501	.00401	.00334
47	.00824	.00708	.00671	.00543	.00435	.00367
48			.00714	.00585	.00464	.00400
49			.00758	.00628	.00492	.00435
45-49	.04120	.03540	.03353	.02719	.02158	.01839

Table 2.2 cont'd — Canadian Life Tables — Female — q_x

Age	1881	1921	1931	1941	1951	1956
50			.00806	.00675	.00521	.00472
51			.00861	.00729	.00556	.00513
52	.01899	.01017	.00928	.00792	.00602	.00562
53			.01009	.00866	.00656	.00616
54			.01100	.00948	.00717	.00676
50-54	.04495	.05085	.04701	.04010	.03052	.02839
55			.01199	.01038	.00786	.00741
56			.01303	.01134	.00866	.00813
57	.01224	.01341	.01410	.01233	.00958	.00891
58			.01513	.01330	.01061	.00973
59			.01613	.01426	.01175	.01058
55-59	.06120	.06705	.07038	.06161	.04846	.04476
60			.01721	.01530	.01301	.01151
61			.01849	.01653	.01438	.01257
62	.01930	.01947	.02007	.01803	.01588	.01380
63			.02195	.01983	.01746	.01518
64			.02405	.02179	.01911	.01666
60-64	.09650	.09735	.10178	.09148	.07984	.06972
65			.02639	.02400	.02091	.01831
66			.02897	.02643	.02293	.02018
67	.02978	.03278	.03180	.02911	.02523	.02234
68			.03466	.03187	.02771	.02711
69			.03754	.03470	.03031	.02711
65-69	.14890	.16390	.15936	.14611	.12709	.11260
70			.04077	.03784	.03322	.02986
71			.04469	.04153	.03659	.03308
72	.03896	.05177	.04963	.04602	.04062	.03694
73			.05578	.05135	.04527	.04145
74			.06292	.05736	.05044	.04649
70-74	.19480	.25885	.25979	.23410	.20614	.18782

Table 2.2 cont'd — Canadian Life Tables — Female — q_x

Age	1881	1921	1931	1941	1951	1956
75			.07076	.06397	.05615	.05205
76			.07901	.07111	.06243	.05814
77	.05515	.07838	.08738	.07871	.06931	.06476
78			.09577	.08660	.07678	.07189
79			.10437	.09484	.08481	.07956
75-79	.27575	.39190	.43729	.39523	.34948	.32640
80			.11333	.10366	.09343	.08775
81			.12281	.11330	.010267	.09646
82	.08721	.11705	.13295	.12400	.11256	.10570
83			.14346	.13588	.12308	.11545
84			.15423	.14878	.13421	.12573
80-84	.43605	.58525	.66678	.62562	.56595	.53109
85			.16572	.16288	.14599	.13653
86			.17836	.17836	.15843	.14785
87	.14374	.18252	.19261	.19182	.17158	.15969
88			.20814	.20598	.18540	.17205
89			.22504	.22112	.19989	.18492
85-89	.71870	.91260	.96987	.96016	.86129	.80104
90			.24341	.23746	.21506	.19832
91			.26335	.25525	.23096	.21223
92	.26261	.25697	.28496	.27474	.24760	.22666
93			.30834	.29613	.26498	.2416C
94			.33358	.31972	.28307	.25706
90-94	1,31305	1.28485	1.43364	1.38330	1.24667	1.13587
95			.36079	.34572	.30189	.27304
96			.39006	.37439	.32148	.28953
97	.45791	.29569	.42148	.40596	.34188	.30653
98			.45517	.44067	.36305	.32405
99			.49121	.47878	.38498	.34208
95-99	2.28955	1.47865	2.11871	2.04552	1.71328	1.53523

Table 2.3

Five Year Totals of q_x Values for 1881, 1891, 1901, 1911 & 1921.

Note: 1881 and 1921 values are based on median q_x ratio of each age group. This figure is multiplied by five to match later five year totals. 1881 - 1921 are based on the proportional differences between 1881 and 1921 q_x values.

Age Group No.	Male q_x Values					Decennial Difference (nearest
	1881	1891	1901	1911	1921	
2 "	.03610	.03087	.02563	.02039	.01515	.005240
3	.02545	.02158	.01772	.01386	.01000	.003860
4	.01670	.01367	.01605	.01573	.01540	.000325
5	.02696	.02492	.02288	.02084	.01880	.002040
6	.03540	.03152	.02765	.02378	.01990	.003875
7	.03271	.02917	.02563	.02209	.01855	.003540
8	.03100	.02903	.02707	.02511	.02315	.001960
9	.03740	.03498	.03255	.03013	.02770	.002550
10	.04220	.04073	.03925	.03778	.03630	.001475
11	.04910	.04898	.04885	.04873	.04860	.000125
12	.06830	.07009	.07188	.07367	.07545	.001790
13	.10355	.10470	.10585	.10700	.10815	.001150
14	.16245	.16291	.16337	.16383	.16430	.000460
15	.21970	.23455	.24940	.26425	.27910	.014850
16	.31330	.34334	.37358	.40372	.43358	.030140
17	.45410	.50024	.54638	.59252	.63866	.046140
18	.74505	.77639	.80773	.83907	.97040	.031340
19	1.73485	1.61038	1.48592	1.36146	1.23700	.124460
20	2.82114	2.46663	2.11212	1.75761	1.40310	.354510

Age Group No.	Female q_x Values 1881	1891	1901	1911	1921	Decennial Difference (nearest
2	.03715	.03113	.02512	.01911	.01310	.006010
3	.02425	.02053	.01682	.01311	.00940	.003710
4	.02360	.02105	.01850	.01595	.01340	.002550
5	.02965	.02688	.02412	.02136	.01860	.002760
6	.03905	.03446	.02988	.02529	.02070	.004590
7	.03990	.03555	.03120	.02685	.02250	.004350
8	.03820	.03558	.03295	.03033	.02770	.002650
9	.03935	.03680	.03425	.03170	.02915	.002550
10	.04120	.03975	.03830	.03685	.03540	.001450
11	.04495	.04643	.04790	.04938	.05085	.001475
12	.06120	.06266	.06412	.06558	.06706	.001460
13	.09650	.09671	.09692	.09713	.09735	.000210
14	.14890	.15265	.15640	.16014	.16390	.003750
15	.19480	.21081	.22682	.24283	.25885	.016010
16	.27575	.30479	.33383	.24283	.25885	.016010
17	.43605	.47335	.51065	.54795	.58525	.037300
18	.71870	.74218	.76565	.78913	.91260	.023475
19	1.31305	1.30600	1.29895	1.29190	1.28485	.007050
20	2.28955	2.08678	1.88400	1.68123	1.47845	.202775

Table 2.4 Adjusted "q_x" values used in migration computations.

q_x values for males 1881 to 1921 for Canada: 1931 and later for Ontario.

Age Group No.	1881	1891	1901	1911	1921	1931	1941	1951
1	-	-	-	-	-	.00954	.00617	.00455
2	.00498	.00469	.00414	.00358	.00268	.00184	.00125	.00070
3	.00504	.00445	.00486	.00327	.00251	.00187	.00134	.00101
4	.00482	.00413	.00398	.00356	.00318	.00218	.00163	.00142
5	.00561	.00506	.00450	.00394	.00362	.00268	.00195	.00156
6.	.00643	.00586	.00528	.00469	.00412	.00331	.00221	.00169
7	.00677	.00617	.00558	.00498	.00460	.00408	.00314	.00194
8	.00717	.00683	.00649	.00614	.00606	.00556	.00494	.00289
9	.00864	.00838	.00813	.00787	.00826	.00845	.00772	.00500
10	.01123	.01126	.01129	.01132	.01179	.01229	.01208	.00838
11	.01538	.01548	.01559	.01569	.01697	.01841	.01878	.01357
12	.02312	.02335	.02347	.02380	.02622	.02748	.02719	.02163
13	.03381	.03541	.03701	.03861	.04004	.04155	.04060	.03237
14	.05058	.05365	.05671	.05977	.06310	.06535	.06321	.04673
15	.07199	.07809	.08419	.09029	.09870	.09885	.09644	.07044
16	.10897	.11511	.12127	.13741	.14190	.15001	.13877	.10897
17	.20645	.19862	.19078	.18295	.21553	.21914	.19006	.16315
18	.32117	.28885	.25653	.22422	.30573	.30290	.25253	.22938

Table 2.4 cont'd

Females q_x

Age Group No.	1881	1891	1901	1911	1921	1931	1941	1951
1	-	-	-	-	-	.00770	.00478	.00350
2	.00582	.00496	.00411	.00325	.00225	.00120	.00068	.00046
3	.00511	.00447	.00382	.00317	.00231	.00130	.00072	.00047
4	.00581	.00509	.00438	.00367	.00290	.00182	.00093	.00057
5	.00652	.00581	.00510	.00439	.00359	.00245	.00127	.00072
6	.00746	.00674	.00602	.00530	.00421	.00301	.00182	.00086
7	.00767	.00698	.00629	.00560	.00471	.00359	.00248	.00126
8	.00780	.00739	.00698	.00657	.00612	.00486	.00361	.00206
9	.00858	.00847	.00836	.00826	.00762	.00647	.00491	.00323
10	.01039	.01039	.01039	.01039	.01058	.00951	.00757	.00500
11	.01417	.01434	.01450	.01467	.01526	.01385	.01199	.00753
12	.02139	.02191	.02243	.02285	.02264	.02165	.01887	.01182
13	.03073	.03235	.03398	.03560	.03511	.03359	.03976	.01924
14	.04537	.04865	.05193	.05620	.06012	.05546	.04956	.03149
15	.06682	.07215	.07748	.11554	.09256	.08794	.08001	.05325
16	.10179	.10704	.11230	.12755	.13618	.13975	.12565	.08806
17	.17421	.17723	.18126	.18328	.20189	.20501	.18673	.17018
18	.28055	.26262	.24469	.12676	.30313	.30154	.26734	.19972

Table 2.5

POPULATION DEATH AND MIGRATION DATA:

Project:- U.61.01.

processed in the

COMPUTING CENTRE

OTTAWA UNIVERSITY.

Programmed by Miss Olga Boshko.

Figures in machine code

54 4 digits before decimal
53 3 digits before decimal
52 2 digits before decimal
51 1 digit before decimal
50 0 digits before decimal
49 1 zero after decimal
48 2 zeros after decimal
47 3 zeros after decimal

*	A	RUSSELL	*MALES	1921-1956	*	*	*	*

* A1=	* RUSSELL	*MALES	1921-1931	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
11440000 54	16270000 54	26800000 48	20000000 51	41100800 52	-43989920 53	-27773182 50	00000100 02
78700000 53	13400000 54	25100000 48	20000000 51	35273200 52	-51972680 53	-39773180 50	00000200 02
55200000 53	11300000 54	31800000 48	20000000 51	35417600 52	-54256240 53	-49569609 50	00000300 02
46900000 53	81100000 53	36200000 48	20000000 51	28884580 52	-31311542 53	-40034426 50	00000400 02
44900000 53	67800000 53	41200000 48	20000000 51	27421520 52	-20157848 53	-30984499 50	00000500 02
47100000 53	60500000 53	46000000 46	20000000 51	27269390 52	-10673061 53	-18474114 50	00000600 02
38500000 53	55600000 53	60600000 48	20000000 51	32791500 52	-13820850 53	-26413569 50	00000700 02
36100000 53	48200000 53	82600000 48	20000000 51	38363740 52	-62636260 52	-18627030 50	00000800 02
33600000 53	46600000 53	11790000 49	20000000 51	52118600 52	-77881400 52	-16817323 50	00000900 02
25300000 53	36300000 53	16970000 49	20000000 51	57102010 52	-52897990 52	-17292690 50	00001000 02
25800000 53	32200000 53	26220000 49	20000000 51	75131390 52	11131390 52	4[illegible]0342 49	00001100 02
18400000 53	28300000 53	40040000 49	20000000 51	94931340 52	-40686600 51	-21633908 49	00001200 02
11800000 53	23700000 53	63100000 49	20000000 51	113[illegible]9676 53	-55032400 51	-44[illegible]9479 49	00001300 02
47000000 52	17300000 53	98700000 49	20000000 51	111[illegible]0216 53	-14197840 52	-23199904 50	00001400 02
23000000 52	10500000 53	14190000 50	20000000 51	82271580 52	27157800 50	11948828 49	00000200 02
80000000 51	67000000 52	21553000 50	20000000 51	61086634 52	20866335 51	35266727 50	00001600 02
10000000 51	14000000 52	30573000 50	20000000 51	13635743 52	63574290 50	1745[illegible]137 51	00001700 02

* A2=	* RUSSELL	*MALES	1931-1941	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
10600000 54	12060000 54	95400000 48	20000000 51	11023530 53	-35764700 52	-32639033 49	00001800 02
10140000 54	12610000 54	18400000 48	20000000 51	23015900 52	-22398410 53	-18092648 50	00001900 02
76200000 53	12420000 54	18700000 48	20000000 51	23034000 52	-45696600 53	-37488002 50	00002000 02
66000000 53	11440000 54	21800000 48	20000000 51	24701200 52	-45929880 53	-41034512 50	00002100 02
52700000 53	78700000 53	26800000 48	20000000 51	20848370 52	-23915163 53	-31214660 50	00002200 02
46000000 53	55200000 53	33100000 48	20000000 51	18002690 52	-73997310 52	-13857244 50	00002300 02
41400000 53	46900000 53	40800000 48	20000000 51	18792380 52	-36207620 52	-80424272 49	00002400 02
40500000 53	44900000 53	55600000 48	20000000 51	24354680 52	-19645320 52	-46262891 49	00002500 02
39900000 53	47100000 53	84500000 48	20000000 51	38315930 52	-33684070 52	-77849111 49	00002600 02
33200000 53	38500000 53	12290000 49	20000000 51	44787140 52	-82128600 51	-24140357 49	00002700 02
28900000 53	36100000 53	18410000 49	20000000 51	61216860 52	-10783140 52	-35969801 49	00002800 02
29200000 53	33600000 53	27480000 49	20000000 51	81710010 52	37710010 52	14829530 50	00002900 02
18700000 53	25300000 53	41550000 49	20000000 51	87491420 52	21491420 52	12985079 50	00003000 02
15300000 53	25800000 53	65350000 49	20000000 51	12674686 53	21746860 52	16568640 50	00003100 02
65000000 52	18400000 53	98850000 49	20000000 51	11901879 53	·018786000 49	·028909894 47	00003200 02
30000000 52	11800000 53	15001000 50	20000000 51	94771460 52	67714560 51	29151444 50	00003300 02
10000000 52	47000000 52	21914000 50	20000000 51	43038790 52	60387900 51	15244812 51	00003400 02
20000000 51	31000000 52	30294000 50	20000000 51	30160421 52	11604208 51	13821457 51	00003500 02

* A3=	* RUSSELL	*MALES	1941-1951	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
10170000 54	10080000 54	61700000 48	20000000 51	60497100 52	69497100 52	73347641 49	00003600 02
78100000 53	97900000 53	12500000 48	20000000 51	12164280 52	-18583572 53	-19221023 50	00003700 02
54800000 53	10600000 54	13400000 48	20000000 51	14134400 52	-49786560 53	-47603210 50	00003800 02
52800000 53	10140000 54	16300000 48	20000000 51	16419500 52	-46958050 53	-47071941 50	00003900 02
52200000 53	76200000 53	19500000 48	20000000 51	14734440 52	-22526556 53	-30145315 50	00004000 02
57400000 53	66000000 53	22100000 48	20000000 51	14443990 52	-71556010 52	-11084400 50	00004100 02
45000000 53	52700000 53	31400000 48	20000000 51	16317930 52	-60682070 52	-11882553 50	00004200 02
40100000 53	46000000 53	49400000 48	20000000 51	22228150 52	-36771850 52	-83997749 49	00004300 02
37000000 53	41400000 53	77200000 48	20000000 51	30875130 52	-13124870 52	-34237421 49	00004400 02
31000000 53	40500000 53	12080000 49	20000000 51	46346540 52	-48653460 52	-13565591 50	00004500 02
30800000 53	39900000 53	18780000 49	20000000 51	68909600 52	-22090400 52	-66924273 49	00004600 02
26700000 53	33200000 53	27190000 49	20000000 51	79989620 52	14989820 52	59481010 49	00004700 02
22100000 53	28900000 53	40600000 49	20000000 51	98059600 52	30059600 52	15742923 50	00004800 02
16700000 53	29200000 53	63210000 49	20000000 51	14001426 53	15014260 52	38787294 49	00004900 02
76000000 52	18700000 53	96440000 49	20000000 51	11917160 53	81715960 51	12047454 50	00005000 02
36000000 52	15300000 53	13877000 50	20000000 51	11865358 53	16535840 51	48144295 49	00005100 02
70000000 51	65000000 52	19066000 50	20000000 51	57103342 52	-89665830 50	-11354908 50	00005200 02
10000000 51	42000000 52	25253000 50	20000000 51	39713405 52	-12865952 51	-56266655 50	00005300 02

* A4=	* RUSSELL	*MALES	1951-1956	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
13180000 54	12590000 54	45500000 48	10000000 51	28389200 52	07389200 52	71012866 49	00005400 02
11810000 54	11880000 54	70000000 47	10000000 51	41507000 51	-28493000 51	-24068097 48	00005500 02
86600000 53	10170000 54	10100000 48	10000000 51	51271000 51	-14587290 53	-14416129 50	00005600 02
54800000 53	78100000 53	14200000 48	10000000 51	55281700 51	-22747183 53	-29333345 50	00005700 02
49800000 53	54800000 53	15600000 48	10000000 51	42609100 51	-4573909? 52	-84119554 49	00005800 02
54300000 53	52800000 53	16900000 48	10000000 51	44490900 51	19449090 52	37148422 49	00005900 02
55200000 53	52200000 53	19400000 48	10000000 51	50476700 51	35047670 52	67796715 49	00006000 02
56400000 53	57400000 53	28900000 48	10000000 51	82469700 51	-17530300 51	-30985782 48	00006100 02
44900000 53	45000000 53	50000000 48	10000000 51	11138470 52	10138470 52	28101751 49	00006200 02
39100000 53	40100000 53	83800000 48	10000000 51	16523880 52	6523880? 51	16968232 49	00006300 02
34100000 53	37000000 53	13570000 49	10000000 51	24433430 52	-45665700 51	-13214733 49	00006400 02
27600000 53	31000000 53	21630000 49	10000000 51	32107590 52	-18924100 51	-68098657 48	00006500 02
28400000 53	30800000 53	32370000 49	10000000 51	46726290 52	22726290 52	86982690 49	00006600 02
22600000 53	26700000 53	46730000 49	10000000 51	56820060 52	15820060 52	75269124 49	00006700 02
14600000 53	22100000 53	70440000 49	10000000 51	67616990 52	-73830100 51	-48134471 49	00006800 02
10300000 53	16700000 53	10897000 50	10000000 51	73205700 52	92057000 51	98147751 49	00006900 02
28000000 52	76000000 52	16315000 50	10000000 51	44807615 52	-31923850 51	-10234501 50	00007000 02
10000000 51	36000000 52	22938000 50	10000000 51	26216314 52	-87836858 51	-89778903 50	00007100 02
30000000 50	80000000 51	31013000 50	10000000 51	67499570 51	-95004300 50	-76000826 50	00007200 02

*	B	RUSSELL	*FEMALES	1921-1956	*	*	*	*

* B1=	* RUSSELL	*FEMALES	1921-1931	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
93500000 53	15100000 54	22500000 48	20000000 51	33624100 52	-54137590 53	-36669245 50	00024700 02
64200000 53	13180000 54	23100000 48	20000000 51	30149600 52	-64585040 53	-50149489 50	00024800 02
53000000 53	10990000 54	29000000 48	20000000 51	31451300 52	-53754870 53	-50353553 50	00024900 02
45100000 53	78800000 53	35900000 48	20000000 51	27837900 52	-30916210 53	-40670549 50	00025000 02
49600000 53	68800000 53	42100000 48	20000000 51	28418550 52	-16358145 53	-24800796 50	00025100 02
43400000 53	60400000 53	47100000 48	20000000 51	27548180 52	-14215182 53	-24672632 50	00025200 02
37200000 53	52800000 53	61200000 48	20000000 51	31437500 52	-12456250 53	-25084959 50	00025300 02
30800000 53	42700000 53	76200000 48	20000000 51	31444090 52	-87555910 52	-22134901 50	00025400 02
29000000 53	39800000 53	10580000 49	20000000 51	40156550 52	-67843450 52	-18958975 50	00025500 02
23500000 53	32400000 53	15260000 49	20000000 51	46179040 52	-42820960 52	-15413150 50	00025600 02
19100000 53	26100000 53	22640000 49	20000000 51	53417610 52	-16582390 52	-79883414 49	00025700 02
17500000 53	25400000 53	35110000 49	20000000 51	76330160 52	-26698400 51	-15026974 49	00025800 02
11900000 53	21400000 53	60120000 49	20000000 51	98884510 52	38845100 51	33744460 49	00025900 02
60000000 52	15900000 53	92560000 49	20000000 51	98802690 52	-19731400 50	-32777874 48	00026000 02
21000000 52	80000000 52	13618000 50	20000000 51	61493684 52	24936840 51	13474773 50	00026100 02
70000000 51	37000000 52	20169000 50	20000000 51	33120000 52	31200002 51	80412380 50	00026200 02
20000000 51	25000000 52	30313000 50	20000000 51	24324757 52	13247572 51	19618974 51	00026300 02

* 82=	* RUSSELL	*FEMALES	1931-1941	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
10680000 54	11430000 54	77000000 48	20000000 51	85023000 52	10023000 52	94737409 48	00026400 02
94000000 53	13320000 54	12000000 48	20000000 51	15914100 52	-37608590 53	-28576091 50	00026500 02
57100000 53	11870000 54	13000000 48	20000000 51	15342400 52	-60065760 53	-51265626 50	00026600 02
55900000 53	93500000 53	18200000 48	20000000 51	16875430 52	-35912457 53	-39115016 50	00026700 02
47400000 53	64200000 53	24500000 48	20000000 51	15552000 52	-15244800 53	-24335300 50	00026800 02
45600000 53	53000000 53	30100000 48	20000000 51	15736300 52	-58263700 52	-11329538 50	00026900 02
39000000 53	45100000 53	35900000 48	20000000 51	15932600 52	-45067400 52	-10358717 50	00027000 02
42600000 53	49600000 53	48600000 48	20000000 51	23587180 52	-46412820 52	-98246318 49	00027100 02
35800000 53	43400000 53	64700000 48	20000000 51	27276070 52	-48723930 52	-11979607 50	00027200 02
29600000 53	37200000 53	95100000 48	20000000 51	33901740 52	-42098260 52	-12451487 50	00027300 02
28000000 53	30800000 53	13850000 49	20000000 51	40095060 52	12095060 52	46146835 49	00027400 02
22700000 53	29000000 53	21650000 49	20000000 51	57009620 52	-59903800 51	-25710847 49	00027500 02
17800000 53	23500000 53	33590000 49	20000000 51	68014850 52	11014850 52	65963051 49	00027600 02
10300000 53	19100000 53	55460000 49	20000000 51	83047340 52	-49526600 51	-45878073 49	00027700 02
68000000 52	17500000 53	87940000 49	20000000 51	10529434 53	-17056610 51	-24469476 49	00027800 02
29000000 52	11900000 53	13975000 50	20000000 51	92588260 52	25882640 51	97996739 49	00027900 02
80000000 51	60000000 52	20501000 50	20000000 51	53949919 52	19499186 51	32229626 50	00028000 02
00000000 51	30000000 52	30154000 50	20000000 51	29171025 52	-82897460 50	-99999995 50	00028100 02

* B3a * RUSSELL *FEMALES 1941-1951 * * * *

* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
97800000 53	98900000 53	47800000 48	20000000 51	46272250 52	35272250 52	37415097 49	00028200 02
74500000 53	98000000 53	68000000 47	20000000 51	66566400 51	-22834336 53	-23459693 50	00028300 02
52000000 53	10680000 54	72000000 47	20000000 51	76695000 51	-54033050 53	-50958687 50	00028400 02
57700000 53	94000000 53	93000000 47	20000000 51	87037600 51	-35429624 53	-38043345 50	00028500 02
50500000 53	57100000 53	12700000 48	20000000 51	72116400 51	-58788360 52	-10427381 50	00028600 02
50500000 53	55900000 53	18200000 48	20000000 51	10089160 52	-43910840 52	-79996307 49	00028700 02
43800000 53	47400000 53	24800000 48	20000000 51	11631400 52	-24368600 52	-52703838 49	00028800 02
38000000 53	45600000 53	36100000 48	20000000 51	16200390 52	-59799610 52	-13597013 50	00028900 02
33400000 53	39000000 53	49100000 48	20000000 51	18734490 52	-37265510 52	-10037428 50	00029000 02
31000000 53	42600000 53	75700000 48	20000000 51	31170500 52	-84829500 52	-21485097 50	00029100 02
29000000 53	35800000 53	11990000 49	20000000 51	40683230 52	-27316770 52	-8686752 49	00029200 02
24500000 53	29600000 53	18870000 49	20000000 51	51340710 52	34071000 50	13925897 48	00029300 02
19700000 53	28000000 53	29760000 49	20000000 51	73010640 52	-99893600 51	-48260258 49	00029400 02
13300000 53	22700000 53	49560000 49	20000000 51	90454980 52	-35450200 51	-25962280 49	00029500 02
71000000 52	17800000 53	80010000 49	20000000 51	10068745 53	-63125500 51	-81649745 49	00029600 02
31000000 52	10300000 53	12565000 50	20000000 51	76104030 52	41040300 51	15258903 50	00029700 02
70000000 51	68000000 52	18673000 50	20000000 51	59392859 52	-16071408 51	-18672180 50	00029800 02
10000000 51	37000000 52	26734000 50	20000000 51	35350996 52	-64900400 50	-39357333 50	00029900 02

* B4=	* RUSSELL	*FEMALES	1951-1956	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
13150000 54	12280000 54	35000000 48	10000000 51	21344300 52	10834430 53	89788910 49	00030000 02
11210000 54	11400000 54	46000000 47	10000000 51	26219000 51	-16378100 52	-14399873 49	00030100 02
80100000 53	97800000 53	47000000 47	10000000 51	22942800 51	-17470572 53	-17905575 50	00030200 02
53200000 53	74500000 53	57000000 47	10000000 51	21241000 51	-21087590 53	-28386424 50	00030300 02
51000000 53	52000000 53	72000000 47	10000000 51	18704800 51	-81295200 51	-15690131 49	00030400 02
58300000 53	57700000 53	86000000 47	10000000 51	24791300 51	84791300 51	14758611 49	00030500 02
52400000 53	50500000 53	12600000 48	10000000 51	31760600 51	22176060 52	44190917 49	00030600 02
47600000 53	50500000 53	20600000 48	10000000 51	51826000 51	-23817400 52	-47652203 49	00030700 02
43400000 53	43800000 53	32300000 48	10000000 51	70279500 51	30279500 51	70258617 48	00030800 02
37400000 53	38000000 53	50000000 48	10000000 51	94058200 51	34058200 51	91901605 48	00030900 02
31600000 53	33400000 53	75300000 48	10000000 51	12388580 52	-56114200 51	-17447826 49	00031000 02
29500000 53	31000000 53	11820000 49	10000000 51	17893180 52	28931800 51	99045274 48	00031100 02
26800000 53	29000000 53	19240000 49	10000000 51	26844170 52	48441700 51	18407990 49	00031200 02
19300000 53	24500000 53	31490000 49	10000000 51	36221350 52	-15778650 52	-75575975 49	00031300 02
13600000 53	19700000 53	53250000 49	10000000 51	47155360 52	-13844640 52	-92393295 49	00031400 02
87000000 52	13300000 53	88060000 49	10000000 51	49115520 52	31155170 51	37140564 49	00031500 02
39000000 52	71000000 52	17018000 50	10000000 51	43063092 52	11063092 52	39600274 50	00031600 02
13000000 52	31000000 52	19972000 50	10000000 51	20824127 52	28241270 51	27753167 50	00031700 02
20000000 51	80000000 51	27769000 50	10000000 51	64270679 51	42706790 50	27151070 50	00031800 02

*	C	PRESCOTT	*MALES	1891-1956	*	*	*	*

* C1=	PRESCOTT	*MALES	1891-1901	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
15230000 54	17990000 54	46900000 48	20000000 51	82629000 52	-19337100 53	-11266271 50	00007300 02
12500000 54	16510000 54	44500000 48	20000000 51	72018400 52	-32898160 53	-20835050 50	00007400 02
98000000 53	13500000 54	41300000 48	20000000 51	54719700 52	-31528030 53	-24340701 50	00007500 02
72900000 53	11140000 54	50600000 48	20000000 51	55099400 52	-32990060 53	-31155011 50	00007600 02
68500000 53	82900000 53	58600000 48	20000000 51	47328050 52	-96671950 52	-12367330 50	00007700 02
60600000 53	67800000 53	61700000 48	20000000 51	40691530 52	-31308470 52	-49126085 49	00007800 02
52200000 53	59400000 53	68300000 48	20000000 51	39353290 52	-32646710 52	-58860369 49	00007900 02
44400000 53	52900000 53	83800000 48	20000000 51	42698430 52	-42301570 52	-86986291 49	00008000 02
36000000 53	44500000 53	11260000 49	20000000 51	47643790 52	-37356210 52	-94011894 49	00008100 02
36100000 53	39100000 53	15480000 49	20000000 51	56476400 52	26476400 52	79146583 49	00008200 02
25300000 53	31600000 53	23350000 49	20000000 51	66496250 52	34962500 51	14012815 49	00008300 02
17500000 53	27400000 53	35410000 49	20000000 51	82935260 52	-16064740 52	-84080087 49	00008400 02
12300000 53	21100000 53	53650000 49	20000000 51	89436710 52	14367100 51	11818617 49	00008500 02
55000000 52	14800000 53	78090000 49	20000000 51	82362550 52	-10637452 52	-16206376 50	00008600 02
28000000 52	12000000 53	11511000 50	20000000 51	84675890 52	-73241110 51	-20734028 50	00008700 02
40000000 51	54000000 52	19862000 50	20000000 51	48101063 52	-18989368 51	-32191170 50	00008800 02
70000000 51	39000000 52	28885000 50	20000000 51	37709748 52	57097478 51	44252959 51	00008900 02

* C2*	PRESCOTT	*MALES	1901-1911	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
14510000 54	18620000 54	41400000 48	20000000 51	75678300 52	-33532170 53	-18771630 50	00009000 02
11340000 54	17470000 54	48600000 48	20000000 51	83078200 52	-52992180 53	-31847759 50	00009100 02
87100000 53	15230000 54	39800000 48	20000000 51	59543200 52	-59245680 53	-40483382 50	00009200 02
78600000 53	12500000 54	45000000 48	20000000 51	55131800 52	-40886820 53	-34218686 50	00009300 02
69600000 53	98000000 53	52800000 48	20000000 51	50528510 52	-23347149 53	-25118736 50	00009400 02
60200000 53	72900000 53	55800000 48	20000000 51	39669450 52	-87330550 52	-12668893 50	00009500 02
55200000 53	68500000 53	64900000 48	20000000 51	43183950 52	-89816050 52	-13994049 50	00009600 02
48400000 53	60600000 53	81300000 48	20000000 51	47500710 52	-74499290 52	-13339192 50	00009700 02
37900000 53	52200000 53	11290000 49	20000000 51	56027270 52	-86972730 52	-18664768 50	00009800 02
35600000 53	44400000 53	15590000 49	20000000 51	64560130 52	-23439870 52	-61774926 49	00009900 02
27700000 53	36000000 53	23470000 49	20000000 51	76101890 52	-68981100 51	-24297837 49	00010000 02
22600000 53	36100000 53	37010000 49	20000000 51	11341337 53	-21586630 52	-87188189 49	00010100 02
13500000 53	25300000 53	56710000 49	20000000 51	11188586 53	-61141400 51	-43327621 49	00010200 02
72000000 52	17500000 53	84190000 49	20000000 51	10237468 53	-62531700 50	-86101793 48	00010300 02
35000000 52	12300000 53	12127000 50	20000000 51	89235910 52	12359060 51	36604151 49	00010400 02
60000000 51	55000000 52	19078000 50	20000000 51	48377489 52	-62251100 50	-93999240 49	00010500 02
10000000 51	39000000 52	25653000 50	20000000 51	36987691 52	-10123087 51	-50305835 50	00010600 02

* C3=	PRESCOTT	*MALES	1911-1921	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
14870000 54	18610000 54	35800000 48	20000000 51	65578700 52	-30842130 53	-17178213 50	00010700 02
10550000 54	17270000 54	32700000 48	20000000 51	55669500 52	-61633050 53	-36876638 50	00010800 02
88900000 53	14510000 54	35600000 48	20000000 51	50840800 52	-51115920 53	-36507220 50	00010900 02
71000000 53	11340000 54	39400000 48	20000000 51	43908300 52	-38009170 53	-34867865 50	00011000 02
68900000 53	87100000 53	46900000 48	20000000 51	40005490 52	-14199451 53	-17087298 50	00011100 02
65100000 53	78600000 53	49800000 48	20000000 51	38273890 52	-96726110 52	-12936035 50	00011200 02
57700000 53	69600000 53	61400000 48	20000000 51	41575970 52	-77424030 52	-11830866 50	00011300 02
50500000 53	60200000 53	78700000 48	20000000 51	45741720 52	-51258280 52	-92148345 49	00011400 02
40800000 53	55200000 53	11320000 49	20000000 51	59394700 52	-84605300 52	-17175069 50	00011500 02
37100000 53	48400000 53	15690000 49	20000000 51	70795200 52	-42204800 52	-10214015 50	00011600 02
29400000 53	37900000 53	23800000 49	20000000 51	81128330 52	-38716700 51	-12997779 49	00011700 02
21500000 53	35600000 53	38610000 49	20000000 51	11586802 53	-25131980 52	-10465903 50	00011800 02
14700000 53	27700000 53	59770000 49	20000000 51	12743852 53	-25614800 51	-17126602 49	00011900 02
92000000 52	22600000 53	90290000 49	20000000 51	13827196 53	42719600 51	48695491 49	00012000 02
33000000 52	13500000 53	13741000 50	20000000 51	10421255 53	22125470 51	71865217 49	00012100 02
90000000 51	72000000 52	18295000 50	20000000 51	62454197 52	-54580320 50	-57177294 49	00012200 02
30000000 51	42000000 52	22422000 50	20000000 51	38683887 52	-31611270 50	-95326284 49	00012300 02

* C4=	PRESCOTT	*MALES	1921-1931	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
13480000 54	17540000 54	26800000 48	20000000 51	46465100 52	-35953490 53	-21055786 50	00012400 02
10900000 54	17010000 54	25100000 48	20000000 51	42237100 52	-56876290 53	-34288378 50	00012500 02
83000000 53	14870000 54	31800000 48	20000000 51	46607100 52	-61039290 53	-42376833 50	00012600 02
69300000 53	10550000 54	36200000 48	20000000 51	37574900 52	-32442510 53	-31886878 50	00012700 02
62900000 53	88900000 53	41200000 48	20000000 51	35955360 52	-22404464 53	-26264117 50	00012800 02
56400000 53	71000000 53	46000000 48	20000000 51	32002100 52	-11399790 53	-16813902 50	00012900 02
55100000 53	68900000 53	60600000 48	20000000 51	40635510 52	-97364490 52	-15016937 50	00013000 02
53600000 53	65100000 53	82600000 48	20000000 51	51814930 52	-63185070 52	-10545168 50	00013100 02
46500000 53	57700000 53	11790000 49	20000000 51	64533110 52	-47466890 52	-92624306 49	00013200 02
38900000 53	50500000 53	16970000 49	20000000 51	79439430 52	-36560570 52	-85911554 49	00013300 02
33400000 53	40800000 53	26220000 49	20000000 51	95197540 52	21197540 52	67766539 49	00013400 02
26100000 53	37100000 53	40040000 49	20000000 51	12445063 53	14450630 52	58611506 49	00013500 02
16300000 53	29400000 53	63100000 49	20000000 51	14079345 53	97934500 51	63923181 49	00013600 02
77000000 52	21500000 53	98700000 49	20000000 51	13894488 53	94488100 50	12423634 49	00013700 02
35000000 52	14700000 53	14190000 50	20000000 51	11518021 53	31802090 51	99944371 49	00013800 02
80000000 51	92000000 52	21553000 50	20000000 51	83880153 52	-11984660 50	-14759712 49	00013900 02
10000000 51	45000000 52	30573000 50	20000000 51	43829174 52	-17082640 50	-14590242 50	00014000 02

* C5=	PRESCOTT	*MALES	1931-1941	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
15510000 54	15300000 54	95400000 48	20000000 51	13985080 53	16085080 53	11570758 50	00014100 02
14050000 54	16090000 54	18400000 48	20000000 51	29367600 52	-17463240 53	-11055256 50	00014200 02
11320000 54	15030000 54	18700000 48	20000000 51	27874500 52	-34312550 53	-23260767 50	00014300 02
93100000 53	13480000 54	21800000 48	20000000 51	29106000 52	-38789400 53	-29410552 50	00014400 02
83800000 53	10900000 54	26800000 48	20000000 51	28875100 52	-22312490 53	-21027204 50	00014500 02
74200000 53	83000000 53	33100000 48	20000000 51	27069250 52	-60930750 52	-75885436 49	00014600 02
62300000 53	69300000 53	40800000 48	20000000 51	27767840 52	-42232160 52	-63484844 49	00014700 02
60800000 53	62900000 53	55600000 48	20000000 51	34118260 52	13118260 52	22051879 49	00014800 02
51500000 53	56400000 53	84500000 48	20000000 51	45881500 52	-31185000 51	-60188934 48	00014900 02
46200000 53	55100000 53	12290000 49	20000000 51	64097960 52	-24902040 52	-51143840 49	00015000 02
45700000 53	53600000 53	18410000 49	20000000 51	90892630 52	11892630 52	26718565 49	00015100 02
37100000 53	46500000 53	27480000 49	20000000 51	11308081 53	19080810 52	54219294 49	00015200 02
28900000 53	38900000 53	41550000 49	20000000 51	13452238 53	34522380 52	13565979 50	00015300 02
19600000 53	33400000 53	65350000 49	20000000 51	16408314 53	26083140 52	15350531 50	00015400 02
11600000 53	26100000 53	98850000 49	20000000 51	16882556 53	23825560 52	25848337 50	00015500 02
55000000 52	16300000 53	15001000 50	20000000 51	13091311 53	22913113 52	71409585 50	00015600 02
60000000 51	77000000 52	21914000 50	20000000 51	70510358 52	-48964180 50	-75449742 49	00015700 02
00000000 50	44000000 52	30290000 50	20000000 51	42807653 52	-11923470 51	-10000000 51	00015800 02

* C6=	PRESCOTT	*MALES	1941-1951	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
14130000 54	13890000 54	61700000 48	20000000 51	83363600 52	10736360 53	82230857 49	00015900 02
12030000 54	13900000 54	12500000 48	20000000 51	17271000 52	-16972900 53	-12364349 50	00016000 02
93100000 53	15510000 54	13400000 48	20000000 51	20681600 52	-59931840 53	-39162987 50	00016100 02
81900000 53	14050000 54	16300000 48	20000000 51	22750900 52	-56324910 53	-40748741 50	00016200 02
79100000 53	11320000 54	19500000 48	20000000 51	21889000 52	-31911100 53	-28745864 50	00016300 02
80900000 53	93100000 53	22100000 48	20000000 51	20374780 52	-10162522 53	-11159939 50	00016400 02
74800000 53	83800000 53	31400000 48	20000000 51	25947670 52	-64052330 52	-78877097 49	00016500 02
63700000 53	74200000 53	49400000 48	20000000 51	35854980 52	-69145020 52	-97919008 49	00016600 02
54300000 53	62300000 53	77200000 48	20000000 51	46461860 52	-33538140 52	-58171589 49	00016700 02
46700000 53	60800000 53	12080000 49	20000000 51	69577030 52	-71422970 52	-13265216 50	00016800 02
40200000 53	51500000 53	18780000 49	20000000 51	88943470 52	-24056530 52	-56463235 49	00016900 02
37500000 53	46200000 53	27190000 49	20000000 51	11131114 53	24311140 52	69323959 49	00017000 02
31500000 53	45700000 53	40600000 49	20000000 51	15506310 53	13063100 52	43264338 49	00017100 02
20300000 53	37100000 53	63210000 49	20000000 51	17789483 53	98948300 51	51240627 49	00017200 02
11200000 53	28900000 53	96440000 49	20000000 51	18417428 53	71742800 51	68440074 49	00017300 02
53000000 52	19600000 53	13877000 50	20000000 51	15200067 53	90006700 51	20456380 50	00017400 02
12000000 52	11600000 53	19006000 50	20000000 51	10190750 53	-20924960 51	-14848311 50	00017500 02
30000000 51	61000000 52	25253000 50	20000000 51	57678993 52	-32100730 50	-96659619 49	00017600 02

* C7=	PRESCOTT	*MALES	1951-1956	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
16100000 54	16750000 54	45500000 48	10000000 51	37769600 52	-27230400 52	-16631990 49	00017700 02
16680000 54	16410000 54	70000000 47	10000000 51	57334000 51	32733400 52	20017164 49	00017800 02
13070000 54	14130000 54	10100000 48	10000000 51	71235000 51	-98876500 52	-70330858 49	00017900 02
82500000 53	12030000 54	14200000 48	10000000 51	85152000 51	-36948480 53	-30932566 50	00018000 02
75400000 53	93100000 53	15600000 48	10000000 51	72388900 51	-16976111 53	-18377166 50	00018100 02
75000000 53	81900000 53	16900000 48	10000000 51	69011500 51	-62098850 52	-76467107 49	00018200 02
78300000 53	79100000 53	19400000 48	10000000 51	76488600 51	-35114000 50	-44825364 47	00018300 02
75400000 53	80900000 53	28900000 48	10000000 51	11623340 52	-43376660 52	-54399210 49	00018400 02
70400000 53	74600000 53	50000000 48	10000000 51	18514620 52	-25485380 52	-34936108 49	00018500 02
60800000 53	63700000 53	83800000 48	10000000 51	26248660 52	-27513400 51	-45048448 48	00018600 02
48000000 53	54300000 53	13570000 49	10000000 51	35857710 52	-27142290 52	-53520068 49	00018700 02
41800000 53	46700000 53	21630000 49	10000000 51	48368530 52	-63147000 50	-15064150 48	00018800 02
37600000 53	40200000 53	32370000 49	10000000 51	60986910 52	34986910 52	10259697 50	00018900 02
30100000 53	37500000 53	46730000 49	10000000 51	79803460 52	58034600 51	19659648 49	00019000 02
22800000 53	31500000 53	70440000 49	10000000 51	96377150 52	93771500 51	42891903 49	00019100 02
12300000 53	20300000 53	10897000 50	10000000 51	88986560 52	89865600 51	78820181 49	00000100 02
48000000 52	11200000 53	16315000 50	10000000 51	66032280 52	20322750 51	44210911 49	00019300 02
16000000 52	53000000 52	22938000 50	10000000 51	38596240 52	15962400 51	11082106 50	00019400 02
30000000 51	15000000 52	31013000 50	10000000 51	12656169 52	65616930 50	27995593 50	00019500 02

*	D	PRESCOTT	*FEMALES	1891-1956	*	*	*	*

* D1=	PRESCOTT	*FEMALES	1891-1901	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
15430000 54	16910000 54	49600000 48	20000000 51	82046100 52	-65953900 52	-40991790 49	00012400 02
12120000 54	14920000 54	44700000 48	20000000 51	65378300 52	-21462170 53	-15044051 50	00012500 02
95900000 53	14250000 54	50900000 48	20000000 51	70887100 52	-39511290 53	-29178727 50	00012600 02
75300000 53	10470000 54	58100000 48	20000000 51	59273600 52	-23472644 53	-23764317 50	00012700 02
68100000 53	82200000 53	67400000 48	20000000 51	53751330 52	-87248670 52	-11356827 50	00012800 02
58200000 53	63500000 53	69800000 48	20000000 51	42956350 52	-10043650 52	-16964374 49	00012900 02
50100000 53	56700000 53	73900000 48	20000000 51	40530690 52	-25469310 52	-48377578 49	00013000 02
46300000 53	49700000 53	84700000 48	20000000 51	40525640 52	65256400 51	14295743 49	00013100 02
31600000 53	41600000 53	10390000 49	20000000 51	41257170 52	-58742830 52	-15675505 50	00013200 02
30000000 53	34700000 53	14340000 49	20000000 51	46669480 52	-33052000 50	-11005209 48	00013300 02
23400000 53	32200000 53	21910000 49	20000000 51	63984460 52	-24015540 52	-93077882 49	00013400 02
16300000 53	22200000 53	32350000 49	20000000 51	62216120 52	32161200 51	20127938 49	00013500 02
91000000 52	17300000 53	48650000 49	20000000 51	67937900 52	-14062100 52	-13384560 50	00013600 02
52000000 52	12100000 53	72150000 49	20000000 51	63777690 52	-52223070 51	-91263482 49	00013700 02
26000000 52	78000000 52	10704000 50	20000000 51	52857145 52	85714500 50	34090997 49	00013800 02
80000000 51	64000000 52	17723000 50	20000000 51	54901706 52	-10982938 51	-12071426 50	00013900 02
00000000 51	19000000 52	26262000 50	20000000 51	18097050 52	-90294980 50	-10000000 51	00014000 02

* D2=	PRESCOTT	*FEMALES	1901-1911	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
13900000 54	17440000 54	41100000 48	20000000 51	70381500 52	-28361850 53	-16946425 50	00014100 02
11310000 54	16390000 54	38200000 48	20000000 51	61537800 52	-44646220 53	-28302561 50	00014200 02
93700000 53	15430000 54	43800000 48	20000000 51	66287600 52	-53971240 53	-36548241 50	00014300 02
74700000 53	12120000 54	51000000 48	20000000 51	60424000 52	-40457600 53	-35132375 50	00014400 02
71000000 53	95900000 53	60200000 48	20000000 51	56185340 52	-19281466 53	-21357059 50	00014500 02
61800000 53	75300000 53	62900000 48	20000000 51	46039780 52	-8896022O 52	-12583483 50	00014600 02
51600000 53	68100000 53	69800000 48	20000000 51	46068150 52	-11893185 53	-18731436 50	00014700 02
42500000 53	58200000 53	83600000 48	20000000 51	46865460 52	-11013454 53	-20560720 50	00014800 02
39100000 53	50100000 53	10390000 49	20000000 51	49687120 52	-6031288O 52	-13363873 50	00014900 02
34600000 53	46300000 53	14500000 49	20000000 51	62916180 52	-54083820 52	-13518122 50	00015000 02
21300000 53	31600000 53	22430000 49	20000000 51	64135430 52	-38864570 52	-15430741 50	00015100 02
20300000 53	30000000 53	33980000 49	20000000 51	87684720 52	-93152800 51	-43874751 49	00015200 02
13100000 53	23400000 53	51930000 49	20000000 51	96717290 52	-62827100 51	-45764758 49	00015300 02
83000000 52	16300000 53	77480000 49	20000000 51	90230800 52	10230800 52	14059245 50	00015400 02
28000000 52	91000000 52	11230000 50	20000000 51	63349603 52	34960300 50	12643688 49	00015500 02
80000000 51	52000000 52	18126000 50	20000000 51	44961772 52	96177190 50	13664972 50	00015600 02
30000000 51	34000000 52	24469000 50	20000000 51	31945392 52	94539230 50	46013275 50	00015700 02

* D3=	PRESCOTT	*FEMALES	1911-1921	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
14550000 54	18730000 54	32500000 48	20000000 51	60000100 52	-35799990 53	-19746272 50	00015800 02
10040000 54	15800000 54	31700000 48	20000000 51	49381100 52	-52661890 53	-34405619 50	00015900 02
83300000 53	13900000 54	36700000 48	20000000 51	50185100 52	-50681490 53	-37827233 50	00016000 02
74400000 53	11310000 54	43900000 48	20000000 51	48687700 52	-33831230 53	-31258288 50	00016100 02
68500000 53	93700000 53	53000000 48	20000000 51	48495590 52	-20350441 53	-22904153 50	00016200 02
57300000 53	74700000 53	56000000 48	20000000 51	40795310 52	-13320469 53	-18862051 50	00016300 02
53900000 53	71000000 53	65700000 48	20000000 51	45295910 52	-12570409 53	-18911286 50	00016400 02
46400000 53	61800000 53	82600000 48	20000000 51	49188360 52	-10481164 53	-18426423 50	00016500 02
38800000 53	51600000 53	10390000 49	20000000 51	51174760 52	-76825240 52	-16527769 50	00016600 02
31600000 53	42500000 53	14670000 49	20000000 51	58386100 52	-50613900 52	-13805778 50	00016700 02
28700000 53	39100000 53	22850000 49	20000000 51	80696440 52	-23303560 52	-15099235 49	00016800 02
20200000 53	34600000 53	35600000 49	20000000 51	10520576 53	-38794240 52	-16110950 50	00016900 02
11300000 53	21300000 53	56200000 49	20000000 51	93551800 52	-64482000 51	-53983233 49	00017000 02
87000000 52	20300000 53	11554000 50	20000000 51	14353300 53	27532999 52	46299626 50	00017100 02
41000000 52	13100000 53	12755000 50	20000000 51	97528800 52	75288000 51	22493367 50	00017200 02
17000000 52	83000000 52	18328000 50	20000000 51	72040062 52	60400620 51	55110367 50	00017300 02
60000000 51	39000000 52	12676000 50	20000000 51	28944479 52	-40555210 51	-40331287 50	00017400 02

* D4=	PRESCOTT	*FEMALES	1921-1931	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
12860000 54	17840000 54	22500000 48	20000000 51	39725400 52	-45827460 53	-26273076 50	00017500 02
94200000 53	16840000 54	23100000 48	20000000 51	38522000 52	-70347800 53	-42752197 50	00017600 02
80800000 53	14550000 54	29000000 48	20000000 51	41639400 52	-60536060 53	-42831292 50	00017700 02
60800000 53	10040000 54	35900000 48	20000000 51	35468600 52	-36053141 53	-37224545 50	00017800 02
60700000 53	83300000 53	42100000 48	20000000 51	34407920 52	-19159208 53	-23991232 50	00017900 02
55700000 53	74400000 53	47100000 48	20000000 51	34303060 52	-15269694 53	-21515795 50	00018000 02
54500000 53	68500000 53	61200000 48	20000000 51	40785390 52	-99214610 52	-15400863 50	00018100 02
45400000 53	57300000 53	76200000 48	20000000 51	42195470 52	-76804530 52	-14469456 50	00018200 02
41300000 53	53900000 53	10580000 49	20000000 51	54382870 52	-71617130 52	-14778085 50	00018300 02
36500000 53	46400000 53	15260000 49	20000000 51	66132950 52	-32867050 52	-82608122 49	00018400 02
31900000 53	38800000 53	22640000 49	20000000 51	79410090 52	10410090 52	33734382 49	00018500 02
25400000 53	31600000 53	35110000 49	20000000 51	94961930 52	32961930 52	14912332 50	00018600 02
14300000 53	28700000 53	60120000 49	20000000 51	13261614 53	-11383860 52	-73737371 49	00018700 02
10900000 53	20200000 53	92560000 49	20000000 51	12552291 53	32522910 52	42526343 50	00018800 02
33000000 52	11300000 53	13618000 50	20000000 51	86859830 52	68598290 51	26242479 50	00018900 02
80000000 51	87000000 52	20189000 50	20000000 51	77876757 52	-11232428 51	-12311881 50	00019000 02
10000000 51	64000000 52	30313000 50	20000000 51	62271378 52	-72862170 50	-42150443 50	00019100 02

* D5=	PRESCOTT	*FEMALES	1931-1941	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
14230000 54	14770000 54	77000000 48	20000000 51	10986790 53	55867900 52	40865034 49	00019200 02
13300000 54	15830000 54	12000000 48	20000000 51	18913000 52	-23408700 53	-14966367 50	00019300 02
96900000 53	14660000 54	13000000 48	20000000 51	18948600 52	-47805140 53	-33036242 50	00019400 02
85800000 53	12860000 54	18200000 48	20000000 51	23210500 52	-40478950 53	-32055184 50	00019500 02
73600000 53	94200000 53	24500000 48	20000000 51	22819290 52	-18318071 53	-19928694 50	00019600 02
71700000 53	80800000 53	30100000 48	20000000 51	23990440 52	-67009560 52	-85470335 49	00019700 02
58400000 53	60800000 53	35900000 48	20000000 51	21478990 52	-25210100 51	-42982433 48	00019800 02
53200000 53	60700000 53	48600000 48	20000000 51	28865760 52	-46134240 52	-79798491 49	00019900 02
52200000 53	55700000 53	64700000 48	20000000 51	35006380 52	.0063800000 48	-0012222372 46	00020000 02
44900000 53	54500000 53	95100000 48	20000000 51	49567870 52	-46332130 52	-93537502 49	00020100 02
36700000 53	45400000 53	13850000 49	20000000 51	59101170 52	-27898830 52	-70648044 49	00020200 02
33500000 53	41300000 53	21650000 49	20000000 51	81189560 52	31895600 51	96125969 48	00020300 02
26500000 53	36500000 53	33590000 49	20000000 51	10564008 53	56400800 51	21746151 49	00020400 02
20900000 53	31900000 53	55460000 49	20000000 51	13870210 53	28702100 52	15919265 50	00020500 02
10000000 53	25400000 53	87940000 49	20000000 51	15282721 53	-11727900 51	-11591951 49	00020600 02
52000000 52	14300000 53	13975000 50	20000000 51	11126153 53	20261528 52	63839015 50	00020700 02
14000000 52	10900000 53	20501000 50	20000000 51	98009020 52	30090190 51	27377165 50	00020800 02
40000000 51	42000000 52	30154000 50	20000000 51	40839436 52	28394355 51	24465986 51	00020900 02

* D6=	PRESCOTT	*FEMALES	1941-1951	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
12640000 54	13330000 54	47800000 48	20000000 51	62367000 52	-66330000 51	-52202328 48	00021000 02
11200000 54	13860000 54	68000000 47	20000000 51	94144000 51	-25658560 53	-18639277 50	00021100 02
87400000 53	14230000 54	72000000 47	20000000 51	10218800 52	-53878120 53	-38136210 50	00021200 02
82400000 53	13300000 54	93000000 47	20000000 51	12314900 52	-49368510 53	-37466091 50	00021300 02
78000000 53	96900000 53	12700000 48	20000000 51	12238310 52	-17676169 53	-18474997 50	00021400 02
74800000 53	85800000 53	18200000 48	20000000 51	15485690 52	-94514310 52	-11218125 50	00021500 02
64200000 53	73600000 53	24800000 48	20000000 51	18060560 52	-75939440 52	-10577416 50	00021600 02
62800000 53	71700000 53	36100000 48	20000000 51	25472980 52	-63527020 52	-91864641 49	00021700 02
48500000 53	58400000 53	49100000 48	20000000 51	28053700 52	-70946300 52	-12761358 50	00021800 02
44300000 53	53200000 53	75700000 48	20000000 51	38926540 52	-50073460 52	-10155375 50	00021900 02
40500000 53	52200000 53	11990000 49	20000000 51	59320240 52	-57679760 52	-12466454 50	00022000 02
34800000 53	44900000 53	18870000 49	20000000 51	77878310 52	-23121690 52	-62302179 49	00022100 02
26700000 53	36700000 53	29760000 49	20000000 51	95696090 52	-43039100 51	-15863796 49	00022200 02
20600000 53	33500000 53	49560000 49	20000000 51	13349084 53	44908400 51	22286034 49	00022300 02
10200000 53	26500000 53	80010000 49	20000000 51	14989985 53	-13100150 52	-11381523 50	00022400 02
68000000 52	20900000 53	12565000 50	20000000 51	15442468 53	13424683 52	24698452 50	00022500 02
12000000 52	10000000 53	18673000 50	20000000 51	87342440 52	-65756000 50	-51949981 49	00022600 02
30000000 51	70000000 52	26734000 50	20000000 51	66880263 52	-11973740 50	-38380602 49	00022700 02

* D7=	PRESCOTT	*FEMALES	1951-1956	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
15710000 54	16330000 54	35000000 48	10000000 51	28383800 52	-33616200 52	-20949683 49	00022800 02
15460000 54	15720000 54	46000000 47	10000000 51	36155000 51	-22384500 52	-14272329 49	00022900 02
10940000 54	12640000 54	47000000 47	10000000 51	29652000 51	-16703460 53	-13245852 50	00023000 02
82200000 53	11200000 54	57000000 47	10000000 51	31933000 51	-29480670 53	-26397290 50	00023100 02
73200000 53	87400000 53	72000000 47	10000000 51	31438400 51	-13885616 53	-15944787 50	00023200 02
82100000 53	82400000 53	86000000 47	10000000 51	35403900 51	54039000 50	.065864303 47	00023300 02
76800000 53	78000000 53	12600000 48	10000000 51	49056000 51	-70944000 51	-91529496 48	00023400 02
70100000 53	74800000 53	20600000 48	10000000 51	76764000 51	-39323600 52	-53116772 49	00023500 02
60100000 53	64200000 53	32300000 48	10000000 51	10301240 52	-30698760 52	-48597151 49	00023600 02
57500000 53	62800000 53	50000000 48	10000000 51	15544360 52	-37455640 52	-61156495 49	00023700 02
44200000 53	48500000 53	75300000 48	10000000 51	17989400 52	-25010600 52	-53554673 49	00023800 02
41200000 53	44300000 53	11820000 49	10000000 51	25569940 52	-54300600 51	-13008311 49	00023900 02
36400000 53	40500000 53	19240000 49	10000000 51	37489270 52	-35107300 51	-95527279 48	00024000 02
29900000 53	34800000 53	31490000 49	10000000 51	51449100 52	24491000 51	82586160 48	00024100 02
18600000 53	26700000 53	53250000 49	10000000 51	63911070 52	-17088930 52	-84145059 49	00024200 02
13000000 53	20600000 53	68060000 49	10000000 51	76073660 52	.073660000 49	.056693662 47	00024300 02
54000000 52	10200000 53	17018000 50	10000000 51	61865290 52	15865287 52	34546870 50	00024400 02
17000000 52	68000000 52	19977000 50	10000000 51	45685667 52	-53143330 51	-23815782 50	00024500 02
40000000 51	15000000 52	27769000 50	10000000 51	12050752 52	10507523 51	35627808 50	00024600 02

*	E	STORMONT	*MALES	1891-1956	*	*	*	*

* E1=	STORMONT	*MALES	1891-1901	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
14470000 54	16520000 54	46900000 48	20000000 51	75877200 52	-12912260 53	-81924327 49	00000100 02
12850000 54	16600000 54	44500000 48	20000000 51	72411000 52	-30258900 53	-19059656 50	00000200 02
10750000 54	15530000 54	41300000 48	20000000 51	62947900 52	-41505210 53	-27854872 50	00000300 02
84400000 53	13090000 54	50600000 48	20000000 51	64744300 52	-40025570 53	-32168283 50	00000400 02
74100000 53	10540000 54	58600000 48	20000000 51	60173400 52	-25282658 53	-25439708 50	00000500 02
66300000 53	83700000 53	61700000 48	20000000 51	50234230 52	-12376577 53	-15730955 50	00000600 02
61100000 53	73500000 53	68300000 48	20000000 51	48694730 52	-7530527O 52	-10972562 50	00000700 02
57900000 53	64200000 53	83800000 48	20000000 51	51819270 52	-11180730 52	-18944587 49	00000800 02
42100000 53	53700000 53	11260000 49	20000000 51	57493740 52	-5850626O 52	-12201355 50	00000900 02
32300000 53	48600000 53	15480000 49	20000000 51	70198290 52	-9280171O 52	-22318742 50	00001000 02
31300000 53	39800000 53	22350000 49	20000000 51	80522420 52	-4477580O 51	-14103610 49	00001100 02
21600000 53	34400000 53	35410000 49	20000000 51	104 12310 53	-23876900 52	-99538138 49	00001200 02
14200000 53	23200000 53	53650000 49	20000000 51	98337990 52	83379900 51	62381151 49	00001300 02
79000000 52	20900000 53	78090000 49	20000000 51	116 30927 53	-13690727 52	-14770331 50	00001400 02
40000000 52	12700000 53	11511000 50	20000000 51	89615320 52	26153160 51	69956884 49	00001500 02
17000000 52	76000000 52	19862000 50	20000000 51	67697793 52	86977930 51	104 76483 51	00001600 02
30000000 51	51000000 52	28885000 50	20000000 51	49312747 52	13127472 51	77803824 50	00001700 02

* E2=	STORMONT	*MALES	1901-1911	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
12830000 54	15300000 54	41400000 48	20000000 51	62184600 52	-18481540 53	-12591188 50	00001800 02
10110000 54	15350000 54	48600000 48	20000000 51	72996600 52	-45100340 53	-30848314 50	00001900 02
83100000 53	14470000 54	39800000 48	20000000 51	56571900 52	-55942810 53	-40234234 50	00002000 02
72300000 53	12850000 54	45000000 48	20000000 51	56675500 52	-50532450 53	-41139332 50	00002100 02
74300000 53	10750000 54	52800000 48	20000000 51	55426700 52	-27657330 53	-27126377 50	00002200 02
66600000 53	84400000 53	55800000 48	20000000 51	45927310 52	-13207269 53	-16548955 50	00002300 02
61300000 53	74100000 53	64900000 48	20000000 51	46714320 52	-81285680 52	-11707815 50	00002400 02
54500000 53	66300000 53	81300000 48	20000000 51	51968600 52	-66031400 52	-10806548 50	00002500 02
43500000 53	61100000 53	11290000 49	20000000 51	65579810 52	-11042019 53	-20244977 50	00002600 02
42600000 53	57900000 53	15590000 49	20000000 51	84189890 52	-68810110 52	-13906367 50	00002700 02
32100000 53	42100000 53	23470000 49	20000000 51	88996940 52	-11003060 52	-38141442 49	00002800 02
24300000 53	32300000 53	37010000 49	20000000 51	10147512 53	21475120 52	96942249 49	00002900 02
19100000 53	31300000 53	56710000 49	20000000 51	13842006 53	16420060 52	94054678 49	00003000 02
10200000 53	21600000 53	84190000 49	20000000 51	12635961 53	12359610 52	13787992 50	00003100 02
29000000 52	14200000 53	12127000 50	20000000 51	10302031 53	-99796860 51	-25602274 50	00003200 02
11000000 52	79000000 52	19078000 50	20000000 51	69487666 52	14876660 51	15639337 50	00003300 02
50000000 51	60000000 52	25653000 50	20000000 51	56904141 52	19041405 51	61506037 50	00003400 02

* E3=	STORMONT	*MALES	1911-1921	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
12470000 54	13370000 54	35800000 48	20000000 51	47113800 52	-42886200 52	-33248049 49	00003500 02
10310000 54	13870000 54	32700000 48	20000000 51	44709700 52	-31129030 53	-23190982 50	00003600 02
87900000 53	12830000 54	35600000 48	20000000 51	44954400 52	-35904560 53	-29001000 50	00003700 02
77300000 53	10110000 54	39400000 48	20000000 51	39145700 52	-19885428 53	-20461327 50	00003800 02
73600000 53	83100000 53	46900000 48	20000000 51	38168270 52	-56831730 52	-71661957 49	00003900 02
69000000 53	72300000 53	49800000 48	20000000 51	35206140 52	22061400 51	32075599 48	00004000 02
68900000 53	74300000 53	61400000 48	20000000 51	44383540 52	-96164600 51	-13765006 49	00004100 02
60400000 53	66600000 53	78700000 48	20000000 51	50604620 52	-11395380 52	-18517169 49	00004200 02
51200000 53	61300000 53	11320000 49	20000000 51	65958250 52	-35041750 52	-64056811 49	00004300 02
43700000 53	54500000 53	15690000 49	20000000 51	79717730 52	-28282270 52	-60785187 49	00004400 02
34600000 53	43500000 53	23800000 49	20000000 51	93115630 52	41156300 51	12038076 49	00004500 02
28800000 53	42600000 53	38610000 49	20000000 51	13865106 53	65106000 50	22657470 48	00004600 02
18400000 53	32100000 53	59770000 49	20000000 51	14768146 53	10681460 52	61629067 49	00004700 02
85000000 52	24300000 53	90290000 49	20000000 51	14867295 53	-93270520 51	-98879927 49	00004800 02
51000000 52	19100000 53	13741000 50	20000000 51	14744146 53	74414550 51	17083801 50	00004900 02
70000000 51	10200000 53	18295000 50	20000000 51	88476780 52	-65232210 51	-48237184 50	00005000 02
10000000 51	45000000 52	22422000 50	20000000 51	41447022 52	-25529779 51	-71854596 50	00005100 02

* E4*	STORMONT	*MALES	1921-1931	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
16260000 54	13670000 54	26800000 48	20000000 51	36213100 52	29521310 53	22183349 50	00005200 02
14530000 54	13350000 54	25100000 48	20000000 51	33149100 52	15114910 53	11610323 50	00005300 02
12110000 54	12470000 54	31800000 48	20000000 51	39084800 52	30848000 51	25538217 48	00005400 02
10810000 54	10310000 54	36200000 48	20000000 51	36720100 52	86720100 52	87219001 49	00005500 02
97600000 53	87900000 53	41200000 48	20000000 51	35550910 52	13255091 53	15715342 50	00005600 02
89600000 53	77300000 53	46000000 48	20000000 51	34841720 52	15764172 53	21303181 50	00005700 02
79900000 53	73600000 53	60600000 48	20000000 51	43407450 52	10640745 53	15363643 50	00005800 02
75300000 53	69000000 53	82600000 48	20000000 51	54919050 52	11791905 53	18567562 50	00005900 02
67500000 53	68900000 53	11790000 49	20000000 51	77059470 52	63059470 52	10304836 50	00006000 02
53000000 53	60400000 53	16970000 49	20000000 51	95012710 52	-69872900 51	-17657199 49	00006100 02
44500000 53	51200000 53	26220000 49	20000000 51	11946358 53	52463580 52	13365277 50	00006200 02
36900000 53	43700000 53	40040000 49	20000000 51	14659009 53	78590090 52	27061780 50	00006300 02
20300000 53	34600000 53	63100000 49	20000000 51	16569569 53	22695690 52	12587436 50	00006400 02
12700000 53	28800000 53	98700000 49	20000000 51	18612151 53	25121510 52	24658306 50	00006500 02
53000000 52	18400000 53	14190000 50	20000000 51	14417115 53	13171147 52	33069361 50	00006600 02
11000000 52	85000000 52	21553000 50	20000000 51	77497968 52	34979680 51	46626939 50	00006700 02
20000000 51	59000000 52	30573000 50	20000000 51	57464917 52	46491650 50	30286072 50	00006800 02

* E5=	STORMONT	*MALES	1931-1941	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
21380000 54	18210000 54	95400000 48	20000000 51	16644980 53	48344980 53	29219410 50	00006900 02
20250000 54	18650000 54	18400000 48	20000000 51	34040100 52	19404010 53	10597725 50	00007000 02
17160000 54	17280000 54	18700000 48	20000000 51	32047300 52	20047300 52	11820672 49	00007100 02
16350000 54	16260000 54	21800000 48	20000000 51	35108600 52	44108600 52	27725714 49	00007200 02
15570000 54	14530000 54	26800000 48	20000000 51	38491300 52	14249130 53	10073554 50	00007300 02
13380000 54	12110000 54	33100000 48	20000000 51	39495000 52	16649500 53	14212061 50	00007400 02
11810000 54	10810000 54	40800000 48	20000000 51	43814600 52	14381460 53	13810987 50	00007500 02
10380000 54	97600000 53	55600000 48	20000000 51	52940250 52	11494030 53	12452097 50	00007600 02
91000000 53	89600000 53	84500000 48	20000000 51	72889750 52	86889750 52	10556271 50	00007700 02
73700000 53	79900000 53	12290000 49	20000000 51	92947850 52	30947850 52	43832244 49	00007800 02
65200000 53	75300000 53	18410000 49	20000000 51	12769058 53	26690580 52	42683796 49	00007900 02
57500000 53	67500000 53	27480000 49	20000000 51	16414956 53	64149560 52	12557405 50	00008000 02
41600000 53	50000000 53	41550000 49	20000000 51	17290794 53	88907940 52	27181320 50	00008100 02
28500000 53	44500000 53	65350000 49	20000000 51	21861377 53	58613770 52	25891049 50	00008200 02
13300000 53	36900000 53	98850000 49	20000000 51	23868441 53	26844100 51	20599301 49	00008300 02
53000000 52	20300000 53	15001000 50	20000000 51	16303903 53	13039030 52	32629413 50	00008400 02
10000000 52	12700000 53	21914000 50	20000000 51	11629631 53	-70369500 50	-65743185 49	00008500 02
20000000 51	66000000 52	30290000 50	20000000 51	64211480 52	21147950 50	11824270 50	00008600 02

* E6=	STORMONT	*MALES	1941-1951	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
22990000 54	21150000 54	61700000 48	20000000 51	12693600 53	31093600 53	15640140 50	00008700 02
19500000 54	20390000 54	12500000 48	20000000 51	25335000 52	-63665000 52	-31616480 49	00008800 02
17180000 54	21380000 54	13400000 48	20000000 51	28508900 52	-39149110 53	-18558557 50	00008900 02
18180000 54	20250000 54	16300000 48	20000000 51	32790400 52	-17420960 53	-8744541? 49	00009000 02
16040000 54	17160000 54	19500000 48	20000000 51	33181500 52	-78818500 52	-46837196 49	00009100 02
16410000 54	16350000 54	22100000 48	20000000 51	35781700 52	41781700 52	26126327 49	00009200 02
15350000 54	15570000 54	31400000 48	20000000 51	48210700 52	26210700 52	17372008 49	00009300 02
12480000 54	13380000 54	49400000 48	20000000 51	64654900 52	-25345100 52	-19904345 49	00009400 02
11690000 54	11810000 54	77200000 48	20000000 51	88076200 52	76076200 52	69607964 49	00009500 02
86200000 53	10380000 54	12080000 49	20000000 51	11878450 53	-57215530 52	-62243868 49	00009600 02
74700000 53	91000000 53	18780000 49	20000000 51	15716225 53	-58377500 51	-77543269 48	00009700 02
62100000 53	73700000 53	27190000 49	20000000 51	17756777 53	61567770 52	11005403 50	00009800 02
49100000 53	65200000 53	40600000 49	20000000 51	22122788 53	60227880 52	13981378 50	00009900 02
31000000 53	57500000 53	63210000 49	20000000 51	27571301 53	10713010 52	3579510? 49	00010000 02
18100000 53	41600000 53	96440000 49	20000000 51	26510900 53	30109000 52	19954139 50	00010100 02
79000000 52	28500000 53	13877000 50	20000000 51	22102138 53	15021382 52	23478753 50	00010200 02
19000000 52	13300000 53	19006000 50	20000000 51	11684222 53	28422220 51	17590426 50	00010300 02
20000000 51	65000000 52	25253000 50	20000000 51	61461222 52	-15387783 51	-43483320 50	00010400 02

* E7=	STORMONT	*MALES	1951-1956	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
33510000 54	32740000 54	45500000 48	10000000 51	73825400 52	15082540 53	47130366 49	00010500 02
26890000 54	26540000 54	70000000 47	10000000 51	92726000 51	44272600 52	16739948 49	00010600 02
22610000 54	22990000 54	10100000 48	10000000 51	11590200 52	-26409800 52	-11545723 49	00010700 02
20460000 54	19500000 54	14200000 48	10000000 51	13802700 52	10980270 53	56710491 49	00010800 02
21640000 54	17180000 54	15600000 48	10000000 51	13358100 52	45935810 53	26947484 50	00010900 02
20870000 54	18180000 54	16900000 48	10000000 51	15319000 52	28431900 53	15772008 50	00011000 02
18240000 54	16040000 54	19400000 48	10000000 51	15510500 52	23551050 53	14826066 50	00011100 02
18050000 54	16410000 54	28900000 48	10000000 51	23577100 52	18757710 53	11597282 50	00011200 02
16350000 54	15350000 54	50000000 48	10000000 51	37994600 52	13799460 53	92180429 49	00011300 02
12790000 54	12480000 54	83800000 48	10000000 51	51425900 52	82425900 52	68884911 49	00011400 02
11120000 54	11690000 54	13570000 49	10000000 51	77196400 52	20196400 52	18498199 49	00011500 02
78300000 53	86200000 53	21630000 49	10000000 51	89279810 52	10279810 52	13303405 49	00011600 02
67700000 53	74700000 53	32370000 49	10000000 51	11332642 53	43326420 52	68373404 49	00011700 02
52500000 53	62100000 53	46730000 49	10000000 51	13215453 53	36154530 52	73959016 49	00011800 02
34300000 53	49100000 53	70440000 49	10000000 51	15022597 53	22259700 51	65320999 48	00011900 02
21800000 53	31000000 53	10897000 50	10000000 51	13589081 53	43890810 52	25208784 50	00012000 02
10000000 53	18100000 53	16315000 50	10000000 51	10671287 53	25712870 52	34612820 50	00012100 02
21000000 52	79000000 52	22938000 50	10000000 51	57530245 52	-46975500 50	-21879849 49	00012200 02
30000000 51	21000000 52	31013000 50	10000000 51	17718637 52	-28136300 50	-85745771 49	00012300 02

*	F	STORMONT	*FEMALES	1891-1956	*	*	*	*

* F1= STORMONT	*FEMALES	1891-1901	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
15270000 54	16290000 54	49600000 48	20000000 51	79037900 52	-22962100 52	-14814620 49	00045800 02
13330000 54	15630000 54	44700000 48	20000000 51	68489500 52	-16151050 53	-10806916 50	00045900 02
10300000 54	15630000 54	50900000 48	20000000 51	77752000 52	-45524800 53	-30651312 50	00046000 02
82400000 53	13880000 54	58100000 48	20000000 51	78578500 52	-48542150 53	-37071447 50	00046100 02
76400000 53	11110000 54	67400000 48	20000000 51	72649300 52	-27435070 53	-26421776 50	00046200 02
71800000 53	87000000 53	69800000 48	20000000 51	58853590 52	-93146410 52	-11483304 50	00046300 02
66300000 53	78100000 53	73900000 48	20000000 51	55827990 52	-62172010 52	-8534156 49	00046400 02
53300000 53	68700000 53	84700000 48	20000000 51	56018340 52	-97981660 52	-15528448 50	00046500 02
43200000 53	56000000 53	10390000 49	20000000 51	55538500 52	-72461500 52	-14364129 50	00046600 02
36100000 53	47100000 53	14340000 49	20000000 51	63346750 52	-46653250 52	-11444346 50	00046700 02
29100000 53	35100000 53	21910000 49	20000000 51	69747030 52	97470300 51	34655741 49	00046800 02
22200000 53	32300000 53	32350000 49	20000000 51	90521650 52	-10478350 52	-5072369 49	00046900 02
12900000 53	23000000 53	48650000 49	20000000 51	90322060 52	-10677940 52	-7646861 49	00047000 02
87000000 52	17200000 53	72150000 49	20000000 51	90659200 52	56592000 51	69573941 49	00047100 02
50000000 52	11900000 53	10704000 50	20000000 51	80641030 52	11641028 52	30347602 50	00047200 02
13000000 52	55000000 52	17723000 50	20000000 51	47181154 52	51811540 51	66264943 50	00047300 02
80000000 51	48000000 52	26262000 50	20000000 51	45718864 52	57188637 51	25070241 51	00047400 02

* F2=	STORMONT	*FEMALES	1901-1911	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
13050000 54	14900000 54	41100000 48	20000000 51	60130900 52	-12486910 53	-87329043 49	00047500 02
11480000 54	15060000 54	38200000 48	20000000 51	56619300 52	-30338070 53	-20902903 50	00047600 02
91600000 53	15270000 54	43800000 48	20000000 51	65600200 52	-54539980 53	-37320369 50	00047700 02
75900000 53	13330000 54	51000000 48	20000000 51	66456400 52	-50754360 53	-40073125 50	00047800 02
74800000 53	10300000 54	60200000 48	20000000 51	60345000 52	-22165496 53	-22859158 50	00047900 02
64900000 53	82400000 53	62900000 48	20000000 51	50380850 52	-12461915 53	-16108592 50	00048000 02
64000000 53	76400000 53	69800000 48	20000000 51	51682920 52	-72317080 52	-10152372 50	00048100 02
57100000 53	71800000 53	83600000 48	20000000 51	57816840 52	-89183160 52	-13508851 50	00048200 02
48000000 53	66300000 53	10390000 49	20000000 51	65753620 52	-11724638 53	-19631158 50	00048300 02
40000000 53	53300000 53	14500000 49	20000000 51	72428340 52	-60571660 52	-13151408 50	00048400 02
32000000 53	43200000 53	22430000 49	20000000 51	87678820 52	-24321180 52	-70635155 49	00048500 02
22000000 53	36100000 53	33980000 49	20000000 51	10551395 53	-35486050 52	-13889623 50	00048600 02
16100000 53	29100000 53	51930000 49	20000000 51	12027663 53	-97233700 51	-56953948 49	00048700 02
10600000 53	22200000 53	77480000 49	20000000 51	12289103 53	68910300 51	69529830 49	00048800 02
36000000 52	12900000 53	11230000 50	20000000 51	89803280 52	-31967170 51	-81555733 49	00048900 02
14000000 52	87000000 52	18126000 50	20000000 51	75224503 52	22245030 51	18890948 50	00049000 02
50000000 51	71000000 52	24469000 50	20000000 51	66709496 52	70949570 50	16536417 50	00049100 02

* F3=	STORMONT	*FEMALES	1911-1921	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
12340000 54	13200000 54	32500000 48	20000000 51	42285200 52	-43714800 52	-34213269 49	00049200 02
10670000 54	13200000 54	31700000 48	20000000 51	41255100 52	-21174490 53	-16558807 50	00049300 02
95400000 53	13050000 54	36700000 48	20000000 51	47116200 52	-30388380 53	-24158336 50	00049400 02
76600000 53	11480000 54	43900000 48	20000000 51	49419500 52	-33258050 53	-30273658 50	00049500 02
74200000 53	91600000 53	53000000 48	20000000 51	47408710 52	-12659129 53	-14574322 50	00049600 02
66900000 53	75900000 53	56000000 48	20000000 51	41450650 52	-48549350 52	-67659946 49	00049700 02
64300000 53	74800000 53	65700000 48	20000000 51	47720200 52	-57279800 52	-81795591 49	00049800 02
56400000 53	64900000 53	82600000 48	20000000 51	51655740 52	-33344260 52	-55820843 49	00049900 02
52200000 53	64000000 53	10390000 49	20000000 51	63472570 52	-54527430 52	-94579073 49	00050000 02
43200000 53	57100000 53	14670000 49	20000000 51	78443440 52	-60556560 52	-12294336 50	00050100 02
35500000 53	48000000 53	22840000 49	20000000 51	99020830 52	-25979170 52	-68190526 49	00050200 02
26500000 53	40000000 53	35600000 49	20000000 51	12162516 53	-13374840 52	-48046152 49	00050300 02
16800000 53	32000000 53	56200000 49	20000000 51	14054731 53	-11452690 52	-63820108 49	00050400 02
10200000 53	22000000 53	11554000 50	20000000 51	15555300 53	37553000 52	58269589 50	00050500 02
41000000 52	16100000 53	12755000 50	20000000 51	11986364 53	-13636000 50	-33148290 48	00050600 02
13000000 52	10600000 53	18328000 50	20000000 51	92002970 52	-99702900 50	-71231473 49	00050700 02
00000000 52	55000000 52	12676000 50	20000000 51	40819137 52	-14180863 52	-10000000 51	00050800 02

* F4=	STORMONT	*FEMALES	1921-1931	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
15820000 54	13080000 54	22500000 48	20000000 51	29126000 52	30312600 53	23702570 50	00050900 02
13890000 54	12450000 54	23100000 48	20000000 51	28479700 52	17247970 53	14178119 50	00051000 02
11510000 54	12340000 54	29000000 48	20000000 51	35314800 52	-47665200 52	-35781254 49	00051100 02
98100000 53	10670000 54	35900000 48	20000000 51	37694200 52	-48305800 52	-46930465 49	00051200 02
93400000 53	95400000 53	42100000 48	20000000 51	39405950 52	19405950 52	21218102 49	00051300 02
90100000 53	76600000 53	47100000 48	20000000 51	35317400 52	17031740 53	23305355 50	00051400 02
77700000 53	74200000 53	61200000 48	20000000 51	44179210 52	79179210 52	11346640 50	00051500 02
66600000 53	66900000 53	76200000 48	20000000 51	49264870 52	46264870 52	74652650 49	00051600 02
57500000 53	64300000 53	10580000 49	20000000 51	64876040 52	-31239600 51	-54036162 48	00051700 02
48600000 53	56400000 53	15260000 49	20000000 51	80385740 52	23857400 51	49331465 48	00051800 02
42100000 53	52200000 53	22640000 49	20000000 51	10683522 53	58352200 51	140[illegible]5190 49	00051900 02
35300000 53	43200000 53	35110000 49	20000000 51	12982137 53	50821370 52	16818320 50	00052000 02
22000000 53	35500000 53	60120000 49	20000000 51	16403739 53	29037390 52	15205799 50	00052100 02
11800000 53	26500000 53	92560000 49	20000000 51	16467114 53	17671140 52	17613217 50	00052200 02
58000000 52	16600000 53	13618000 50	20000000 51	12913674 53	19136730 52	49241196 50	00052300 02
12000000 52	10200000 53	20189000 50	20000000 51	91303780 52	13037840 51	12189208 50	00052400 02
30000000 51	54000000 52	30313000 50	20000000 51	52541475 52	15414754 51	10568731 51	00052500 02

* F5=	STORMONT	*FEMALES	1931-1941	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
21340000 54	18470000 54	77000000 48	20000000 51	13739060 53	42439060 53	24823834 50	00052600 02
21140000 54	18130000 54	12000000 48	20000000 51	21660900 52	32266090 53	18012274 50	00052700 02
18020000 54	16390000 54	13000000 48	20000000 51	21184700 52	18418470 53	11384779 50	00052800 02
16420000 54	15820000 54	18200000 48	20000000 51	28552900 52	28552900 52	17004130 49	00052900 02
14880000 54	13890000 54	24500000 48	20000000 51	33647600 52	13264760 53	7869454 49	00053000 02
12560000 54	11510000 54	30100000 48	20000000 51	34174500 52	13917450 53	12461616 50	00053100 02
10610000 54	98100000 53	35900000 48	20000000 51	34656060 52	11465610 53	12115690 50	00053200 02
97000000 53	93400000 53	48600000 48	20000000 51	44416180 52	30416180 52	9397530 49	00053300 02
84900000 53	90100000 53	64700000 48	20000000 51	56626120 52	46261200 51	54787578 48	00053400 02
74200000 53	77700000 53	95100000 48	20000000 51	70610680 52	35810680 52	30710042 49	00053500 02
59400000 53	66000000 53	13850000 49	20000000 51	86699070 52	14699070 52	25373807 49	00053600 02
50800000 53	57500000 53	21650000 49	20000000 51	11303631 53	46036310 52	9653525 49	00053700 02
40900000 53	46600000 53	33590000 49	20000000 51	14066049 53	33660490 52	18434175 50	00053800 02
27500000 53	42100000 53	55460000 49	20000000 51	18305198 53	37051980 52	15571460 50	00053900 02
17000000 53	35300000 53	87940000 49	20000000 51	21239372 53	29393720 52	20904984 50	00054000 02
76000000 52	22000000 53	13975000 50	20000000 51	17117158 53	27171581 52	55647063 50	00054100 02
15000000 52	11800000 53	20501000 50	20000000 51	10610151 53	31015070 51	26066385 50	00054200 02
60000000 51	73000000 52	30154000 50	20000000 51	7098282B 52	39828284 51	19744619 51	00054300 02

* F6=	STORMONT	*FEMALES	1941-1951	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
21820000 54	20470000 54	47800000 48	20000000 51	95772800 52	23077280 53	11827059 50	00054400 02
20110000 54	20860000 54	68000000 47	20000000 51	14182700 52	-62817300 52	-30290663 49	00054500 02
19650000 54	21340000 54	72000000 47	20000000 51	15324700 52	-15367500 53	-7253367? 49	00054600 02
19580000 54	21140000 54	93000000 47	20000000 51	19574200 52	-13642500 53	-6513?567 49	00054700 02
16720000 54	18020000 54	12700000 48	20000000 51	22759000 52	-10724100 53	-6027345? 49	00054800 02
16860000 54	16420000 54	18200000 48	20000000 51	29635800 52	7363580? 52	4566?459 49	00054900 02
14770000 54	14860000 54	24800000 48	20000000 51	36513700 52	2551370? 52	1757763? 49	00055000 02
11930000 54	12560000 54	36100000 48	20000000 51	44622100 52	-18377900 52	-1517107? 49	00055100 02
10190000 54	10610000 54	49100000 48	20000000 51	50967400 52	8967400? 51	8?763273 48	00055200 02
89100000 53	97000000 53	75700000 48	20000000 51	70975070 52	-8024930? 51	-8926259? 48	00055300 02
71800000 53	84900000 53	11990000 49	20000000 51	96480620 52	-3451938? 52	-458717?9 49	00055400 02
66100000 53	74200000 53	18870000 49	20000000 51	12869868 53	4769868? 52	7777364? 49	00055500 02
50400000 53	59400000 53	29760000 49	20000000 51	15488685 53	6488685? 52	1477679? 50	00055600 02
33300000 53	50800000 53	49560000 49	20000000 51	20242790 53	2742790? 52	8975917? 49	00055700 02
20400000 53	40900000 53	80010000 49	20000000 51	23135487 53	2635487? 52	1483568? 50	00055800 02
89000000 52	27500000 53	12565000 50	20000000 51	20319037 53	1719037? 52	2393881? 50	00055900 02
36000000 52	17000000 53	16673000 50	20000000 51	14848215 53	1448214? 52	6730294? 50	00056000 02
90000000 51	97000000 52	26734000 50	20000000 51	92676935 52	4676935? 51	1081856? 51	00056100 02

* F7=	STORMONT	*FEMALES	1951-1956	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
32560000 54	31060000 54	35000000 48	10000000 51	53986500 52	20398650 53	66836696 49	00056200 02
26290000 54	25220000 54	46000000 47	10000000 51	58005000 51	11280050 53	44829712 49	00056300 02
22500000 54	21820000 54	47000000 47	10000000 51	51187000 51	73118700 52	33588740 49	00056400 02
20040000 54	20110000 54	57000000 47	10000000 51	57336000 51	-12664000 51	-63153704 47	00056500 02
20460000 54	19650000 54	72000000 47	10000000 51	70682000 51	88068200 52	44980218 49	00056600 02
20370000 54	19580000 54	86000000 47	10000000 51	84127000 51	87412700 52	44836515 49	00056700 02
17860000 54	16720000 54	12600000 47	10000000 51	10584000 51	11505840 53	66858421 49	00056800 02
17340000 54	16860000 54	20600000 48	10000000 51	17302700 52	65302700 52	39133940 49	00056900 02
14560000 54	14770000 54	32300000 48	10000000 51	23699300 52	26993000 51	18573582 48	00057000 02
11950000 54	11930000 54	50000000 48	10000000 51	29529300 52	31529300 52	27099350 49	00057100 02
99700000 53	10190000 54	75300000 48	10000000 51	37796300 52	15796290 52	16098889 49	00057200 02
82400000 53	89100000 53	11820000 49	10000000 51	51428480 52	-15571520 52	-18546985 49	00057300 02
67200000 53	71800000 53	19240000 49	10000000 51	66462460 52	20462460 52	31406418 49	00057400 02
59500000 53	66100000 53	31490000 49	10000000 51	97723730 52	31723730 52	56320019 49	00057500 02
37900000 53	50400000 53	53250000 49	10000000 51	12064111 53	-43588900 51	-11370259 49	00057600 02
22600000 53	33300000 53	88060000 49	10000000 51	12297344 53	15973440 52	76054381 49	00057700 02
11100000 53	20400000 53	17018000 50	10000000 51	12373057 53	30730570 52	38284278 50	00057800 02
44000000 52	89000000 52	19977000 50	10000000 51	59794476 52	14794476 52	50656431 50	00057900 02
60000000 51	45000000 52	27769000 50	10000000 51	36152257 52	-28477430 51	-32186095 50	00058000 02

*	G	GLENGARRY	*MALES	1891-1956	*	*	*	*

* G1=	GLENGARRY	*MALES	1891-1901	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
12230000 54	15320000 54	46900000 48	20000000 51	70365600 52	-23863440 53	-16326545 50	00019600 02
94000000 53	12470000 54	44500000 48	20000000 51	54395500 52	-25260450 53	-21180911 50	00019700 02
75100000 53	12490000 54	41300000 48	20000000 51	50625800 52	-44737420 53	-37331762 50	00019800 02
58600000 53	99100000 53	50600000 48	20000000 51	49015720 52	-35598428 53	-37790894 50	00000400 02
66400000 53	78400000 53	58600000 48	20000000 51	44758980 52	-75241020 52	-10178145 50	00000500 02
54300000 53	64600000 53	61700000 48	20000000 51	38770980 52	-64229020 52	-10577396 50	00000600 02
47600000 53	54300000 53	66300000 48	20000000 51	35974470 52	-31025530 52	-61191258 49	00000700 02
37600000 53	44200000 53	83800000 48	20000000 51	35676190 52	-30323810 52	-74629665 49	00000800 02
35900000 53	43100000 53	11260000 49	20000000 51	46144880 52	-25855120 52	-67181437 49	00000900 02
30300000 53	38700000 53	15480000 49	20000000 51	55898640 52	-28101360 52	-84872379 49	00020500 02
27100000 53	32600000 53	23350000 49	20000000 51	68600560 52	13600560 52	52838343 49	00020600 02
19000000 53	34300000 53	35410000 49	20000000 51	10382041 53	-49179590 52	-20561784 50	00020700 02
17900000 53	29800000 53	53650000 49	20000000 51	12631346 53	73134600 51	42597748 49	00020800 02
92000000 52	19800000 53	78090000 49	20000000 51	11018773 53	41877330 51	47689613 49	00020900 02
39000000 52	13500000 53	11511000 50	20000000 51	95260380 52	-73962500 50	-18611776 49	00021000 02
15000000 52	75000000 52	19862000 50	20000000 51	66807032 52	68070320 51	83063837 50	00021100 02
70000000 51	50000000 52	28885000 50	20000000 51	48345831 52	53458305 51	32317308 51	00021200 02

* G2=	GLENGARRY	*MALES	1901-1911	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
11220000 54	13320000 54	41400000 48	20000000 51	54137200 52	-15536260 53	-12197147 50	00021300 02
83400000 53	12570000 54	48600000 48	20000000 51	59776400 52	-36322360 53	-30338827 50	00021400 02
68700000 53	12230000 54	39800000 48	20000000 51	47814400 52	-48818560 53	-41541149 50	00021500 02
58700000 53	94000000 53	45000000 48	20000000 51	41459090 52	-31154091 53	-34671867 50	00021600 02
57500000 53	75100000 53	52800000 48	20000000 51	38721330 52	-13727867 53	-19273169 50	00021700 02
54300000 53	58600000 53	55800000 48	20000000 51	31887920 52	-11112080 52	-20053849 49	00021800 02
49200000 53	66400000 53	64900000 48	20000000 51	41860070 52	-13013993 53	-20918112 50	00021900 02
46100000 53	54300000 53	81300000 48	20000000 51	42562520 52	-39437480 52	-78806008 49	00022000 02
35900000 53	47600000 53	11290000 49	20000000 51	51090000 52	-65910000 52	-15511520 50	00022100 02
28600000 53	37600000 53	15590000 49	20000000 51	54672540 52	-35327460 52	-10994224 50	00022200 02
27000000 53	35900000 53	23470000 49	20000000 51	75890500 52	-13109500 52	-46305405 49	00022300 02
18000000 53	30300000 53	37010000 49	20000000 51	95191830 52	-27808170 52	-13381654 50	00022400 02
13400000 53	27100000 53	56710000 49	20000000 51	11984612 53	-17153880 52	-11348620 50	00022500 02
83000000 52	19000000 53	84190000 49	20000000 51	11114966 53	41496560 51	52626987 49	00022600 02
42000000 52	17900000 53	12127000 50	20000000 51	12986364 53	-71363650 51	-14523592 50	00022700 02
11000000 52	92000000 52	19078000 50	20000000 51	80922345 52	-77655000 49	-70100576 48	00022800 02
70000000 51	61000000 52	25653000 50	20000000 51	57852543 52	38525428 51	12240175 51	00022900 02

* G3=	GLENGARRY	*MALES	1911-1921	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
10640000 54	13240000 54	35800000 48	20000000 51	46655700 52	-21334430 53	-16702177 50	00023000 02
84900000 53	13130000 54	32700000 48	20000000 51	42324300 52	-42167570 53	-33185155 50	00023100 02
73300000 53	11220000 54	35600000 48	20000000 51	39313200 52	-34968680 53	-32298057 50	00023200 02
57500000 53	83400000 53	39400000 48	20000000 51	32292310 52	-22670769 53	-28278098 50	00023300 02
59100000 53	68700000 53	46900000 48	20000000 51	31554270 52	-64445730 52	-98323518 49	00023400 02
54000000 53	58700000 53	49800000 48	20000000 51	28583680 52	-18416320 52	-32979552 49	00023500 02
53600000 53	57500000 53	61400000 48	20000000 51	34347960 52	-46520400 51	-86044991 48	00023600 02
41600000 53	54300000 53	78700000 48	20000000 51	41258730 52	-85741270 52	-17068742 50	00023700 02
40200000 53	49200000 53	11320000 49	20000000 51	52938760 52	-37061240 52	-84410184 49	00023800 02
37500000 53	46100000 53	15690000 49	20000000 51	67430960 52	-18569040 52	-47181150 49	00023900 02
31800000 53	35900000 53	23800000 49	20000000 51	76847150 52	35847150 52	12704869 50	00024000 02
17500000 53	28600000 53	38610000 49	20000000 51	93084990 52	-17915010 52	-92864780 49	00024100 02
14100000 53	27000000 53	59770000 49	20000000 51	12421805 53	-47819500 51	-32802072 49	00024200 02
75000000 52	18000000 53	90290000 49	20000000 51	11012811 53	51281090 51	73393019 49	00024300 02
44000000 52	13400000 53	13741000 50	20000000 51	10344060 53	13440602 52	43981894 50	00024400 02
12000000 52	83000000 52	18295000 50	20000000 51	71995810 52	99581000 50	90493712 49	00024500 02
60000000 51	60000000 52	22422000 50	20000000 51	55262696 52	12626961 51	26654319 50	00024600 02

* G4*	GLENGARRY	*MALES	1921-1931	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
98300000 53	11770000 54	26800000 48	20000000 51	31179800 52	-16232020 53	-14209926 50	00024700 02
77400000 53	11440000 54	25100000 48	20000000 51	28406400 52	-34159360 53	-30619896 50	00024800 02
61200000 53	10640000 54	31800000 48	20000000 51	33349000 52	-41865100 53	-40620055 50	00024900 02
60300000 53	84900000 53	36200000 48	20000000 51	30237980 52	-21576202 53	-26352226 50	00025000 02
53200000 53	73300000 53	41200000 48	20000000 51	29645980 52	-17135402 53	-24362414 50	00025100 02
48500000 53	57500000 53	46000000 48	20000000 51	25917190 52	-64082810 52	-11670883 50	00025200 02
48200000 53	59100000 53	60600000 48	20000000 51	34855710 52	-74144290 52	-13331844 50	00025300 02
45900000 53	54000000 53	82600000 48	20000000 51	42980120 52	-38019880 52	-76495693 49	00025400 02
40100000 53	53600000 53	11790000 49	20000000 51	59947570 52	-75052430 52	-15765581 50	00025500 02
32300000 53	41600000 53	16970000 49	20000000 51	65439220 52	-27560780 52	-78619120 49	00025600 02
34000000 53	40200000 53	26220000 49	20000000 51	93797580 52	31797580 52	10317109 50	00025700 02
28300000 53	37500000 53	40040000 49	20000000 51	12579241 53	33792410 52	13559944 50	00025800 02
16000000 53	31800000 53	63100000 49	20000000 51	15228679 53	-57132100 51	-34476491 49	00025900 02
56000000 52	17500000 53	98700000 49	20000000 51	11309467 53	-59053300 51	-95392917 49	00026000 02
29000000 52	14100000 53	14190000 50	20000000 51	11047698 53	-15210240 51	-49835287 49	00026100 02
10000000 52	75000000 52	21553000 50	20000000 51	68380560 52	33805600 51	51070180 50	00026200 02
10000000 51	62000000 52	30573000 50	20000000 51	60386861 52	-61313860 50	-38009046 50	00026300 02

* G5=	GLENGARRY	*MALES	1931-1941	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
97500000 53	99300000 53	95400000 48	20000000 51	90765880 52	72765860 52	80650774 49	00026400 02
99400000 53	11330000 54	18400000 48	20000000 51	20679600 52	-11832040 53	-10637259 50	00026500 02
86000000 53	11200000 54	18700000 48	20000000 51	20771400 52	-23922860 53	-21763317 50	00026600 02
65800000 53	98300000 53	21800000 48	20000000 51	21224940 52	-30377506 53	-31584834 50	00026700 02
62300000 53	77400000 53	26800000 48	20000000 51	20503990 52	-13049601 53	-17318739 50	00026800 02
58100000 53	61200000 53	33100000 48	20000000 51	19959500 52	-11040500 52	-18648217 49	00026900 02
55400000 53	60300000 53	40800000 48	20000000 51	24161630 52	-24838370 52	-42910718 49	00027000 02
48800000 53	53200000 53	55600000 48	20000000 51	28856780 52	-15143220 52	-30097236 49	00027100 02
45500000 53	48500000 53	84500000 48	20000000 51	39454830 52	94548300 51	21220811 49	00027200 02
41600000 53	48200000 53	12290000 49	20000000 51	56071170 52	-99288300 51	-23311007 49	00027300 02
38400000 53	45900000 53	18410000 49	20000000 51	77835290 52	28352900 51	74384903 48	00027400 02
36600000 53	40100000 53	27480000 49	20000000 51	97517000 52	62517000 52	20599836 50	00027500 02
25900000 53	32300000 53	41550000 49	20000000 51	11169853 53	47698530 52	22573686 50	00027600 02
16700000 53	34000000 53	65350000 49	20000000 51	16703075 53	-59692500 51	-34510469 49	00027700 02
11700000 53	28300000 53	98850000 49	20000000 51	18305607 53	17056070 52	17065638 50	00027800 02
44000000 52	16000000 53	15001000 50	20000000 51	12850367 53	12503669 52	39698811 50	00027900 02
70000000 51	56000000 52	21914000 50	20000000 51	51280261 52	22802605 51	48313270 50	00028000 02
20000000 51	40000000 52	30290000 50	20000000 51	38916048 52	91604820 50	84510049 50	00028100 02

* G6=	GLENGARRY	*MALES	1941-1951	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
89600000 53	93000000 53	61700000 48	20000000 51	55815810 52	21815810 52	24955622 49	00028200 02
75000000 53	97400000 53	12500000 48	20000000 51	12102150 52	-21189785 53	-22029143 50	00028300 02
51200000 53	97500000 53	13400000 48	20000000 51	13001020 52	-44999896 53	-46777490 50	00028400 02
51800000 53	99400000 53	16300000 48	20000000 51	16095640 52	-45990436 53	-47029585 50	00028500 02
52400000 53	86000000 53	19500000 48	20000000 51	16629420 52	-31937058 53	-37868357 50	00028600 02
52800000 53	65800000 53	22100000 48	20000000 51	14400220 52	-11559978 53	-17961439 50	00028700 02
51500000 53	62300000 53	31400000 48	20000000 51	19290450 52	-88709550 52	-14694078 50	00028800 02
50600000 53	58100000 53	49400000 48	20000000 51	28075120 52	-46924880 52	-84866646 49	00028900 02
44200000 53	55400000 53	77200000 48	20000000 51	41316000 52	-70684000 52	-13787050 50	00029000 02
39800000 53	48800000 53	12080000 49	20000000 51	55844720 52	-34155280 52	-73034740 49	00029100 02
37900000 53	45500000 53	18780000 49	20000000 51	78581130 52	25811300 51	68570686 48	00029200 02
35900000 53	41600000 53	27190000 49	20000000 51	10022821 53	43228210 52	13689700 50	00029300 02
29900000 53	38400000 53	40600000 49	20000000 51	13029372 53	45293720 52	17852818 50	00029400 02
20400000 53	36600000 53	63210000 49	20000000 51	17549732 53	13497320 52	70851077 49	00029500 02
92000000 52	25900000 53	96440000 49	20000000 51	16505585 53	-19441540 51	-20694784 49	00029600 02
38000000 52	16700000 53	13877000 50	20000000 51	12951078 53	51077500 50	13624581 49	00029700 02
16000000 52	11700000 53	19006000 50	20000000 51	10278602 53	17860150 51	12565195 50	00029800 02
20000000 51	53000000 52	25253000 50	20000000 51	50114535 52	-88546540 50	-30687091 50	00029900 02

* G7=	GLENGARRY	*MALES	1951-1956	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
12110000 54	10890000 54	45500000 48	10000000 51	24655900 52	14655590 53	13768304 50	00030000 02
11570000 54	10880000 54	70000000 47	10000000 51	38013000 51	72801300 52	67147563 49	00030100 02
75000000 53	89600000 53	10100000 48	10000000 51	45171200 51	-14148288 53	-15870510 50	00030200 02
48700000 53	75000000 53	14200000 48	10000000 51	53087400 51	-25769126 53	-34603771 50	00030300 02
45300000 53	51200000 53	15600000 48	10000000 51	39810000 51	-55019000 52	-10830107 50	00030400 02
51300000 53	51800000 53	16900000 48	10000000 51	43648300 51	-63517000 50	-12366170 48	00030500 02
53300000 53	52400000 53	19400000 48	10000000 51	50670100 51	14067010 52	27107565 49	00030600 02
55200000 53	52800000 53	28900000 48	10000000 51	75860600 51	31586060 52	60694108 49	00030700 02
51400000 53	51500000 53	50000000 48	10000000 51	12747360 52	11747360 52	23369344 49	00030800 02
47900000 53	50600000 53	83800000 48	10000000 51	20850580 52	-61494200 51	-12675311 49	00030900 02
42900000 53	44200000 53	13570000 49	10000000 51	29188040 52	16188040 52	39214077 49	00031000 02
36800000 53	39800000 53	21630000 49	10000000 51	41222000 52	11222000 52	31453733 49	00031100 02
36700000 53	37900000 53	32370000 49	10000000 51	57497610 52	45497610 52	14151562 50	00031200 02
30600000 53	35900000 53	46730000 49	10000000 51	76398510 52	23398510 52	8276639 49	00031300 02
20600000 53	29900000 53	70440000 49	10000000 51	91481800 52	-15182000 51	+7315964 48	00031400 02
11800000 53	20400000 53	10897000 50	10000000 51	89424920 52	34249200 51	29892364 49	00031500 02
36000000 52	92000000 52	16315000 50	10000000 51	54240797 52	-17592030 51	-4659004 49	00031600 02
15000000 52	38000000 52	22938000 50	10000000 51	27672776 52	46727760 51	45247164 50	00031700 02
10000000 51	18000000 52	31013000 50	10000000 51	15187403 52	-18125968 51	-6444566 50	00031800 02

*	H	GLENGARRY	*FEMALES	1891-1956	*	*	*	*

● M1= GLENGARRY *FEMALES 1891-1901 * * * *

* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
11790000 54	14790000 54	49600000 48	20000000 51	71760000 52	-22824000 53	-16218982 50	00031900 02
98900000 53	11580000 54	44700000 48	20000000 51	50742700 52	-11825730 53	-10680201 50	00032000 02
81700000 53	11460000 54	50900000 48	20000000 51	57008200 52	-27199180 53	-24976478 50	00032100 02
67500000 53	10980000 54	58100000 48	20000000 51	62160800 52	-36083920 53	-34835446 50	00032200 02
61500000 53	89000000 53	67400000 48	20000000 51	58197910 52	-21680209 53	-26064143 50	00032300 02
50300000 53	68700000 53	69800000 48	20000000 51	46474040 52	-13752596 53	-21470786 50	00032400 02
47500000 53	56400000 53	73900000 48	20000000 51	40316240 52	-48683760 52	-92964044 49	00032500 02
43200000 53	53400000 53	84700000 48	20000000 51	43542640 52	-58457360 52	-11918948 50	00032600 02
36500000 53	46300000 53	10390000 49	20000000 51	45918440 52	-52081560 52	-12467140 50	00032700 02
36500000 53	46000000 53	14340000 49	20000000 51	61867320 52	-33132680 52	-83220197 49	00032800 02
30100000 53	37200000 53	21910000 49	20000000 51	73919930 52	29199300 51	97957908 48	00032900 02
26700000 53	40600000 53	32350000 49	20000000 51	11378263 53	-25217370 52	-86296615 49	00033000 02
16100000 53	26900000 53	48650000 49	20000000 51	10563754 53	-23624600 51	-14461462 49	00033100 02
96000000 52	19500000 53	72150000 49	20000000 51	10278223 53	37822320 51	41014135 49	00033200 02
34000000 52	12800000 53	10704000 50	20000000 51	86739930 52	-72600700 51	-17595874 50	00033300 02
23000000 52	95000000 52	17723000 50	20000000 51	81494720 52	94947200 51	70303763 50	00033400 02
40000000 51	62000000 52	26262000 50	20000000 51	59053532 52	10535323 51	35755773 50	00033500 02

M2=	GLENGARRY	*FEMALES	1901-1911	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
10410000 54	12400000 54	41100000 48	20000000 51	50041900 52	-14895810 53	-12517928 50	00033600 02
86000000 53	12730000 54	38200000 48	20000000 51	47796000 52	-36520400 53	-29807608 50	00033700 02
71700000 53	11790000 54	43800000 48	20000000 51	50650100 52	-41134990 53	-36455881 50	00033800 02
64100000 53	98900000 53	51000000 48	20000000 51	49306360 52	-29869364 53	-31706279 50	00033900 02
56300000 53	81700000 53	60200000 48	20000000 51	47865920 52	-20613408 53	-26800799 50	00034000 02
54600000 53	67500000 53	62900000 48	20000000 51	41270720 52	-87729280 52	-13843337 50	00034100 02
46500000 53	61500000 53	69800000 48	20000000 51	41603400 52	-10839660 53	-18904298 50	00034200 02
44700000 53	50300000 53	83600000 48	20000000 51	40504000 52	-15496000 52	-33505155 49	00034300 02
36600000 53	47500000 53	10390000 49	20000000 51	47108550 52	-61891450 52	-14464288 50	00034400 02
33200000 53	43200000 53	14500000 49	20000000 51	58703650 52	-41296350 52	-11062618 50	00034500 02
28900000 53	36500000 53	22430000 49	20000000 51	74080480 52	-19195200 51	-65981135 48	00034600 02
24000000 53	36500000 53	33980000 49	20000000 51	10668308 53	-18316920 52	-70908712 49	00034700 02
15500000 53	30100000 53	51930000 49	20000000 51	12440984 53	-21590160 52	-12226140 50	00034800 02
11700000 53	26700000 53	77480000 49	20000000 51	14780137 53	-21986300 51	-18445095 49	00034900 02
41000000 52	16100000 53	11230000 50	20000000 51	11208007 53	-79199340 51	-16189584 50	00035000 02
19000000 52	96000000 52	18126000 50	20000000 51	83006348 52	60063480 51	46225249 50	00035100 02
50000000 51	61000000 52	24469000 50	20000000 51	57313792 52	13137921 51	35640749 50	00035200 02

* H3=	GLENGARRY	*FEMALES	1911-1921	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
94800000 53	12510000 54	32500000 48	20000000 51	40074800 52	-26292520 53	-21712753 50	00036900 02
79100000 53	12630000 54	31700000 48	20000000 51	39473600 52	-43252640 53	-35350802 50	00037000 02
63400000 53	10410000 54	36700000 48	20000000 51	37584700 52	-36941530 53	-36815793 50	00037100 02
52000000 53	86000000 53	43900000 48	20000000 51	37021580 52	-30297842 53	-36614868 50	00037200 02
57000000 53	71700000 53	53000000 48	20000000 51	37109220 52	-10939078 53	-16163005 50	00037300 02
51500000 53	64100000 53	56000000 48	20000000 51	35006410 52	-90993590 52	-15015603 50	00037400 02
43600000 53	56300000 53	65700000 48	20000000 51	35917740 52	-91082260 52	-17280464 50	00037500 02
47000000 53	54600000 53	82600000 48	20000000 51	43457680 52	-32542320 52	-64725382 49	00037600 02
36700000 53	46500000 53	10390000 49	20000000 51	46116790 52	-51883210 52	-12366080 50	00037700 02
34900000 53	44700000 53	14670000 49	20000000 51	61408440 52	-36591560 52	-94897202 49	00037800 02
30400000 53	36600000 53	22850000 49	20000000 51	75536820 52	13536820 52	46604255 49	00037900 02
24200000 53	33200000 53	35600000 49	20000000 51	10094888 53	10948880 52	47367262 49	00038000 02
17700000 53	28900000 53	56200000 49	20000000 51	12693179 53	14931790 52	92132751 49	00038100 02
10200000 53	24000000 53	11554000 50	20000000 51	16969419 53	31694190 52	45080468 50	00038200 02
53000000 52	15500000 53	12755000 50	20000000 51	11539667 53	13396672 52	33827137 50	00038300 02
13000000 52	11700000 53	18328000 50	20000000 51	10155045 53	-24495500 51	-15855154 50	00038400 02
40000000 51	65000000 52	12676000 50	20000000 51	48240798 52	-12759202 52	-76132515 50	00038500 02

H4=	GLENGARRY	*FEMALES	1921-1931	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
85900000 53	12140000 54	22500000 48	20000000 51	27032900 52	-32796710 53	-27630682 50	00038600 02
58800000 53	11570000 54	23100000 48	20000000 51	26466700 52	-54253330 53	-47989148 50	00038700 02
53000000 53	94800000 53	29000000 48	20000000 51	27129980 52	-39087002 53	-42445732 50	00038800 02
52300000 53	79100000 53	35900000 48	20000000 51	27943880 52	-24005612 53	-31459825 50	00038900 02
49500000 53	63400000 53	42100000 48	20000000 51	26188020 52	-11281198 53	-18560342 50	00039000 02
45100000 53	52000000 53	47100000 48	20000000 51	23975260 52	-4502474O 52	-90771158 49	00039100 02
42300000 53	57000000 53	61200000 48	20000000 51	33938210 52	-11306179 53	-21091186 50	00039200 02
43000000 53	51500000 53	76200000 48	20000000 51	37924370 52	-47075630 52	-98675403 49	00039300 02
36400000 53	43600000 53	10580000 49	20000000 51	43990590 52	-28009410 52	-71450861 49	00039400 02
37600000 53	47600000 53	15260000 49	20000000 51	66988110 52	-27011890 52	-67025045 49	00039500 02
29100000 53	36700000 53	22640000 49	20000000 51	75112120 52	+38786000 50	+30416529 48	00039600 02
27100000 53	34900000 53	35110000 49	20000000 51	10487884 53	26878840 52	11010451 50	00039700 02
16200000 53	30400000 53	60120000 49	20000000 51	14047145 53	-15285500 51	+93472975 48	00039800 02
91000000 52	24200000 53	92560000 49	20000000 51	15037893 53	+62106900 50	+67786701 48	00039900 02
45000000 52	17700000 53	13618000 50	20000000 51	13605478 53	40547760 51	99029279 49	00040000 02
14000000 52	10200000 53	20189000 50	20000000 51	91303780 52	33037640 51	30887409 50	00040100 02
30000000 51	70000000 52	30313000 50	20000000 51	68109320 52	11093200 51	58673070 50	00040200 02

* H5=	GLENGARRY	*FEMALES	1931-1941	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
96900000 53	96500000 53	77000000 48	20000000 51	71782320 52	75782320 52	84841939 49	00040300 02
83800000 53	10150000 54	12000000 48	20000000 51	12126800 52	-16487320 53	-16440084 50	00040400 02
60800000 53	99000000 53	13000000 48	20000000 51	12796110 52	-36920389 53	-37781664 50	00040500 02
56500000 53	85900000 53	18200000 48	20000000 51	15503740 52	-27849626 53	-33016893 50	00040600 02
52200000 53	58800000 53	24500000 48	20000000 51	14243890 52	-51756110 52	-90205767 49	00040700 02
46200000 53	53000000 53	30100000 48	20000000 51	15736300 52	-52263700 52	-10162821 50	00040800 02
49500000 53	52300000 53	35900000 48	20000000 51	18476170 52	-95238300 51	-18876859 49	00040900 02
44400000 53	49500000 53	48600000 48	20000000 51	23539630 52	-27460370 52	-58245341 49	00041000 02
39900000 53	45100000 53	64700000 48	20000000 51	28344480 52	-23655520 52	-55966795 49	00041100 02
36500000 53	42300000 53	95100000 48	20000000 51	38549560 52	-19450440 52	-50592841 49	00041200 02
36700000 53	43000000 53	13850000 49	20000000 51	55976880 52	-70231200 51	-18777235 49	00041300 02
32100000 53	36400000 53	21650000 49	20000000 51	71556900 52	28556900 52	97649423 49	00041400 02
30100000 53	37600000 53	33590000 49	20000000 51	10882375 53	33823750 52	12659714 50	00041500 02
19600000 53	29100000 53	55460000 49	20000000 51	12652762 53	31527620 52	19168945 50	00041600 02
13300000 53	27100000 53	87940000 49	20000000 51	16305561 53	25055810 52	23211619 50	00041700 02
50000000 52	16200000 53	13975000 50	20000000 51	12604453 53	14044528 52	39060892 50	00000300 02
18000000 52	91000000 52	20501000 50	20000000 51	81824043 52	88240430 51	96164827 50	00041900 02
60000000 51	62000000 52	30154000 50	20000000 51	60286786 52	42867857 51	25021888 51	00042000 02

* H6=	GLENGARRY	*FEMALES	1941-1951	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
86100000 53	91100000 53	47800000 48	20000000 51	42622880 52	-73771200 51	-84952952 48	00042100 02
64300000 53	90800000 53	68000000 47	20000000 51	61675800 51	-25883242 53	-28700722 50	00042200 02
47100000 53	96900000 53	72000000 47	20000000 51	69585700 51	-49104143 53	-51041610 50	00042300 02
49500000 53	83800000 53	93000000 47	20000000 51	77593100 51	-33524069 53	-40378735 50	00042400 02
49100000 53	60800000 53	12700000 48	20000000 51	76789400 51	-10932106 53	-18210432 50	00042500 02
48500000 53	56500000 53	18200000 48	20000000 51	10197450 52	-69802550 52	-12581512 50	00042600 02
43800000 53	52200000 53	24800000 48	20000000 51	12809260 52	-71190740 52	-13981154 50	00042700 02
39100000 53	46200000 53	36100000 48	20000000 51	16413550 52	-54586450 52	-12250474 50	00042800 02
40800000 53	49500000 53	49100000 48	20000000 51	23778390 52	-63221610 52	-13416535 50	00042900 02
40300000 53	44400000 53	75700000 48	20000000 51	32487560 52	-85124400 51	-20685742 49	00043000 02
34100000 53	39900000 53	11990000 49	20000000 51	45342480 52	-12657520 52	-35790332 49	00043100 02
31900000 53	36500000 53	18870000 49	20000000 51	63308650 52	17308650 52	57372046 49	00043200 02
31200000 53	36700000 53	29760000 49	20000000 51	95696090 52	40696090 52	15000186 50	00043300 02
18600000 53	32100000 53	49560000 49	20000000 51	12791212 53	-70878800 51	-36708052 49	00043400 02
11900000 53	30100000 53	80010000 49	20000000 51	17026361 53	-11736390 52	-89771409 49	00043500 02
57000000 52	19600000 53	12565000 50	20000000 51	14481932 53	58193200 51	11370150 50	00043600 02
13000000 52	13300000 53	18673000 50	20000000 51	11616545 53	-38345550 51	-22777882 50	00043700 02
40000000 51	74000000 52	26734000 50	20000000 51	70701992 52	70199190 50	21285330 50	00043800 02

* H7=	GLENGARRY	*FEMALES	1951-1956	*	*	*	*
* PY 2	* PY 1	* Q X	PROGRAM	* NO OF DEATHS	NO OF NET MIGRANTS	MIGRATION RATE	* CARD NO
11740000 54	11000000 54	35000000 48	10000000 51	19119500 52	93119500 52	8615522 49	00043900 02
99400000 53	10100000 54	46000000 47	10000000 51	23229000 51	-13677100 52	-1357[illegible]899 49	00044000 02
68700000 53	86100000 53	47000000 47	10000000 51	20198100 51	-17196019 53	-2007[illegible]438 50	00044100 02
39100000 53	64300000 53	57000000 47	10000000 51	18352800 51	-2501667[illegible] 53	-3501[illegible]7421 50	00044200 02
46800000 53	47100000 53	72000000 47	10000000 51	16942200 51	-13057800 51	-2782[illegible]650 48	00044300 02
54400000 53	49500000 53	86000000 47	10000000 51	21268100 51	51126810 52	10[illegible]3218 50	00044400 02
52300000 53	49100000 53	12600000 48	10000000 51	30880100 51	55066010 52	7191[illegible]630 49	00044500 02
48500000 53	48500000 53	20600000 48	10000000 51	49773500 51	49773500 51	10[illegible]990 49	00044600 02
42600000 53	43800000 53	32300000 48	10000000 51	70279500 51	-49720500 51	-1155[illegible]27 49	00044700 02
41400000 53	39100000 53	5[illegible]000000 48	10000000 51	96780900 51	32678090 52	8569[illegible]59 49	00044800 02
37800000 53	40800000 53	75300000 48	10000000 51	15133350 52	-14866650 52	-3784[illegible]466 49	00044900 02
36400000 53	40300000 53	11820000 49	10000000 51	23261140 52	-15738860 52	-414[illegible]6535 49	00045000 02
32000000 53	34100000 53	19240000 49	10000000 51	31565040 52	10565040 52	3414[illegible]007 49	00045100 02
30000000 53	31900000 53	31490000 49	10000000 51	47161680 52	34161680 52	12566911 50	00045200 02
20400000 53	31200000 53	53250000 49	10000000 51	74682590 52	-33317410 52	-1403[illegible]176 50	00045300 02
13600000 53	18600000 53	38060000 49	10000000 51	68687870 52	18687870 52	1593[illegible]041 50	00045400 02
5900000 52	11900000 53	17018000 50	10000000 51	72176170 52	12176168 52	2600[illegible]211 50	00045500 02
2100000 52	5700000 52	19972000 50	10000000 51	38289524 52	22895240 51	1223[illegible]589 50	00045600 02
2000000 51	1700[illegible]000 52	27769000 50	10000000 51	13657519 52	-13424807 51	-4016[illegible]4202 50	00045700 02

D = Deaths
M = Migrants

Table 2.6 Population Death & Migration Summary Tables Russell Males.

Gr. Id. No.	1921 D	1931 M	1931 D	1941 M	1941 D	1951 M	1951 D	1956 M
1	-	--	-	-	-	-	-	-
2	-	-	-	-	-	-	28.4	+ 87.4
3	-	-	110.2	- 35.8	60.5	+ 69.5	4.2	- 2.8
4	43.1	- 439.9	23.0	- 224.0	12.2	- 185.8	5.1	-145.9
5	33.3	- 519.7	23.0	- 457.0	14.1	- 497.9	5.5	-227.5
6	35.4	- 542.6	24.7	- 459.3	16.4	- 469.6	4.3	- 45.7
7	28.9	- 313.1	20.8	- 239.2	14.7	- 225.3	4.5	+ 19.4
8	27.4	- 201.6	18.0	- 74.0	14.4	- 71.6	5.0	+ 35.0
9	27.3	- 106.7	18.8	- 36.2	16.3	- 60.7	8.2	- 1.8
10	32.8	- 138.2	24.4	- 19.6	22.2	- 36.8	11.1	+ 10.1
11	38.4	- 82.6	38.3	- 33.7	30.9	- 13.1	16.5	+ 6.5
12	52.1	- 77.9	44.8	- 8.2	46.3	- 48.7	24.4	- 4.6
13	57.1	- 52.9	61.2	- 10.8	68.9	- 22.1	32.1	- 1.9
14	75.1	+ 11.1	81.7	+ 37.7	80.0	+ 15.0	46.7	+ 22.7
15	94.9	- 4.1	87.5	+ 21.5	98.1	+ 30.1	56.8	+ 15.8
16	113.5	- 5.5	126.7	+ 21.7	140.0	+ 15.0	67.6	- 7.4
17	111.8	- 14.2	119.0	+ 0.0	119.2	+ 8.2	73.2	+ 9.2
18	82.3	+ 0.3	94.8	+ 6.8	118.7	+ 1.7	44.8	- 3.2
19	61.1	+ 2.1	43.0	+ 6.0	57.1	- 0.9	26.2	- 8.8
20	13.6	+ 0.6	30.2	+ 1.2	39.7	- 1.3	6.7	- 1.0

Table 2.6 cont'd

Russell Females

Gr. Id. No.	1921 D	1931 M	1931 D	1941 M	1941 D	1951 M	1951 D	1956 M
1	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	21.3	+ 108.3
3	-	-	85.3	+ 10.0	46.3	+ 35.3	2.6	- 16.4
4	33.6	- 541.4	15.9	- 376.1	6.7	- 228.3	2.3	- 174.8
5	30.1	- 645.9	15.3	- 600.7	7.7	- 540.3	2.1	- 210.9
6	31.5	- 537.5	16.9	- 359.1	8.7	- 354.3	1.9	- 8.1
7	27.8	- 309.2	15.6	- 152.4	7.2	- 58.8	2.5	+ 8.5
8	28.4	- 163.6	15.7	- 58.3	10.1	- 43.9	3.2	+ 22.2
9	27.8	- 142.2	15.9	- 45.1	11.6	- 24.4	5.2	- 23.8
10	31.4	- 124.6	23.6	- 46.4	16.2	- 59.8	7.0	+ 3.0
11	31.4	- 87.6	27.3	- 48.7	18.7	- 37.3	9.4	+ 3.4
12	40.2	- 67.8	33.9	- 42.1	31.2	- 84.8	12.4	- 5.6
13	46.2	- 42.8	40.1	+ 12.1	40.7	- 27.3	17.9	+ 2.9
14	53.4	- 16.6	57.0	- 6.0	51.3	+ 0.3	26.8	+ 4.8
15	76.3	- 2.7	68.0	+ 11.0	73.0	- 10.0	36.2	- 15.8
16	98.9	+ 3.9	83.0	- 5.0	90.5	- 3.5	47.2	- 13.8
17	98.8	- 0.2	105.3	- 1.7	100.7	- 6.3	49.1	+ 3.1
18	61.5	+ 2.5	92.6	+ 2.6	76.1	+ 4.1	43.0	+ 11.1
19	33.1	+ 3.1	53.9	+ 1.9	59.4	- 1.6	20.8	+ 2.8
20	24.3	+ 1.3	29.2	- 0.8	35.4	- 0.6	6.4	+ 0.4

Table 2.6 cont'd

Prescott Males

Gr. Id. No.	1891 D	1901 M	1901 D	1911 M	1911 D	1921 M	1921 D	1931 M
1	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-
3	-		-	-	-	-	-	-
4	82.6 -	193.4	75.7 -	335.3	65.6 -	308.4	46.5 -	359.5
5	72.0 -	329.0	83.1 -	529.9	55.7 -	616.3	42.2 -	568.8
6	54.7 -	315.3	59.5 -	592.5	50.8 -	511.2	46.6 -	610.4
7	55.1 -	329.9	55.1 -	408.9	43.9 -	380.1	37.6 -	324.4
8	47.3 -	96.7	50.5 -	33.5	40.0 -	142.0	36.0 -	224.0
9	40.7 -	31.3	39.7 -	87.3	38.3 -	96.7	32.0 -	114.0
10	39.4 -	32.6	43.2 -	89.8	41.6 -	77.4	40.6 -	97.4
11	42.7 -	42.3	47.5 -	74.5	45.7 -	51.3	51.8 -	63.2
12	47.6 -	37.4	56.0 -	87.0	59.4 -	84.6	64.5 -	47.5
13	56.5 +	26.5	64.6 -	23.4	70.8 -	42.2	79.4 -	36.6
14	66.5 +	3.5	76.1 -	6.9	81.1 -	3.9	95.2 +	21.2
15	82.9 -	16.1	113.4 -	21.6	115.9 -	25.1	124.5 +	14.5
16	89.4 +	1.4	111.9 -	6.1	127.4 -	2.6	140.8 +	9.8
17	82.4 -	10.6	102.4 -	0.6	138.3 +	4.3	138.9 +	0.9
18	84.7 -	7.3	89.2 +	1.2	104.2 +	2.2	115.2 +	3.2
19	48.1 -	1.9	48.4 -	0.6	62.5 -	0.5	83.9 -	0.1
20	37.7 +	5.7	37.0 -	1.0	38.7 -	0.3	43.8 -	0.2

Table 2.6 cont'd

Prescott Males

Gr. Id. No.	1931 D	1941 M	1941 D	1951 M	1951 D	1956 M
1	-	-	-	-	-	-
2	-	-	-	-	37.8 -	27.2
3	139.9 +	160.9	83.4 +	107.4	5.7 +	32.7
4	29.4 -	174.6	17.3 -	169.7	7.1 -	98.9
5	27.9 -	343.1	20.7 -	599.3	8.5 -	369.5
6	29.1 -	387.9	22.8 -	563.2	7.2 -	169.3
7	28.9 -	223.1	21.9 -	319.1	6.9 -	62.1
8	27.1 -	60.9	20.4 -	101.6	7.6 -	0.4
9	27.8 -	42.2	25.9 -	64.1	11.6 -	43.4
10	34.1 +	13.1	35.9 -	69.1	18.5 -	25.5
11	45.9 -	3.1	46.5 -	33.5	26.2 -	2.8
12	64.1 -	24.9	69.6 -	71.4	35.9 -	27.1
13	90.9 +	11.9	88.9 -	24.1	48.4 -	0.6
14	113.1 +	19.1	111.3 +	24.3	61.0 +	35.0
15	134.5 +	34.5	155.1 +	13.1	79.8 +	5.8
16	164.1 +	26.1	177.2 +	9.9	96.4 +	9.4
17	168.9 +	23.8	184.2 +	7.2	89.0 +	9.0
18	130.9 +	22.9	152.0 +	9.0	66.0 +	2.0
19	70.5 -	0.5	101.9 -	2.1	38.6 +	1.6
20	42.8 -	1.2	57.7 -	0.3	12.7 +	0.7

Table 2.6 cont'd

Prescott Females

Gr. Id. No.	1891 D	1901 M	1901 D	1911 M	1911 D	1921 M	1921 D	1931 M
1	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-
4	82.0	- 66.0	70.4	- 283.6	60.0	- 358.0	39.7	- 458.3
5	65.4	-214.6	61.5	- 446.5	49.4	- 526.6	38.5	- 703.5
6	70.9	- 395.1	66.3	- 539.7	50.2	- 506.8	41.6	- 605.4
7	59.3	- 234.7	60.4	- 404.6	48.7	- 338.3	35.5	- 360.5
8	53.8	- 87.2	56.2	- 192.8	48.5	- 203.5	34.4	- 191.6
9	43.0	- 10.0	46.0	- 89.0	40.8	- 133.2	34.3	- 152.7
10	40.5	- 25.5	46.1	- 118.9	45.3	- 125.7	40.8	- 99.2
11	40.5	+ 6.5	46.9	- 110.1	49.2	- 104.8	42.2	- 76.8
12	41.3	- 58.7	49.7	- 60.3	51.2	- 76.8	54.4	- 71.6
13	46.7	- 0.3	62.9	- 54.1	58.4	- 50.6	66.1	- 32.9
14	64.0	- 24.0	64.1	- 38.9	80.7	- 23.3	79.4	+ 10.4
15	62.2	+ 3.2	87.7	- 9.3	105.2	- 38.8	95.0	+ 33.0
16	67.9	- 14.1	96.7	- 6.3	93.6	- 6.4	132.6	- 11.4
17	63.8	- 5.2	90.2	+ 10.2	143.5	+ 27.5	125.5	+ 32.5
18	52.9	+ 0.9	63.3	+ 0.3	97.5	+ 7.5	86.9	+ 6.9
19	54.9	- 1.1	45.0	+ 1.0	72.0	+ 6.0	77.9	- 1.1
20	18.1	- 0.9	31.9	+ 0.9	28.9	- 4.1	62.3	- 0.7

Table 2.6 cont'd

Prescott Females

Gr. Id. No.	1931 D	1941 M	1941 D	1951 M	1951 D	1956 M
1	-	-	-	-	-	-
2	-	-	-	-	28.4 -	33.6
3	109.9 +	55.9	62.4 -	6.6	3.6 -	22.4
4	18.9 -	234.1	9.4 -	256.6	3.0 -	167.0
5	18.9 -	478.1	10.2 -	538.5	3.2 -	294.8
6	23.2 -	404.8	12.3 -	493.7	3.1 -	138.9
7	22.8 -	183.2	22.2 -	176.8	3.5 +	0.5
8	24.0 -	67.0	15.5 -	94.5	4.9 -	7.1
9	21.5 -	2.5	18.1 -	75.9	7.7 -	39.3
10	28.9 -	46.0	25.5 -	63.5	10.3 -	30.7
11	35.0 -	0.0	28.1 -	70.9	15.5 -	37.5
12	49.7 -	46.3	38.9 -	50.1	18.0 -	25.0
13	59.1 -	27.9	59.3 -	57.7	25.6 -	5.4
14	81.2 +	3.2	77.9 -	23.1	37.5 -	3.5
15	105.6 +	5.6	95.7 -	4.3	51.4 +	2.5
16	138.7 +	28.7	133.5 +	5.4	63.9 -	17.1
17	152.8 -	1.2	149.9 -	13.1	76.1 +	0.1
18	111.3 +	20.3	154.4 +	13.4	61.9 +	13.9
19	98.0 +	3.0	87.3 -	0.7	45.7 -	5.3
20	40.8 +	2.8	66.9 -	0.1	12.1 +	1.1

Table 2.6 cont'd

Stormont Males

Gr. Id. No.	1891 D	1901 M	1901 D	1911 M	1911 D	1921 M	1921 D	1931 M
1	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-
4	75.9 -	129.1	62.2 -	184.8	47.1 -	42.9	36.2 +	259.2
5	72.4 -	302.6	73.0 -	451.0	44.7 -	311.3	33.1 +	151.1
6	62.9 -	450.1	56.6 -	559.4	45.0 -	359.0	39.1 +	3.1
7	64.7 -	400.3	56.7 -	505.3	39.1 -	198.9	36.7 +	86.7
8	60.2 -	252.8	55.4 -	276.6	38.2 -	56.8	35.6 +	132.6
9	50.2 -	123.8	45.9 -	132.1	35.2 +	2.2	34.8 +	157.8
10	48.7 -	75.3	46.7 -	81.3	44.4 -	9.6	43.4 +	106.4
11	51.8 -	11.2	52.0 -	66.0	50.6 -	11.4	54.9 +	117.9
12	57.5 -	58.5	65.6 -	110.4	66.0 -	35.0	77.1 +	63.1
13	70.2 -	92.8	84.2 -	68.8	79.7 -	28.3	95.0 -	9.0
14	80.5 -	4.5	89.0 -	11.0	93.1 +	4.1	119.5 +	52.5
15	104.1 -	23.9	101.5 +	21.5	138.7 +	0.7	146.6 +	78.6
16	98.3 +	8.3	138.4 +	16.4	147.7 +	10.7	165.7 +	22.7
17	116.3 -	13.7	126.4 +	1.2	148.7 -	9.3	186.1 +	25.1
18	89.6 +	2.6	103.0 -	10.0	147.4 +	7.4	144.2 +	13.2
19	67.7 +	8.7	69.5 +	1.5	88.5 -	6.5	77.5 +	3.5
20	49.3 +	1.3	56.9 +	1.9	41.4 -	2.6	57.5 +	0.5

Table 2.6 cont'd

Stormont Males

Gr. Id No.	1931 D	1941 M	1941 D	1951 M	1951 D	1956 M
1	-	-	-	-	-	-
2	-	-	-	-	73.8 +	150.8
3	166.5 +	483.4	126.9 +	310.9	9.3 +	44.3
4	34.0 +	194.0	25.3 -	63.7	11.6 -	26.4
5	32.0 +	20.0	28.5 -	391.5	13.8 +	109.8
6	35.1 +	44.1	32.8 -	174.2	13.4 +	459.4
7	38.5 +	142.5	33.2 -	78.8	15.3 +	284.3
8	39.5 +	166.5	35.8 +	41.8	15.5 +	235.5
9	43.3 +	143.3	38.2 +	26.2	23.6 +	187.6
10	52.9 +	114.9	64.7 -	25.3	38.0 +	138.0
11	72.9 +	86.9	88.1 +	76.1	51.4 +	82.4
12	92.9 +	30.9	118.8 -	57.2	77.2 +	20.2
13	127.7 +	26.7	157.2 -	5.8	89.3 +	10.3
14	164.1 +	64.1	177.6 +	61.6	113.3 +	43.3
15	172.9 +	88.9	221.2 +	60.2	132.2 +	36.2
16	218.6 +	58.6	275.7 +	10.7	150.2 +	2.2
17	238.7 +	2.7	265.1 +	30.1	135.9 +	43.9
18	163.0 +	13.0	221.0 +	15.0	106.7 +	25.7
19	116.3 -	0.7	116.8 +	2.8	57.5 -	0.5
20	64.2 +	0.2	61.5 -	1.5	17.7 -	0.3

Table 2.6 cont'd

Stormont Females

Gr. Id. No.	1891 D		1901 M	1901 D		1911 M	1911 D		1921 M	1921 D		1931 M
1	-		-	-		-	-		-	-		-
2	-		-	-		-	-		-	-		-
3	-		-	-		-	-		-	-		-
4	79.0	-	23.0	60.1	-	124.9	42.3	-	43.7	29.1	+	303.1.
5	68.5	-	161.5	56.6	-	303.4	41.3	-	211.7	28.5	+	172.5
6	77.8	-	455.2	65.6	-	545.4	47.1	-	303.9	35.3	-	47.7
7	78.6	-	485.4	66.5	-	507.5	49.4	-	332.6	37.7	-	48.3
8	72.6	-	274.3	60.3	-	221.7	47.4	-	126.6	39.4	+	19.4
9	58.9	-	93.1	50.4	-	124.6	41.5	-	48.5	35.3	+	170.3
10	55.8	-	62.2	51.7	-	72.3	47.7	-	57.3	44.2	+	79.2
11	56.0	-	98.0	57.8	-	89.2	51.7	-	33.3	49.3	+	46.3
12	55.5	-	72.5	65.8	-	117.2	63.5	-	54.5	64.9	-	3.1
13	63.3	-	46.7	72.4	-	60.6	78.3	-	60.6	80.4	+	2.4
14	69.7	+	9.7	87.7	-	24.3	99.0	-	26.0	106.8	+	5.8
15	90.5	-	10.5	105.5	-	35.5	121.6	-	13.4	129.8	+	50.8
16	90.3	-	10.7	120.3	-	9.7	140.5	-	11.5	164.0	+	29.0
17	90.7	+	5.7	122.9	+	6.9	155.6	+	37.6	164.7	+	17.7
18	80.6	+	11.6	89.8	-	3.2	119.9	-	0.1	129.1	+	19.1
19	47.2	+	5.2	75.2	+	2.2	92.0	-	1.0	91.3	+	1.3
20	45.7	+	5.7	66.7	+	0.7	40.8	-	14.2	52.5	+	1.5

Table 2.6

Stormont Females

Gr. Id. No.	1931	1941	1941	1951	1951	1956
	D	M	D	M	D	M
1	-	-	-	-	-	-
2	-	-	-	-	54.0	+ 204.0
3	137.4	+ 424.4	95.8	+ 230.8	5.8	+ 112.8
4	21.7	+ 322.7	14.2	- 62.8	5.1	+ 73.1
5	21.2	+ 184.2	15.3	- 153.7	5.7	- 1.3
6	28.6	+ 88.6	19.6	- 136.4	7.1	+ 88.0
7	33.6	+ 132.7	22.8	- 107.2	8.4	+ 87.4
8	34.2	+ 139.2	29.6	+ 73.6	1.1	+ 115.1
9	34.7	+ 114.7	36.5	+ 25.5	17.3	+ 65.3
10	44.4	+ 80.4	44.6	- 18.4	23.7	+ 2.7
11	56.6	+ 4.6	51.0	+ 9.0	29.5	+ 31.5
12	70.8	+ 35.8	71.0	- 8.0	37.8	+ 15.8
13	86.7	+ 14.7	96.5	- 34.5	51.4	- 15.6
14	113.0	+ 46.0	123.7	+ 47.7	66.5	+ 20.5
15	140.7	+ 63.7	154.9	+ 64.9	97.7	+ 31.7
16	183.1	+ 37.1	202.2	+ 27.4	120.6	- 4.4
17	212.4	+ 29.4	231.4	+ 26.4	123.0	+ 16.0
18	171.2	+ 27.2	203.2	+ 17.2	123.7	+ 30.7
19	106.1	+ 3.1	148.5	+ 14.5	59.8	+ 14.8
20	71.0	+ 4.0	92.7	+ 4.7	36.2	- 2.8

Table 2.6 cont'd

Glengarry Males

Gr. Id. No.	1891 D		1901 M	1901 D		1911 M	1911 D		1921 M	1921 D		1931 M
1	-		-	-		-	-		-	-		-
2	-		-	-		-	-		-	-		-
3	-		-	-		-	-		-	-		-
4	70.4	-	238.6	54.1	-	155.9	46.7	-	213.3	31.2	-	162.8
5	54.4	-	252.6	59.8	-	363.2	42.3	-	421.7	28.4	-	341.6
6	50.6	-	447.4	47.8	-	488.2	39.3	-	349.7	33.3	-	418.7
7	49.0	-	356.0	41.5	-	311.5	32.3	-	226.7	30.2	-	215.8
8	44.8	-	75.2	38.7	-	137.3	31.6	-	64.4	29.6	-	171.4
9	37.8	-	64.2	31.9	-	11.1	28.6	-	18.4	35.9	-	64.1
10	35.9	-	31.0	41.9		130.1	34.3	-	4.7	34.9	-	74.1
11	35.6	-	30.3	42.6	-	39.4	41.3	-	85.7	43.0	-	38.0
12	46.1	-	25.9	51.1	-	65.9	52.9	-	37.1	59.9	-	75.1
13	55.9	-	28.1	54.7	-	35.3	67.4	-	18.6	65.4	-	27.6
14	68.6	+	13.6	75.9	-	13.1	76.8	+	35.8	93.8	+	31.8
15	103.8	-	49.2	95.2	-	27.8	93.1	-	17.9	125.8	+	33.8
16	126.3	+	7.3	119.8	-	17.2	124.2	-	4.8	152.3	-	5.7
17	110.2	+	4.2	111.1	+	4.1	110.1	+	5.1	113.1	-	5.9
18	95.3	-	0.7	129.9	-	7.1	103.4	+	13.4	110.5	-	1.5
19	66.8	+	6.8	80.9	-	0.1	72.0	+	1.0	68.4	+	3.4
20	48.3	+	5.3	57.9	+	3.9	55.3	+	1.3	60.4	-	0.6

Table 2.6 cont'd

Glengarry Males

Gr. Id. No.	1931 D	1941 M	1941 D	1951 M	1951 D	1956 M
1	-	-	-	-	-	-
2	-	-	-	-	24.6	+ 146.6
3	90.8	+ 72.8	55.8	+ 21.8	3.8	+ 72.8
4	20.7	- 118.3	12.1	- 211.9	4.5	- 141.5
5	20.8	- 239.2	13.0	- 450.0	5.3	- 257.7
6	21.2	- 303.8	16.1	- 460.0	4.0	- 55.0
7	20.5	- 130.5	16.6	- 319.4	4.4	- 0.6
8	20.0	- 11.0	14.4	- 115.6	5.1	+ 14.1
9	24.2	- 24.8	19.3	- 88.7	7.6	+ 31.6
10	28.9	- 15.1	28.1	- 46.9	12.7	+ 11.7
11	39.5	+ 9.5	41.3	- 70.7	20.9	- 6.1
12	56.1	- 9.9	55.8	- 34.1	29.2	+ 16.2
13	77.8	+ 2.8	78.6	+ 2.6	41.2	+ 11.2
14	97.5	+ 62.5	100.2	+ 43.2	57.5	+ 45.5
15	111.7	+ 47.7	130.3	+ 45.3	76.4	+ 23.4
16	167.0	- 6.0	175.5	+ 13.5	91.5	+ 1.5
17	183.1	+ 17.1	165.1	- 1.9	89.4	+ 3.4
18	128.5	+ 12.5	129.5	+ 0.5	54.2	- 1.8
19	51.3	+ 2.3	102.8	+ 1.8	27.7	+ 4.7
20	38.9	+ 0.9	50.1	- 0.9	15.2	- 1.8

Table 2.6 cont'd

Glengarry Females

Gr. Id. No.	1891 D	1901 M	1901 D	1911 M	1911 D	1921 M	1921 D	1931 M
1	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-
4	71.8 -	288.2	50.0 -	149.0	40.1 -	62.9	27.0 -	238.0
5	50.7 -	118.3	47.8 -	365.2	39.5 -	432.5	26.5 -	542.5
6	57.0 -	272.0	50.7 -	411.3	37.6 -	369.4	27.1 -	390.9
7	62.2 -	360.8	49.3 -	298.7	37.0 -	303.0	27.9 -	240.1
8	58.2 -	216.8	47.9 -	206.1	37.1 -	109.9	26.2 -	112.8
9	46.5 -	137.5	41.3 -	87.7	35.0 -	91.0	24.0 -	45.0
10	40.3 -	48.7	41.6 -	108.4	35.9 -	91.1	33.9 -	113.1
11	43.5 -	58.5	40.5 -	15.5	43.5 -	32.5	37.9 -	47.1
12	45.9 -	52.1	47.1 -	61.9	46.1 -	51.9	44.0 -	28.0
13	61.9 -	33.1	58.7 -	41.3	61.4 -	36.6	67.0 -	27.0
14	73.9 +	2.9	74.1 -	1.9	75.5 +	13.5	75.1 -	0.9
15	113.8 -	25.2	106.7 -	18.3	100.9 +	10.9	104.9 +	26.9
16	105.6 -	2.4	124.4 -	21.6	126.9 +	14.9	140.5 -	1.5
17	102.8 +	3.8	147.8 -	2.2	169.7 +	31.7	150.4 -	0.6
18	86.7 -	7.3	112.1 -	7.9	115.4 +	13.4	136.1 +	4.1
19	81.5 +	9.5	83.0 +	6.0	101.6 -	2.4	91.3 +	3.3
20	59.1 +	1.1	57.3 +	1.3	48.2 -	12.8	68.1 +	1.1

Table 2.6 cont'd

Glengarry Females

Gr. Id. No.	1931 D	1941 M	1941 D	1951 M	1951 D	1956 M
1	-	-	-	-	-	-
2	-	-	-	-	19.1 + 93.1	
3	71.8 + 75.8		42.6 - 7.4		2.3 - 13.7	
4	12.1 - 164.9		6.2 - 258.8		2.0 - 172.0	
5	12.8 - 369.2		7.0 - 491.0		1.8 - 250.2	
6	15.5 - 278.5		7.8 - 335.2		1.7 - 1.3	
7	14.2 - 51.8		7.7 - 109.3		2.1 + 51.1	
8	15.7 - 52.3		10.2 - 69.8		3.1 + 35.1	
9	18.5 - 9.5		12.8 - 71.2		5.0 + 5.0	
10	23.5 - 27.5		16.4 - 54.6		7.0 - 5.0	
11	28.3 - 23.7		23.8 - 63.2		9.7 + 32.7	
12	38.5 - 19.5		32.5 - 8.5		15.1 - 14.9	
13	56.0 - 7.0		45.3 - 12.7		23.3 - 15.7	
14	71.6 + 28.6		63.3 + 17.3		31.6 + 10.6	
15	108.8 + 33.8		95.7 + 40.7		47.2 + 34.2	
16	126.5 + 31.5		127.9 - 7.1		74.7 - 33.3	
17	163.1 + 25.1		170.3 - 11.7		68.7 + 18.7	
18	126.0 + 14.0		144.8 + 5.8		72.2 + 12.2	
19	81.8 + 8.8		116.2 - 3.8		38.3 + 2.3	
20	60.2 + 4.3		70.7 + 0.7		13.7 - 1.3	

Table 2.7 Net Migration Ratios

Note:-

1. The formula used for the computation of net migration ratios was:-

$$\frac{\text{total net migration}}{\text{projected population at end of intercensus period}} \times 100$$

2. These figures are, therefore, the percentage of net migrants to total surviving population.

3. Ratios for the period 1951 to 1956 must be doubled before they are comparable with earlier figures. In graphing these ratios 1951 to 1956 figures were doubled.

Russell County

	1921 1931	1931 1941	1941 1941	1951 1956	1921 1931	1931 1941	1941 1951	1951 1956
	Males				Females			
4	-27.8	-18.1	-19.5	-14.4	-36.7	-28.6	-23.5	-17.9
5	-39.8	-37.5	-46.6	-29.3	-50.1	-51.3	-51.0	-28.3
6	-49.6	-41.0	-47.1	- 8.4	-50.4	-39.1	-38.0	- 1.6
7	-40.0	-31.2	-30.1	- 3.7	-40.7	-24.3	-10.4	- 1.5
8	-31.0	-13.9	-11.1	+ 6.8	-24.8	-11.3	- 8.0	+ 4.4
9	-18.5	- 8.0	-11.9	- 0.3	-24.7	-10.4	- 5.3	- 4.8
10	-26.4	- 4.6	- 8.4	+ 2.3	-25.1	- 9.8	-13.6	+ 0.7
11	-18.6	- 7.8	- 3.4	+ 1.7	-22.1	-12.0	-10.0	+ 0.9
12	-18.8	- 2.4	-13.6	- 1.3	-19.0	-12.5	-21.5	- 1.7
13	-17.3	- 3.5	- 6.7	- 0.7	-15.4	- 4.5	8.6	+ 1.0

Table 2.7 cont'd

Prescott County

	1891 1901	1901 1911	1911 1921	1921 1931	1931 1941	1941 1951	1951 1956
				Males			
4	-11.3	-18.8	-17.2	-21.1	-11.1	-12.4	- 7.0
5	-20.8	-31.8	-36.9	-34.3	-23.3	-39.2	-30.9
6	-24.3	-40.5	-36.5	-42.4	-29.4	-42.7	-18.4
7	-31.2	-34.2	-34.9	-31.9	-21.0	-28.7	- 7.6
8	-12.4	-25.1	-17.1	-26.3	- 7.6	-11.1	- 0.0
9	- 4.9	-12.7	-12.9	-16.8	- 6.3	- 7.9	- 5.4
10	- 5.9	-14.0	-11.8	-15.0	+ 2.2	- 9.8	- 3.5
11	- 8.7	-13.3	- 9.2	-10.5	- 0.6	- 5.8	- 0.5
12	- 9.4	-18.7	-17.2	- 9.3	- 5.1	-13.3	- 5.4
13	+ 7.9	- 6.2	-10.2	- 8.6	+ 2.7	- 5.6	- 0.2
				Females			
4	- 4.1	-16.9	-19.7	-26.3	-15.1	-18.6	-13.2
5	-15.0	-28.3	-34.4	-42.8	-33.0	-38.1	-26.4
6	-29.2	-36.5	-37.8	-42.8	-32.1	-37.5	-15.9
7	-23.8	-35.1	-31.3	-37.2	-19.9	-18.5	+ 0.0
8	-11.4	-21.4	-22.9	-24.0	- 8.5	-11.2	- 0.9
9	- 1.7	-12.6	-18.9	-21.5	- 0.4	-10.6	- 5.3
10	- 4.8	-18.7	-18.9	-15.4	- 8.4	- 9.2	- 4.9
11	+ 1.4	-20.6	-18.4	-14.5	+ 0.0	-12.8	- 6.1
12	-15.7	-13.4	-16.5	-14.8	- 9.4	-10.2	- 5.4
13	- 0.1	-13.5	-13.8	- 8.3	- 7.1	-12.5	- 1.3

Table 2.7 cont'd

Stormont County

	1891 1901	1901 1911	1911 1921	1921 1931	1931 1941	1941 1951	1951 1956
				Males			
4	- 8.2	-12.6	- 3.3	+22.2	+10.6	- 3.2	- 1.2
5	-19.1	-30.8	-23.2	+11.6	+ 1.2	-18.6	+ 5.7
6	-27.9	-40.2	-29.0	+ 0.3	+ 2.8	- 8.7	+26.9
7	-32.2	-41.1	-20.5	+ 8.7	+10.1	- 4.7	+15.8
8	-25.4	-27.1	- 7.2	+15.7	+14.2	+ 2.6	+14.8
9	-15.7	-16.5	+ 0.3	+21.4	+13.8	+ 1.7	+11.6
10	-11.0	-11.7	- 1.4	+15.4	+12.5	- 2.0	+ 9.2
11	- 1.9	-10.8	- 1.9	+18.6	+10.6	+ 7.0	+ 6.9
12	-12.2	-20.2	- 6.4	+10.3	+ 4.4	- 6.2	+ 1.8
13	-22.3	-13.9	- 6.1	- 1.8	+ 4.3	- 8.0	+ 1.3
				Females			
4	- 1.5	- 8.7	- 3.4	+23.7	+18.0	- 3.0	+ 3.4
5	-10.8	-20.9	-16.6	+14.2	+11.4	- 7.3	- 0.1
6	-30.7	-37.3	-24.2	- 4.0	+ 5.7	- 6.5	+ 4.5
7	-37.1	-40.1	-30.3	- 4.7	+ 9.8	- 6.0	+ 4.5
8	-26.4	-22.9	-14.6	- 2.1	+12.5	+ 4.6	+ 6.9
9	-11.5	-16.1	- 6.8	+23.3	+12.1	+ 1.8	+ 3.9
10	- 8.6	-10.2	- 8.2	+11.3	+ 9.0	- 1.5	+ 0.2
11	-15.5	-13.5	- 5.6	+ 7.5	+ 0.5	+ 0.9	+ 2.7
12	-14.4	-19.6	- 9.5	- 0.5	+ 5.1	- 0.9	+ 1.6
13	-11.4	-13.2	-12.3	+ 0.5	+ 2.5	- 4.6	- 1.9

Table 2.7 cont'd

Glengarry County

	1891 1901	1901 1911	1911 1921	1921 1931	1931 1941	1941 1951	1951 1956
				Males			
4	-16.3	-12.2	-16.7	-14.2	-10.6	-22.0	-15.9
5	-21.2	-30.3	-33.2	-30.6	-21.8	-46.8	-34.6
6	-37.3	-41.5	-32.3	-40.6	-31.6	-47.0	-10.8
7	-37.8	-34.7	-28.3	-26.4	-17.3	-37.9	- 0.1
8	-10.2	-19.3	- 9.8	-24.4	- 1.9	-18.0	+ 2.7
9	-10.6	- 2.0	- 3.3	-11.7	- 4.3	-14.7	+ 6.1
10	- 6.1	-20.9	- 0.9	-13.3	- 3.0	- 8.5	+ 2.3
11	- 7.5	- 7.9	-17.1	- 7.6	+ 2.1	-13.8	- 1.3
12	- 6.7	-15.5	- 8.4	-15.8	- 2.3	- 7.9	+ 3.9
13	- 8.5	-11.0	- 4.7	- 7.9	+ 0.7	+ 0.7	+ 3.1
				Females			
4	-16.2	-12.5	-21.7	-27.6	-16.4	-28.7	-20.0
5	-10.7	-29.8	-35.4	-48.0	-37.8	-51.0	-39.0
6	-25.0	-36.5	-36.8	-42.4	-33.0	-40.4	- 0.3
7	-34.8	-31.8	-36.8	-31.5	- 9.0	-18.2	+10.4
8	-26.1	-26.8	-16.2	-18.6	-10.2	-12.6	+ 7.2
9	-21.5	-13.8	-15.0	- 9.1	- 1.9	-14.0	+ 1.0
10	- 9.3	-18.9	-17.3	-21.1	- 5.8	-12.3	- 1.2
11	-11.9	- 3.4	- 6.5	- 9.9	- 5.6	-13.4	+ 8.6
12	-12.5	-14.5	-12.4	- 7.1	- 5.1	- 2.1	- 3.8
13	- 8.3	-11.1	- 9.5	- 6.7	- 1.9	- 3.6	- 4.1

Table 2.8

Births, Deaths and Infant Deaths for Easternmost Counties in Ontario 1931-1956

Russell County

1. Russell County 1931-1940

	Births		Deaths		Infant Deaths	
	male	female	male	female	male	female
1931	266	253	85	102	32	25
1932	293	227	112	88	35	22
1933	235	209	114	98	36	17
1934	212	210	79	75	28	17
1935	230	213	84	70	20	15
1936	243	227	90	78	27	13
1937	212	200	68	84	16	21
1938	206	202	76	63	18	14
1939	230	234	71	63	16	17
1940	192	177	74	55	14	4
Totals (1931-40)	2319	2152	853	773	242	165

2. Russell County 1941-1950

1941	235	168	79	72	16	11
1942	222	218	59	55	13	12
1943	224	209	69	76	14	19
1944	236	252	95	89	17	20
1945	241	222	71	41	22	8
1946	264	274	88	68	19	10
1947	290	250	93	78	27	18
1948	248	234	89	55	11	8
1949	278	275	82	73	12	12
1950	280	244	74	76	13	16
Totals (1941-50)	2519	2346	799	683	164	134

Table 2.8 cont'd

3. Russell County 1951-1956

	Births		Deaths		Infant Deaths	
	male	female	male	female	male	female
1951	243	269	91	70	12	12
1952	265	229	100	72	29	
1953	243	250	88	53	15	
1954	287	239	88	58	21	
1955	298	242	92	65	16	
Total (1951-55)	1356	1229	459	318	105	

Table 2.8 cont'd

1. Prescott County 1931-1940

	Births		Deaths		Infant Deaths	
	male	female	male	female	male	female
1931	368	333	149	106	36	27
1932	332	326	150	143	36	28
1933	324	331	142	140	35	37
1934	331	299	152	114	46	29
1935	348	336	144	149	36	30
1936	320	321	116	116	30	26
1937	321	306	151	140	39	36
1938	371	326	120	122	41	25
1939	370	382	153	110	38	17
1940	358	320	135	135	24	14
Totals (1931-40)	3443	3180	1412	1275	361	263

2. Prescott County 1941-1950

1941	381	356	151	132	48	18
1942	400	325	141	116	38	21
1943	415	409	160	139	26	30
1944	356	381	151	133	27	21
1945	413	394	127	109	32	21
1946	374	351	142	102	29	18
1947	383	385	147	90	26	16
1948	384	389	147	114	28	25
1949	376	348	124	102	22	19
1950	382	344	151	109	36	11
Totals (1941-50)	3860	3682	1441	1146	310	200

Table 2.8 cont'd

3. Prescott County 1951-1956

	Births		Deaths		Infant Deaths	
	male	female	male	female	male	female
1951	350	337	144	91	30	10
1952	423	364	156	123	55	
1953	380	376	140	108	54	
1954	418	364	131	81	33	
1955	413	388	148	115	43	
Totals	1984	1829	689	518	225	

Table 2.8 cont'd

1. Stormont County 1931-1940

	Births		Deaths		Infant Deaths	
	male	female	male	female	male	female
1931	457	450	221	220	54	40
1932	454	408	233	227	42	27
1933	435	434	212	195	25	29
1934	439	449	240	185	50	39
1935	540	497	226	206	39	27
1936	551	474	249	203	40	33
1937	517	491	260	222	43	33
1938	536	487	205	176	32	20
1939	531	492	213	182	30	23
1940	541	526	244	210	25	30
Totals	5001	4708	2303	2026	380	301

2. Stormont County 1941-1950

1941	537	495	264	188	44	23
1942	572	534	248	211	38	20
1943	578	575	270	184	51	21
1944	524	509	214	214	30	29
1945	560	589	242	196	26	34
1946	667	612	226	177	22	19
1947	745	734	227	218	41	40
1948	693	668	239	186	35	28
1949	675	662	255	200	36	34
1950	649	585	233	175	18	21
Totals	6200	5927	2418	1949	341	269

Table 2.8 cont'd

3. Stormont County 1951-1956

	Births		Deaths		Infant Deaths	
	male	female	male	female	male	female
1951	701	666	261	199	30	18
1952	765	699	227	198	59	
1953	728	735	250	199	36	
1954	764	732	269	207	39	
1955	795	814	245	171	43	
Totals	3753	3646	1252	974	255	

Table 2.8 cont'd

1. Glengarry County 1931-1940

	Births		Deaths		Infant Deaths	
	male	female	male	female	male	female
1931	199	160	103	92	26	13
1932	178	184	99	87	20	14
1933	173	143	92	82	18	9
1934	174	154	83	85	16	8
1935	132	148	72	80	9	4
1936	146	157	93	73	6	6
1937	160	140	107	123	18	12
1938	153	145	104	100	9	4
1939	153	130	91	90	5	5
1940	129	158	94	74	10	5
Totals	1597	1519	938	886	173	80

2. Glengarry County 1941-1950

1941	145	121	89	86	12	10
1942	171	141	86	82	7	7
1943	163	131	88	72	11	2
1944	218	196	107	78	9	8
1945	136	128	94	91	8	2
1946	251	231	101	79	8	9
1947	239	227	125	90	15	6
1948	228	203	94	112	9	11
1949	240	194	96	81	12	11
1950	222	266	96	98	10	12
Totals	2013	1838	976	869	101	78

Table 2.8 cont'd

3. Glengarry County 1951-1956

	Births		Deaths		Infant Deaths	
	male	female	male	female	male	female
1951	214	210	120	89	17	11
1952	233	220	112	85	24	
1953	226	205	84	90	23	
1954	209	212	80	84	18	
1955	242	219	111	66	13	
Totals	1124	1066	507	414	106	

Table 2.9

Estimates of Total Net Migration for Russell and Prescott Counties 1931 to 1956 based on the Vital Statistics Method

	Russell County 1931-41		Russell County 1941-51		Russell County 1951-56	
	male	female	male	female	male	female
Total Deaths	853	773	799	683	459	318
Total Inf. Deaths	242	165	164	134	105	
Total all Deaths	1095	938	963	817	882	
Births	2319	2152	2518	2346	1356	1229
Natural Increase	+1224	+1214	+1515	+1529	+1703	
$P_{y}1$	9555	8932	9048	8400	17666	
Natural Increase $P_{y}1$	10779	10146	10603	9929	19369	
$P_{y}2$	9048	8400	9031	8635	18994	
Net Migration	-1731	-1746	-1572	-1294	-375	

	Prescott County 1931-41		Prescott County 1941-51		Prescott County 1951-56	
	male	female	male	female	male	female
Total Deaths	1412	1275	1441	1146	689	518
Total Inf. Deaths	361	263	310	200	225	
Total all Deaths	1773	1538	1751	1346	1432	
Births	3443	3180	3864	3682	1984	1829
Natural Increase	+1670	+1642	+2113	+2336	+2381	
$P_{y}1$	12618	11978	13076	12185	25576	
Natural Increase $P_{y}1$	14288	13620	15189	14521	27957	
$P_{y}2$	13076	12185	13152	12424	26291	
Net Migration	-1212	-1428	-2037	-2097	-1666	

Table 2.9 cont'd

Estimates of Total Net Migration for Stormont and Glengarry Counties 1931 to 1956 based on the Vital Statistics Method

	Stormont County 1931-41		Stormont County 1941-51		Stormont County 1951-56	
	male	female	male	female	male	female
Total Deaths	2303	2066	2418	1949	1252	974
Total Inf. Deaths	380	301	341	269	255	
Total all Deaths	2683	2327	2759	2218	2481	
Births	5001	4708	6200	5927	3753	3646
Natural Increase	+2318	+2381	+3441	+3709	+4918	
P_y1	16595	15929	20659	20246	2422	24236
Net Increase x P_y1	18913	18310	24100	23955	53376	
P_y2	20659	20246	24222	24236	56452	
Net Migration	+1746	+1936	+122	+381	+3076	

	Glengarry County 1931-41		Glengarry County 1941-51		Glengarry County 1951-56	
	male	female	male	female	male	female
Total Deaths	938	886	976	869	507	414
Total Inf. Deaths	173	80	101	78	106	
Total all Deaths	1111	966	1077	947	1027	
Births	1597	1519	2013	1838	1124	1066
Natural Increase	+486	+553	+936	+891	+1163	
P_y1	9779	8887	9854	8878	9155	8547
Net Increase x P_y1	10265	9440	10790	9769	18865	
P_y2	9854	8878	9155	8547	18693	
Net Migration	-411	-562	-1635	-1222	-172	

Table 2.10

Comparison of Results on Net Migration computed by Vital Statistics and Survival Ratio Methods 1931 to 1956

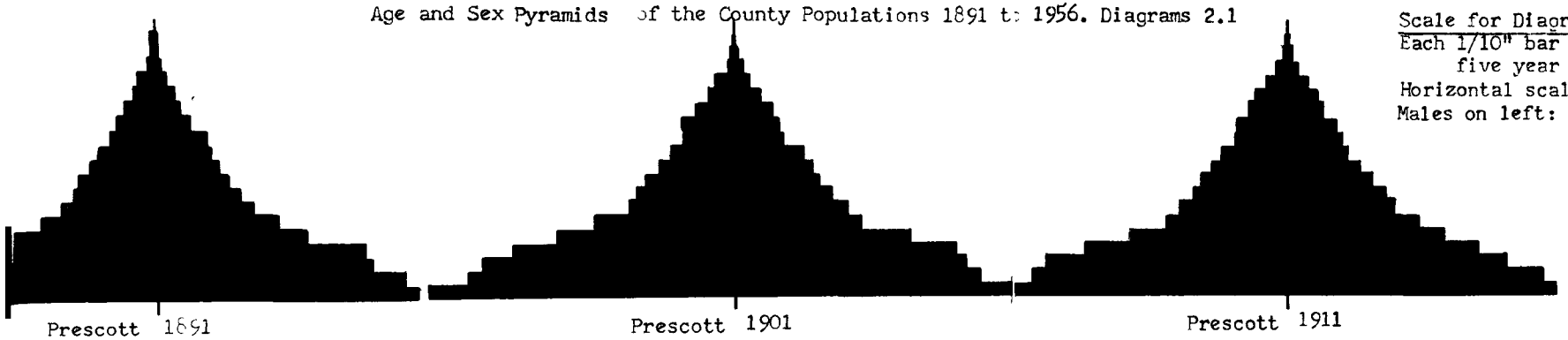
Russell County	male	female	male	female	male & female
Vital Statistics Total	-1731	-1746	-1572	-1294	-375
Survival Ratio Age Gr. 1	n.a.	n.a.	n.a.	n.a.	n.a.
2	n.a.	n.a.	n.a.	n.a.	+195
3	-36	+10	+69	+35	-19
4-13	-1562	-1718	-1632	-1459	-742
14-20	+95	+3	-68	-18	+19
Total	-1503	-1705	-1495	-1442	-546
Difference	228 less	41 less	77 less	148 more	171 more
Prescott County					
Vital Statistics Total	-1212	-1428	-2037	-2097	-1666
Survival Ratio Age Gr. 1	n.a.	n.a.	n.a.	n.a.	n.a.
2	n.a.	n.a.	n.a.	n.a.	-61
3	+161	+56	+107	-7	+11
4-13	-1236	-1490	-2015	-1881	-1538
14-20	+126	+62	+ 61	-24	+53
Total	-948	-1428	-1847	-1912	-1533
Difference	264 less	(no diff.)	190 less	185 less	133 less
Stormont County					
Vital Statistics Total	+1746	+1936	+122	+381	+3076
Survival Ratio Age Gr. 1	n.a.	n.a.	n.a.	n.a.	n.a.
2	n.a.	n.a.	n.a.	n.a.	+355
3	+483	+424	+311	+231	+157
4-13	+970	+1119	-652	-412	+1562
14-20	+229	+211	+183	+203	+258
Total	+1682	+1754	-158	+21	+2332
Difference	64 less	82 less	280 less	360 less	744 less

Table 2.10 cont'd

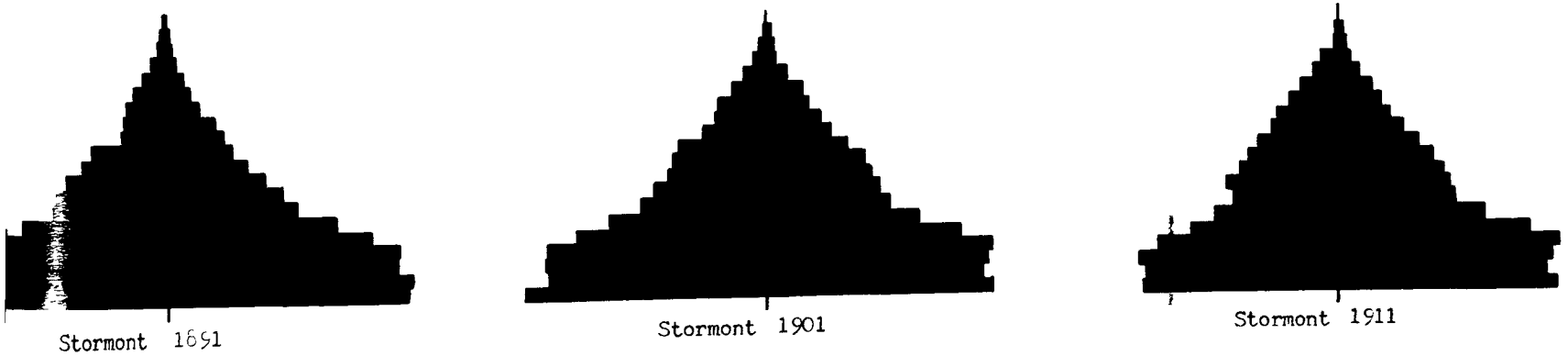
Glengarry County	male	female	male	female	male & female
Vital Statistics Total	-411	-562	-1635	-1222	-172
Survival Ratio Age Gr. 1	n.a.	n.a.	n.a.	n.a.	n.a.
2	n.a.	n.a.	n.a.	n.a.	+240
3	+73	+76	+22	-7	+59
4-13	-840	-1003	-1794	-1475	-711
14-20	+138	+147	+101	+42	+114
Total	-629	-780	-1671	-1440	-298
Difference	218 more	218 more	36 more	218 more	126 more

Age and Sex Pyramids of the County Populations 1891 to 1956. Diagrams 2.1

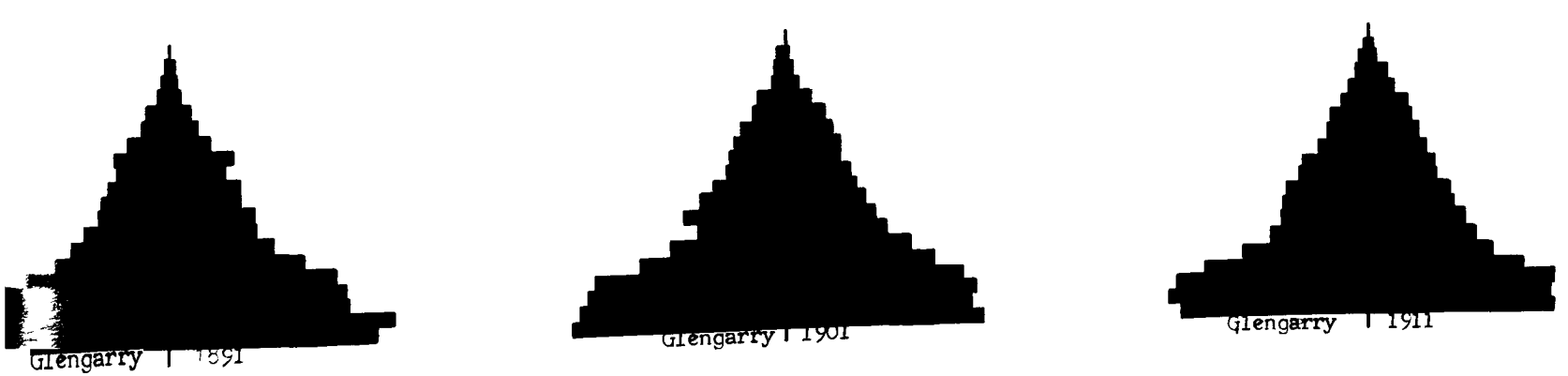
Scale for Diagrams 2.1
Each 1/10" bar represents a five year age group.
Horizontal scale: 1/10" to 100 people
Males on left: females on right.



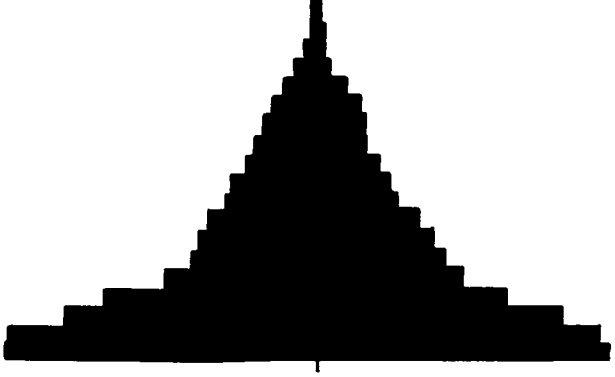
Prescott 1891 | Prescott 1901 | Prescott 1911



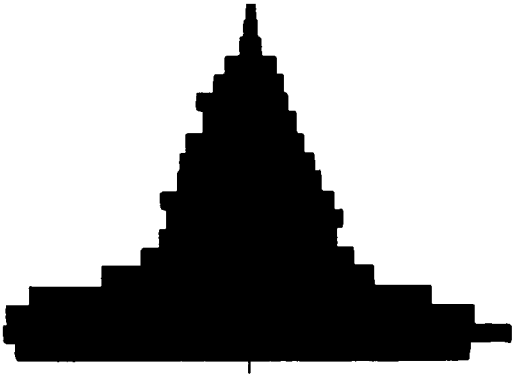
Stormont 1891 | Stormont 1901 | Stormont 1911



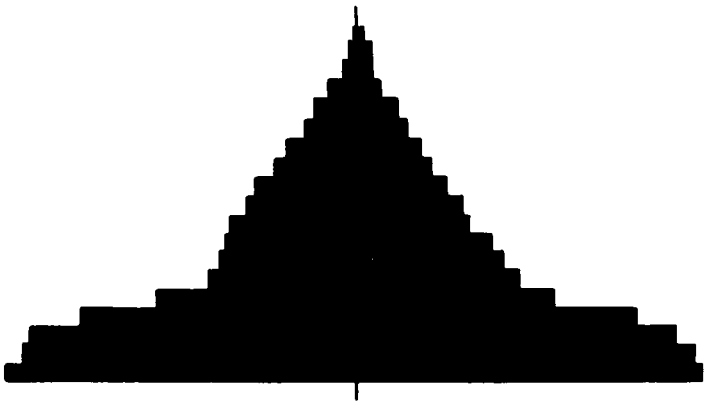
Glengarry 1891 | Glengarry 1901 | Glengarry 1911



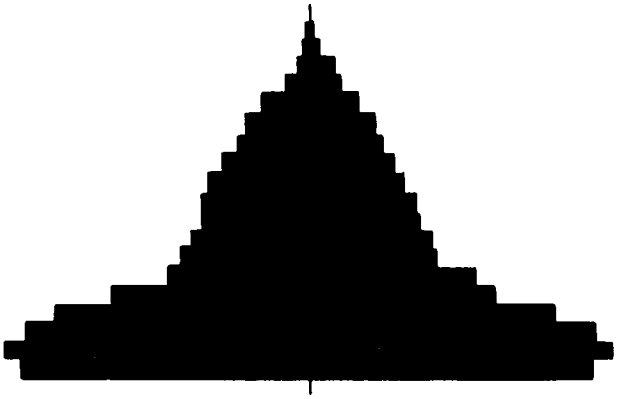
Russell 1921



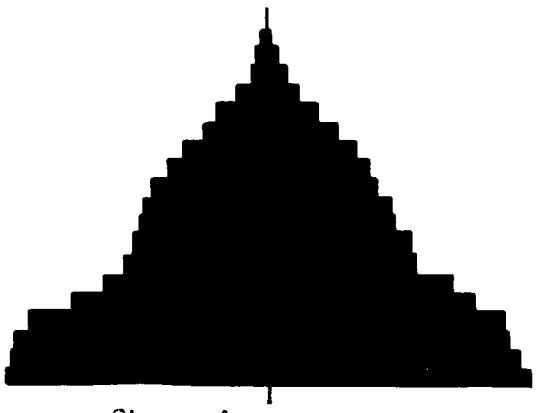
Russell 1931



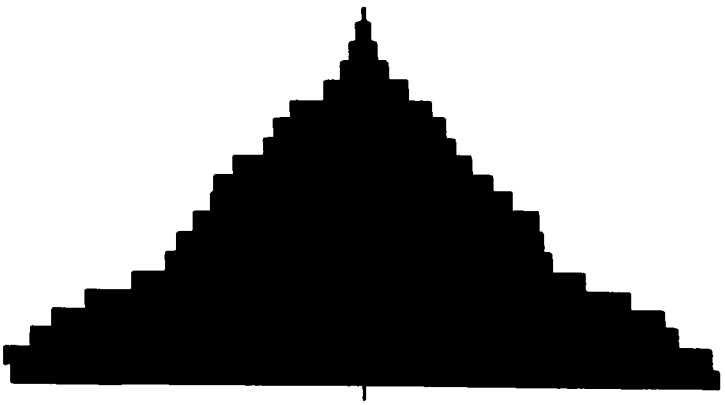
Prescott 1921



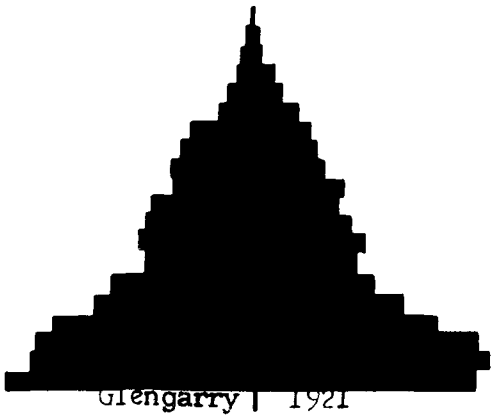
Prescott 1931



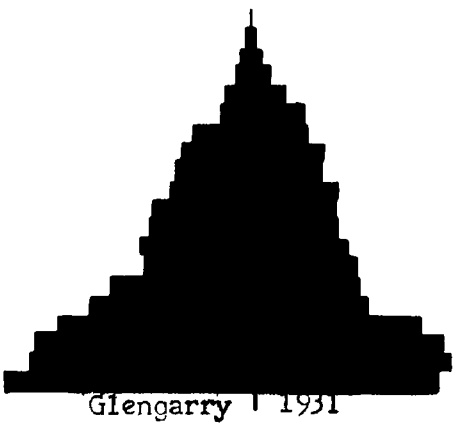
Stormont 1921



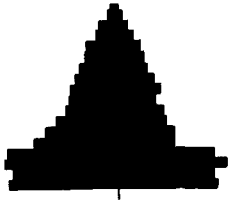
Stormont 1931



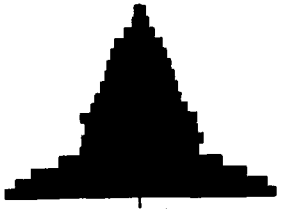
Glengarry 1921



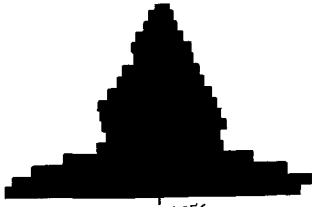
Glengarry 1931



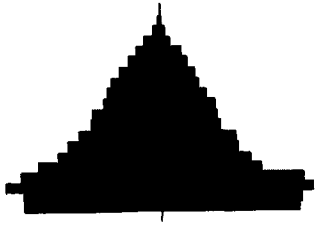
Russell 1941



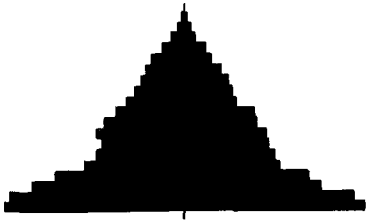
Russell 1951



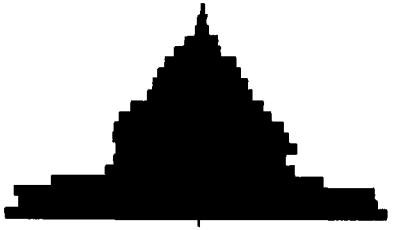
Russell 1956



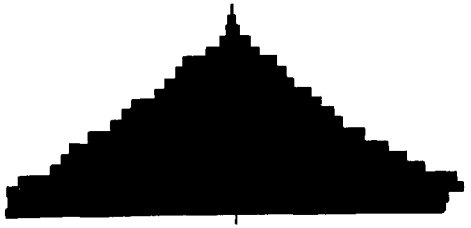
Prescott 1941



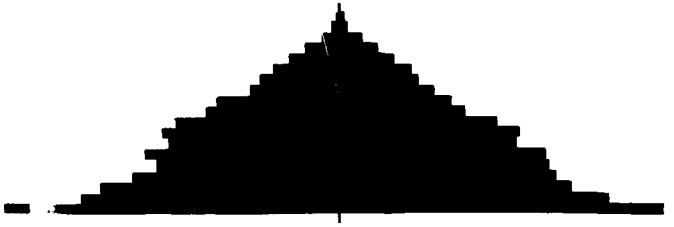
Prescott 1951



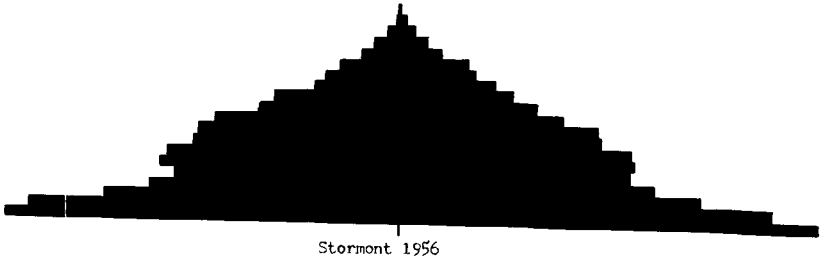
Prescott 1956



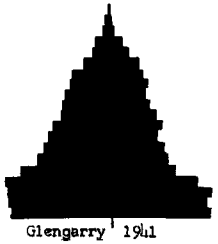
Stormont 1941



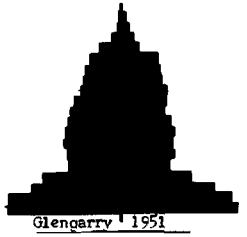
Stormont 1951



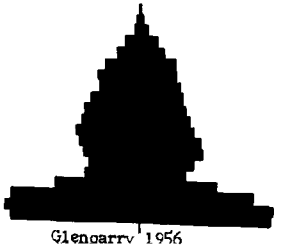
Stormont 1956



Glengarry 1941

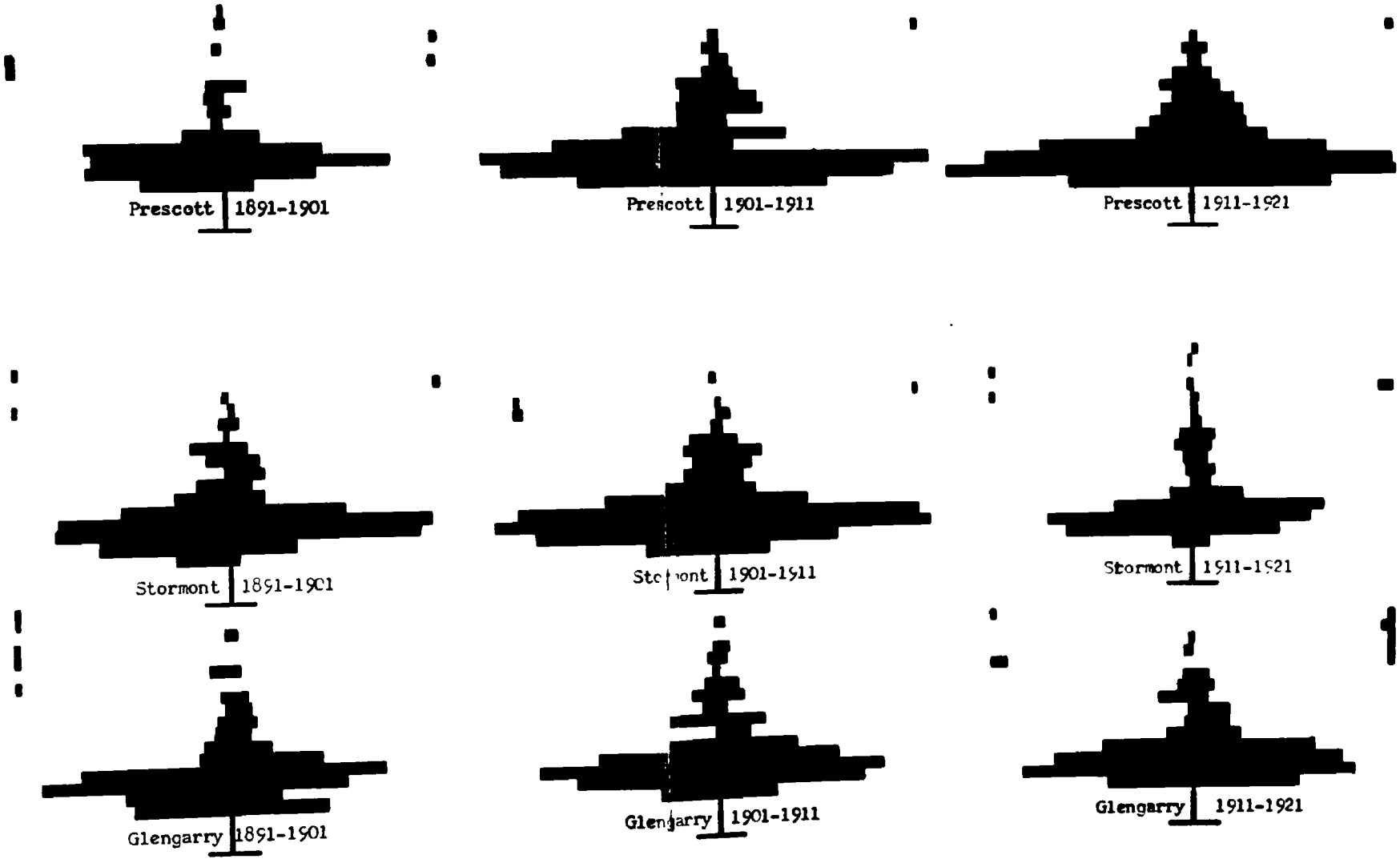


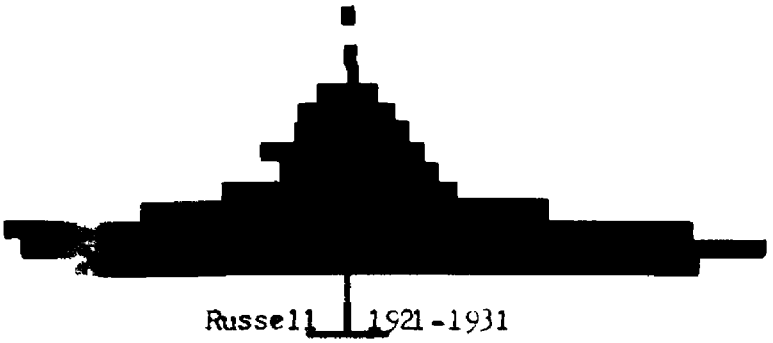
Glengarry 1951



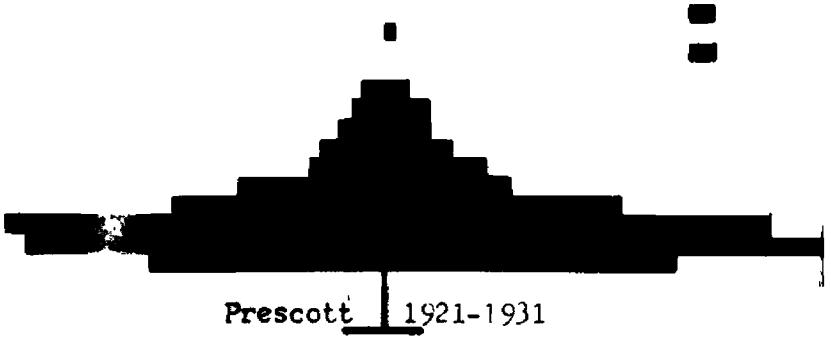
Glengarry 1956

Age and Sex Pyramids of Net Migrants by County, Sex and Intercensus Period 1891 to 1956. Diagrams 2.2 Horizontal scale: 1/10" to 30 people.

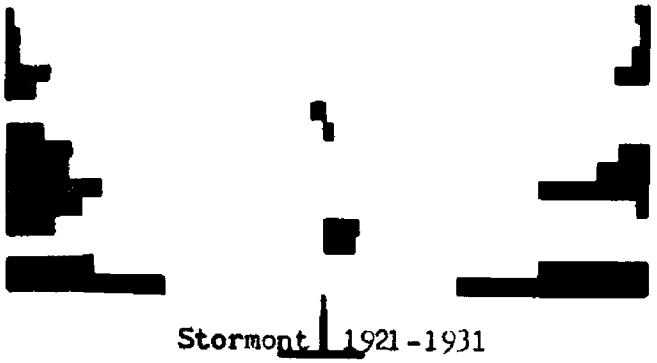




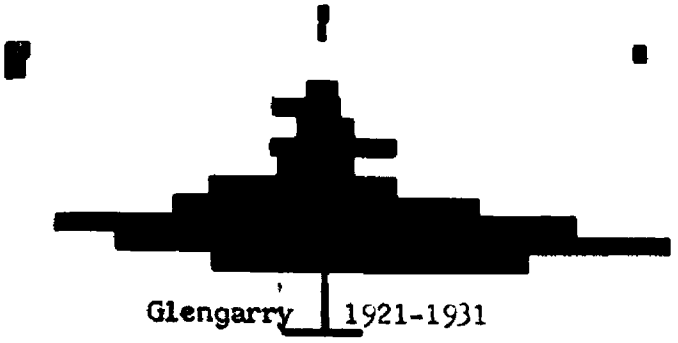
Russell 1921-1931



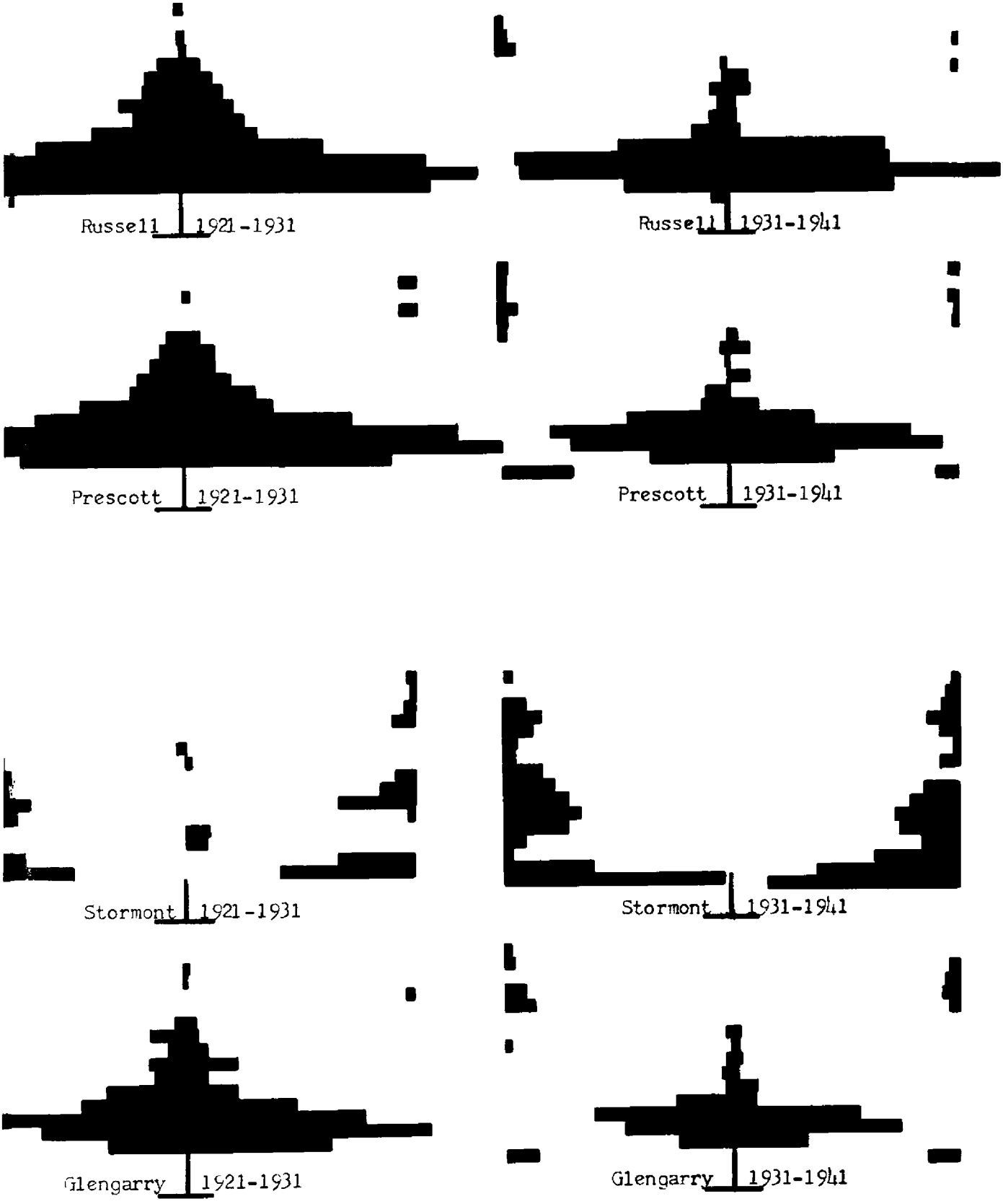
Prescott 1921-1931

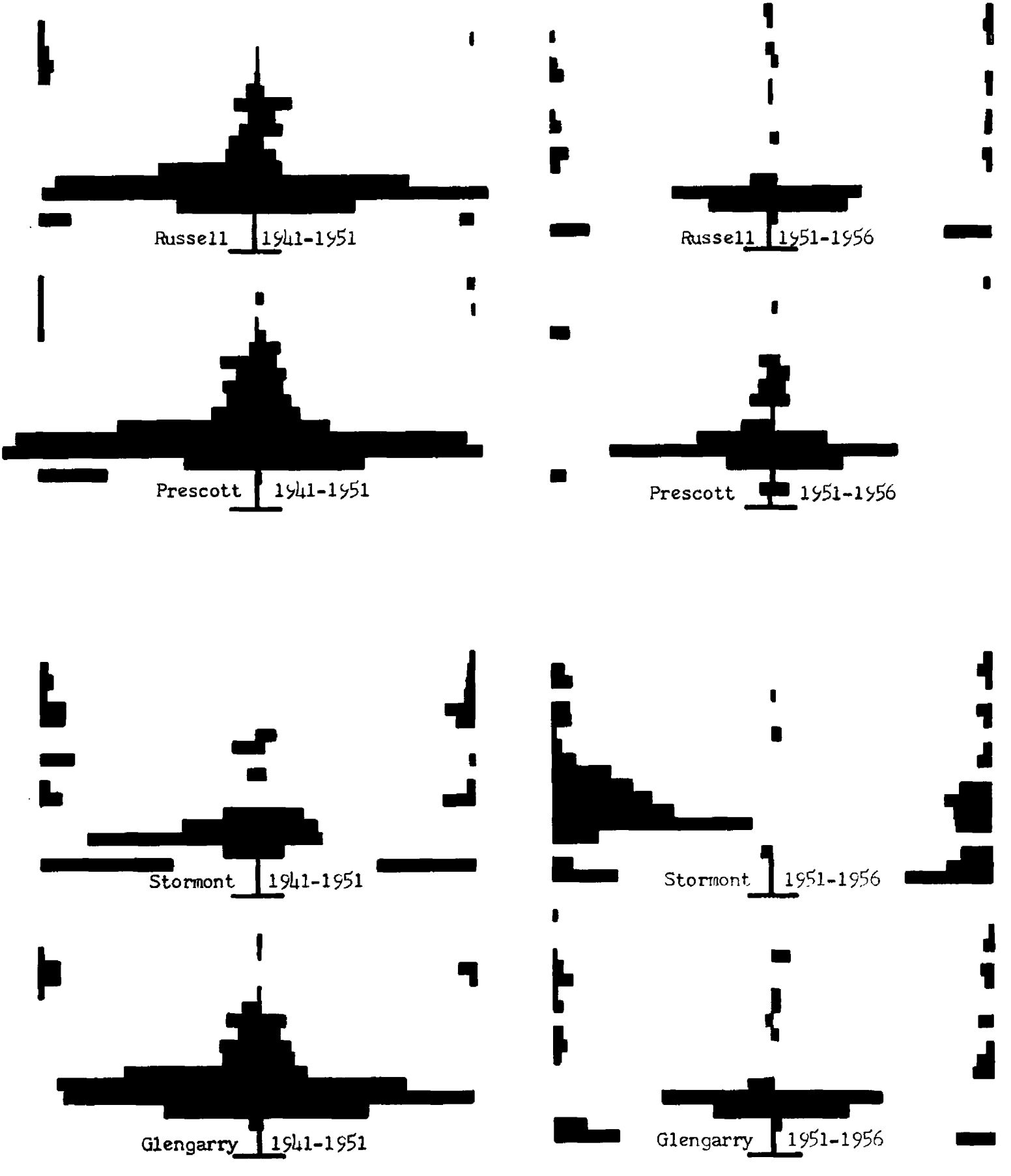


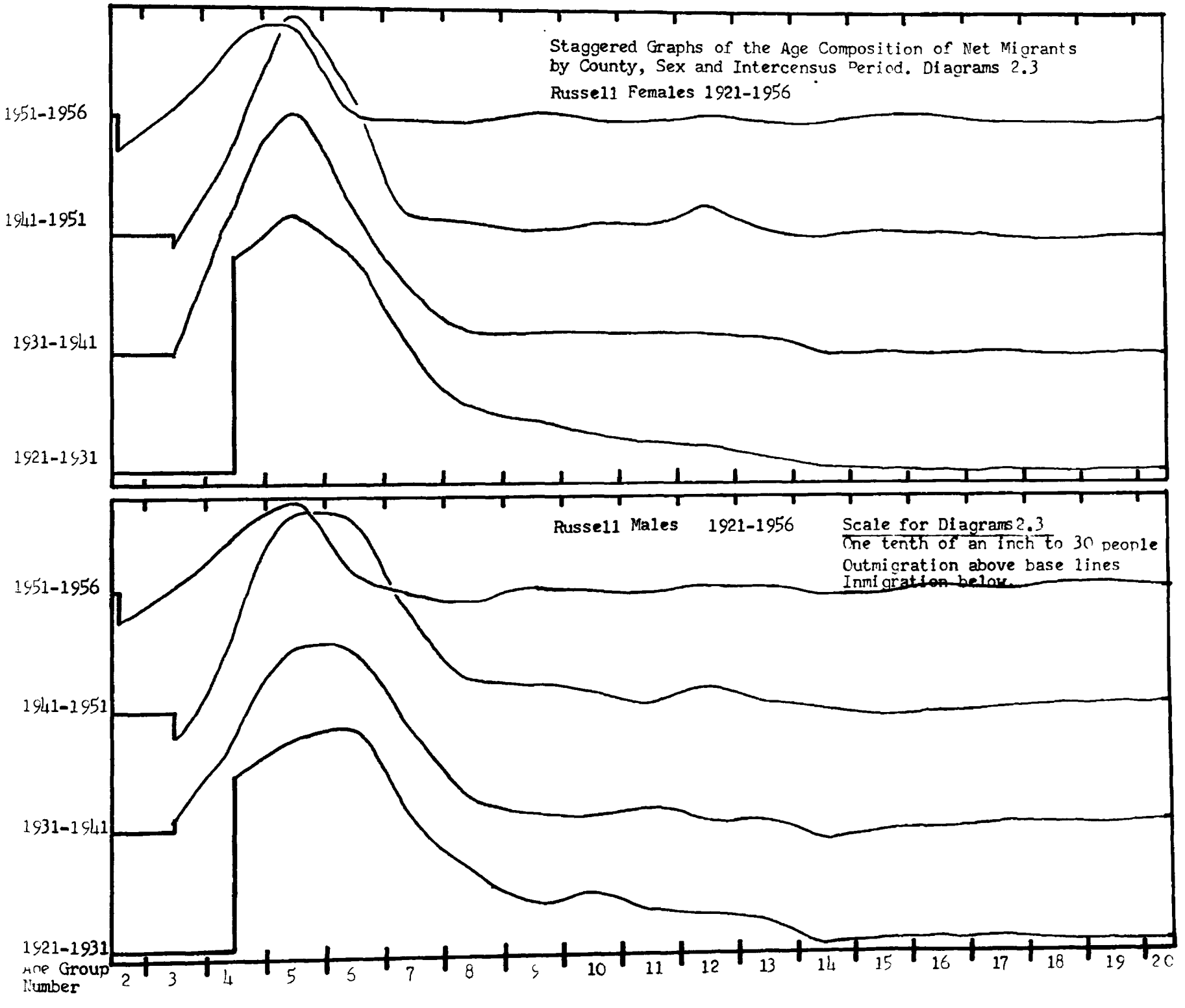
Stormont 1921-1931



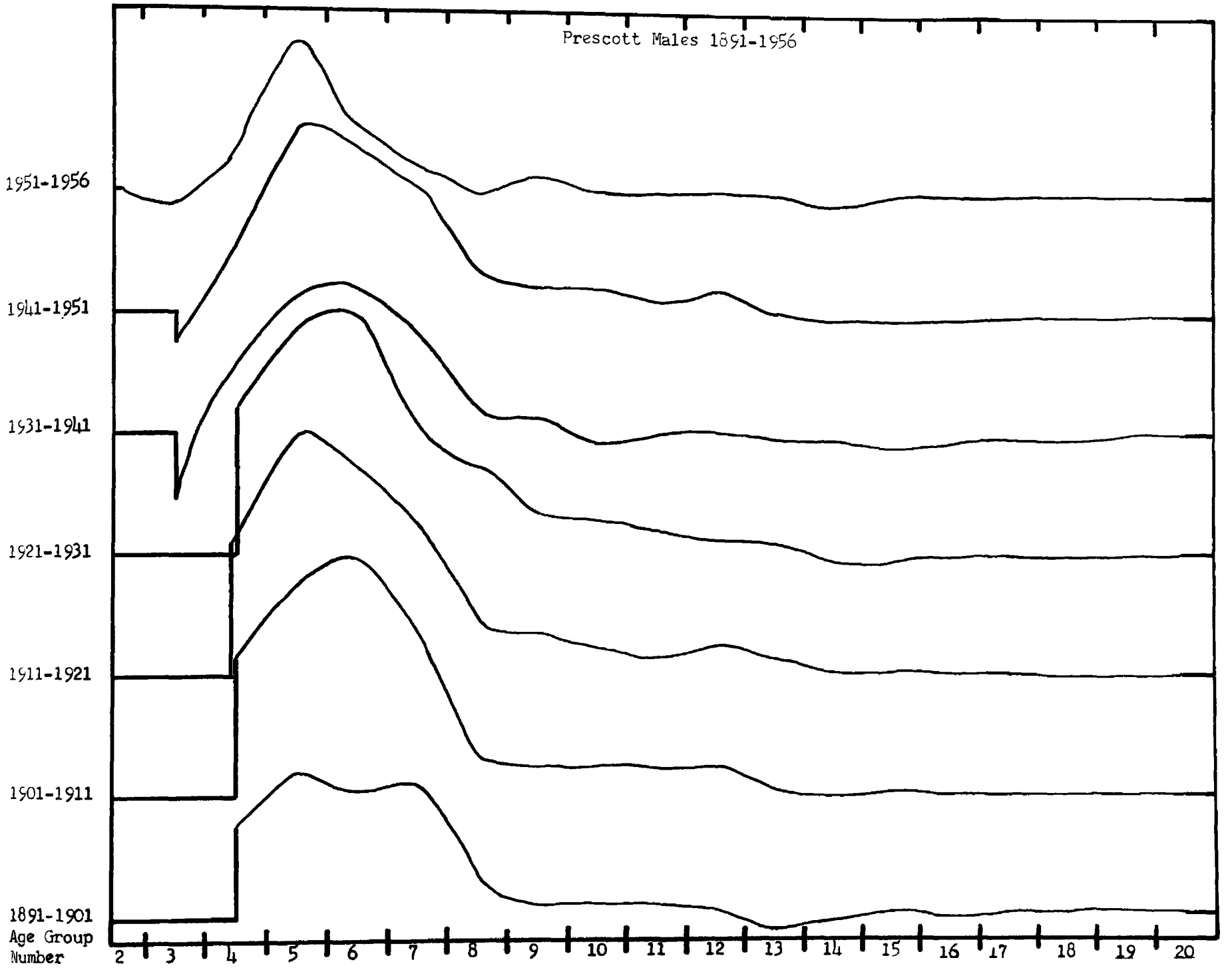
Glengarry 1921-1931


Russell 1921-1931
Russell 1931-1941
Prescott 1921-1931
Prescott 1931-1941
Stormont 1921-1931
Stormont 1931-1941
Glengarry 1921-1931
Glengarry 1931-1941

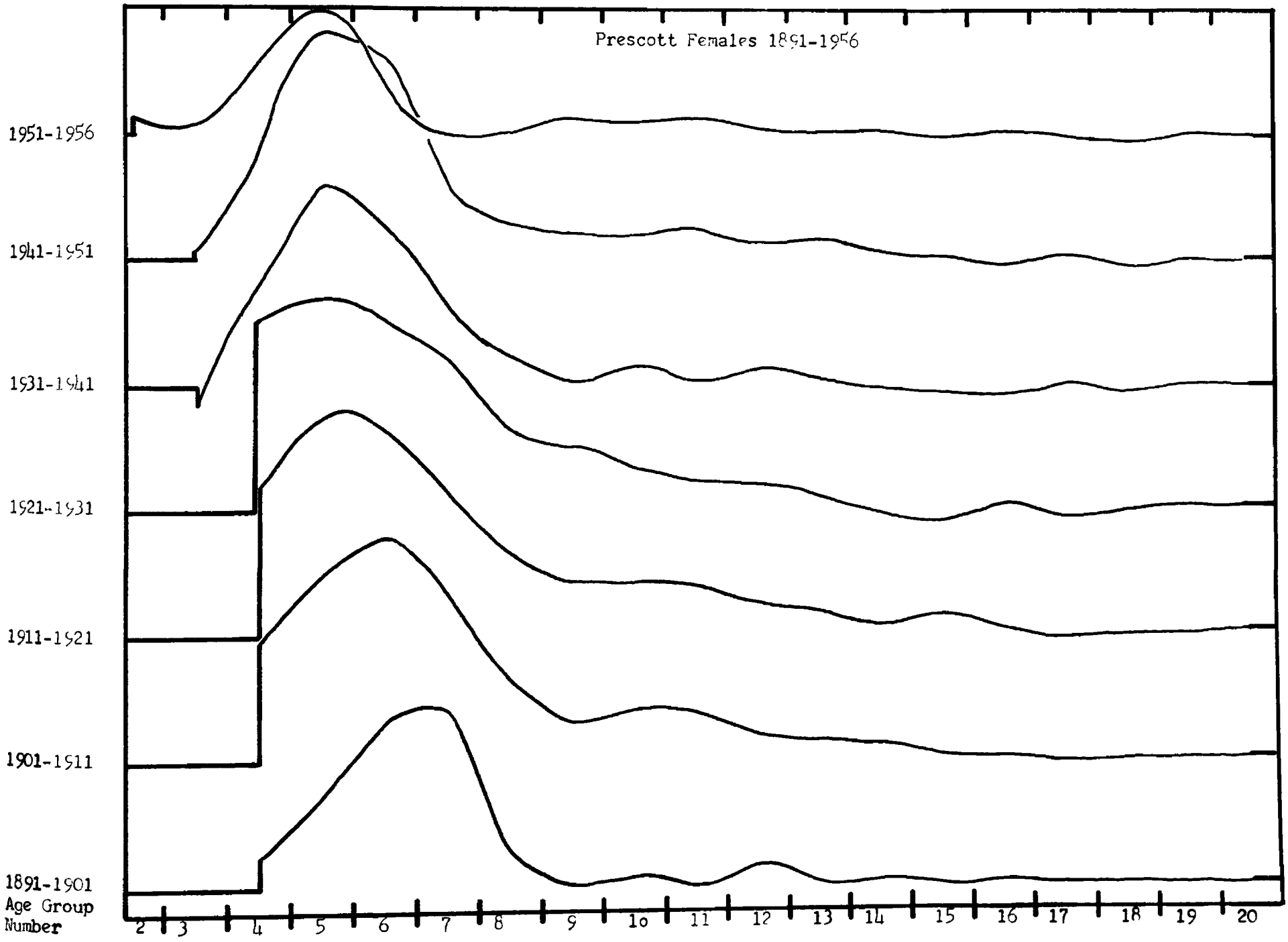

Russell 1941-1951
Russell 1951-1956
Prescott 1941-1951
Prescott 1951-1956
Stormont 1941-1951
Stormont 1951-1956
Glengarry 1941-1951
Glengarry 1951-1956


Staggered Graphs of the Age Composition of Net Migrants
by County, Sex and Intercensus Period. Diagrams 2.3
Russell Females 1921-1956
1951-1956
1941-1951
1931-1941
1921-1931
Russell Males 1921-1956
Scale for Diagrams 2.3
One tenth of an inch to 30 people
Outmigration above base lines
Inmigration below.
1951-1956
1941-1951
1931-1941
1921-1931
Age Group Number
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

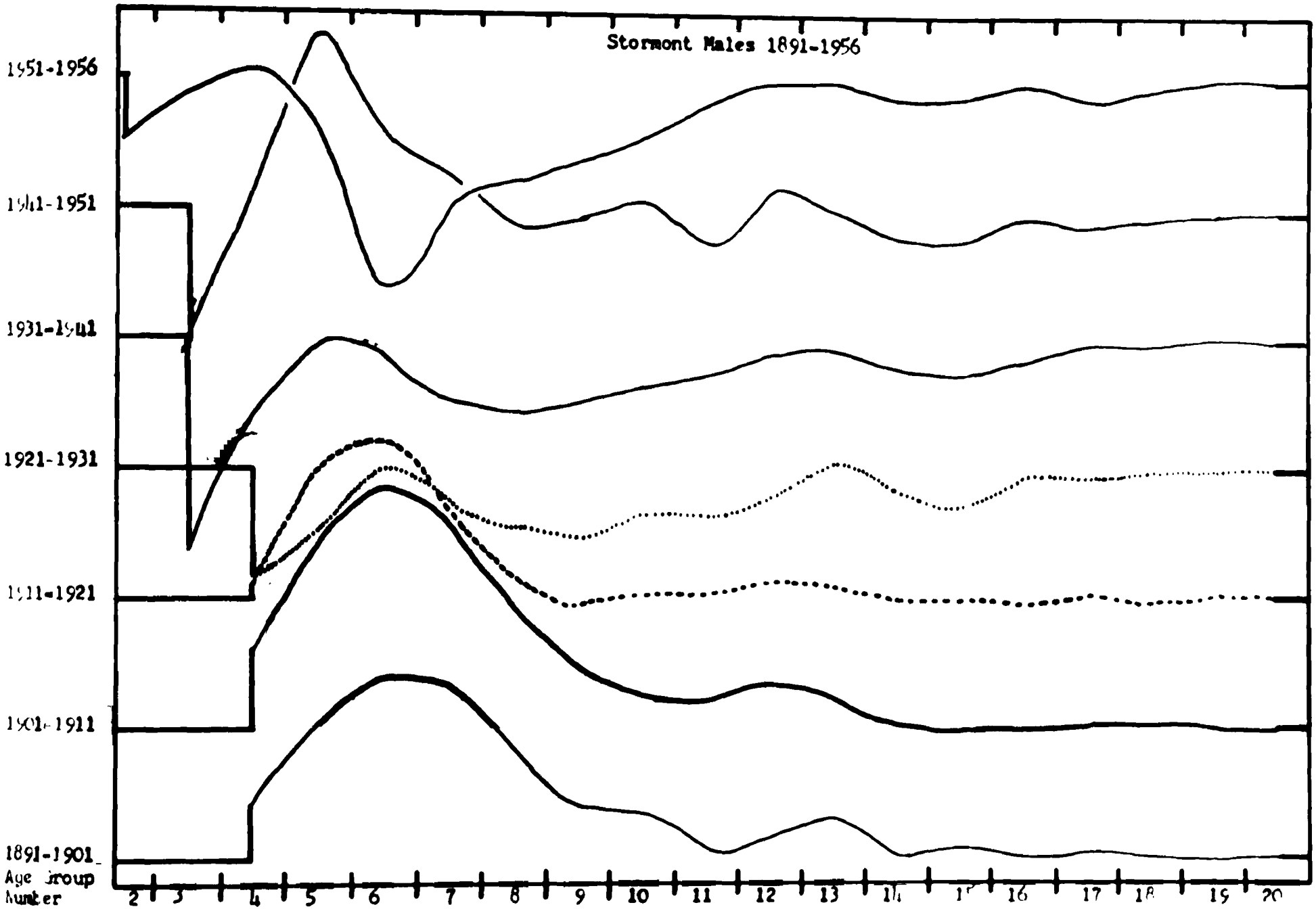
Diagrams 2.3 contd.



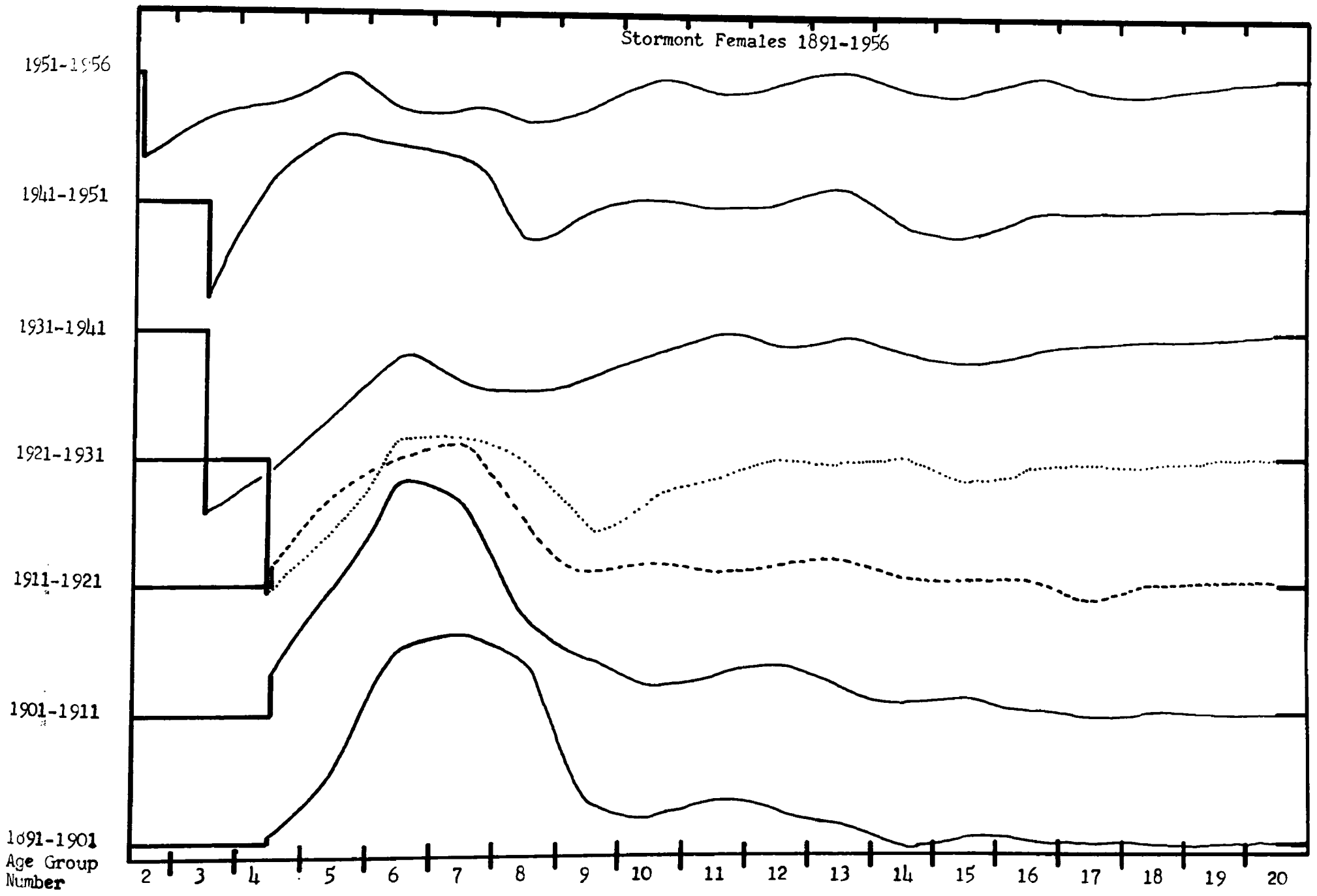
Diagrams 2.3 contd.



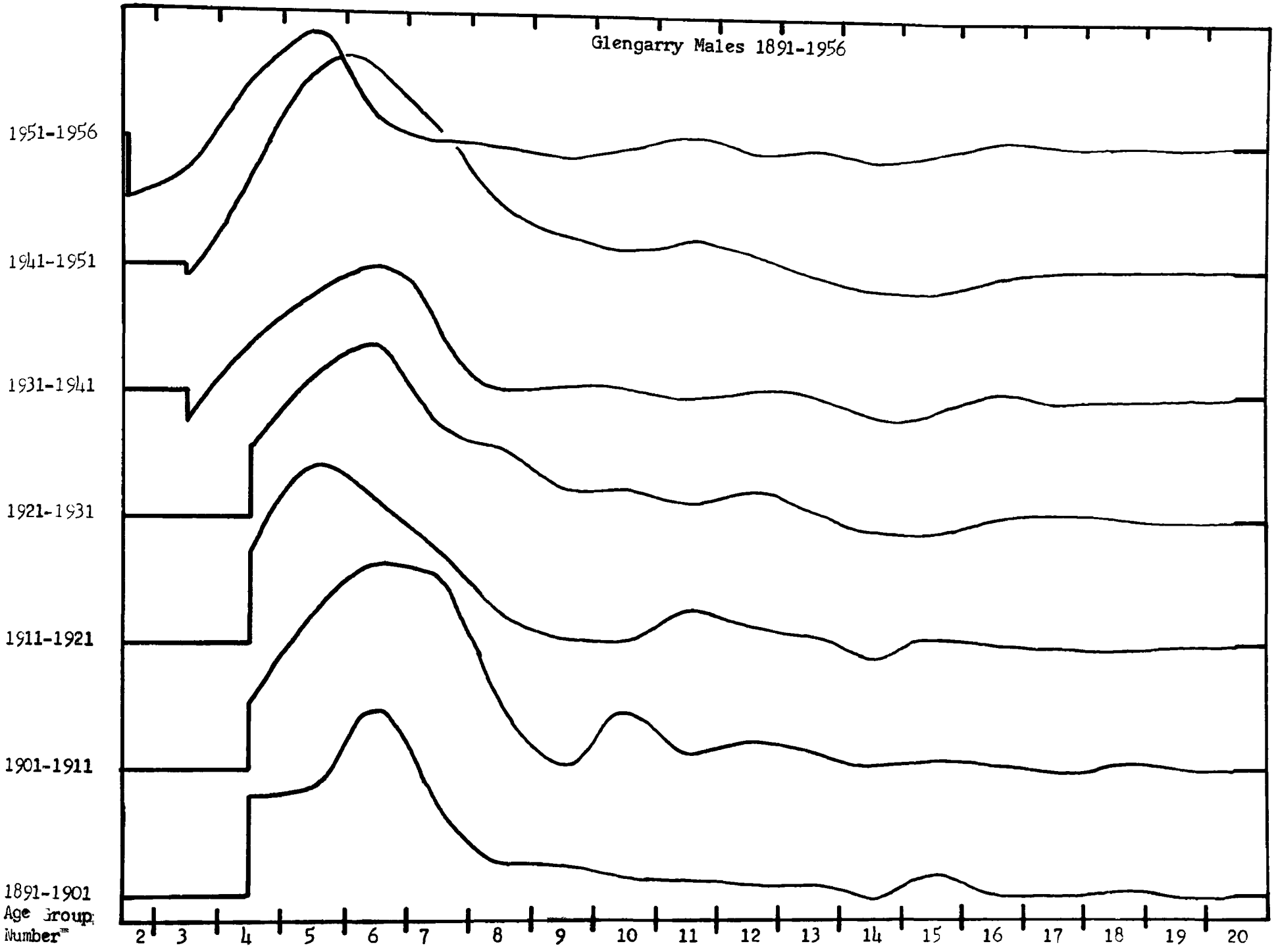
Diagrams 2.3 contd.



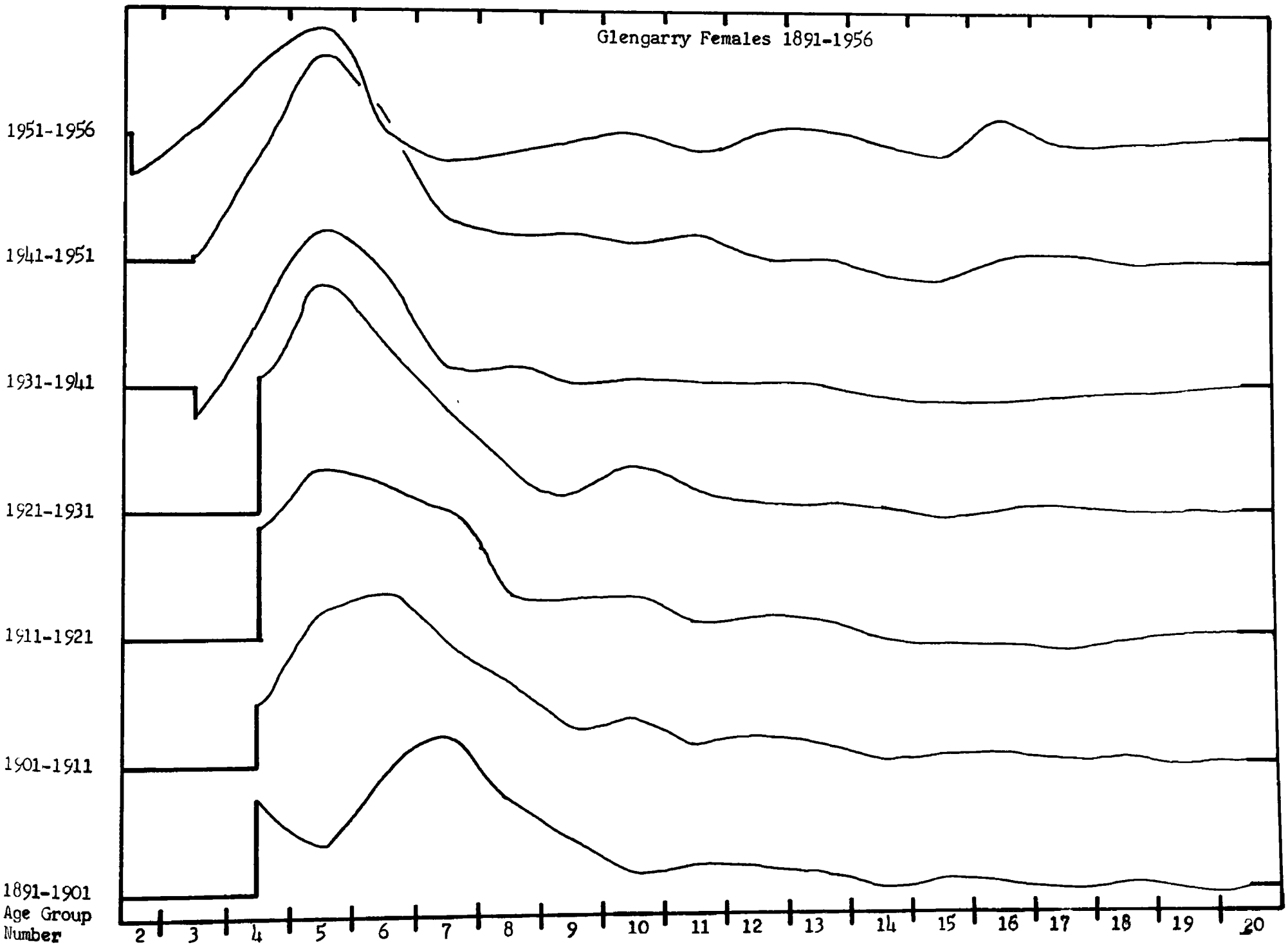
Diagrams 2.3 contd.



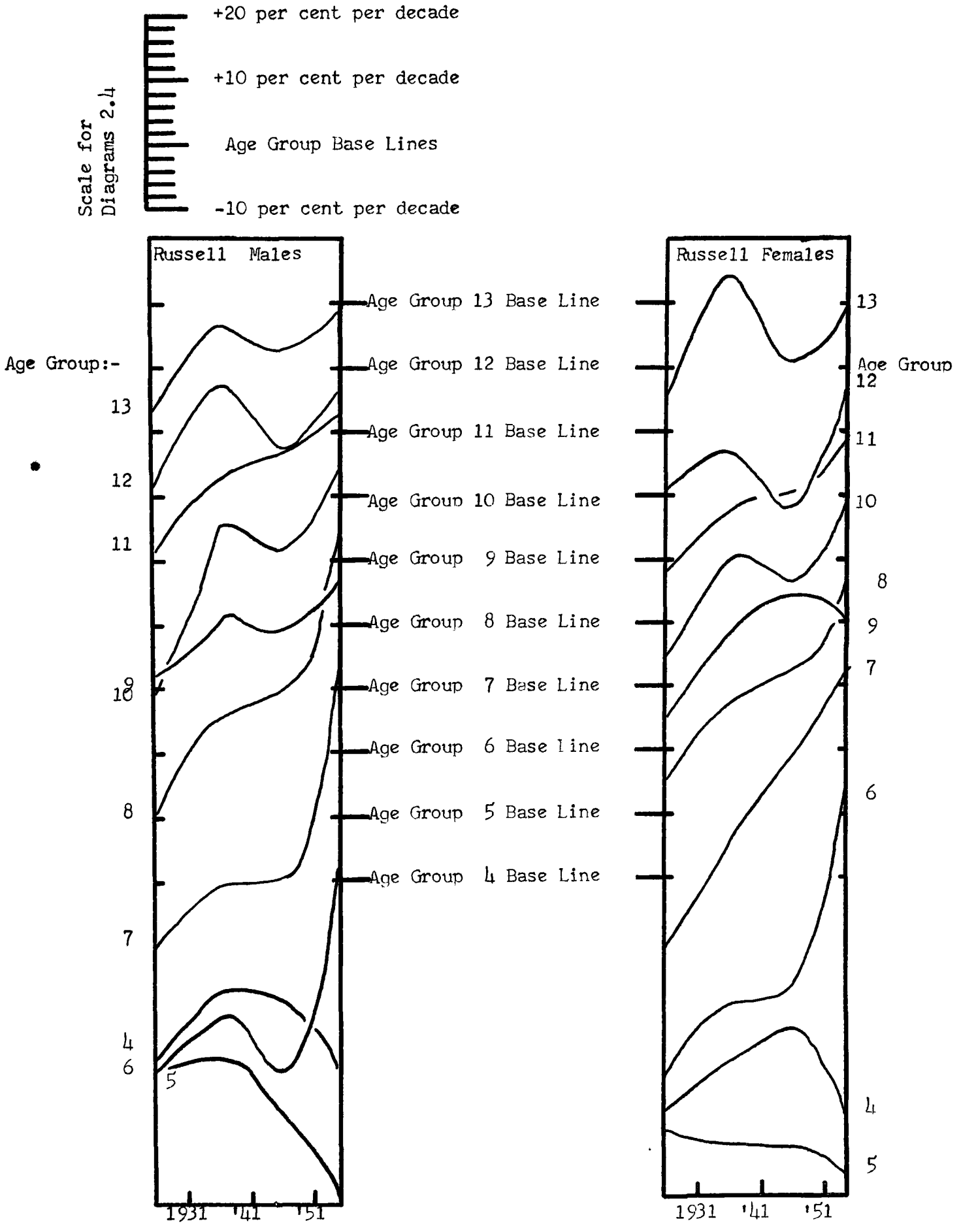
Diagrams 2.3 contd.



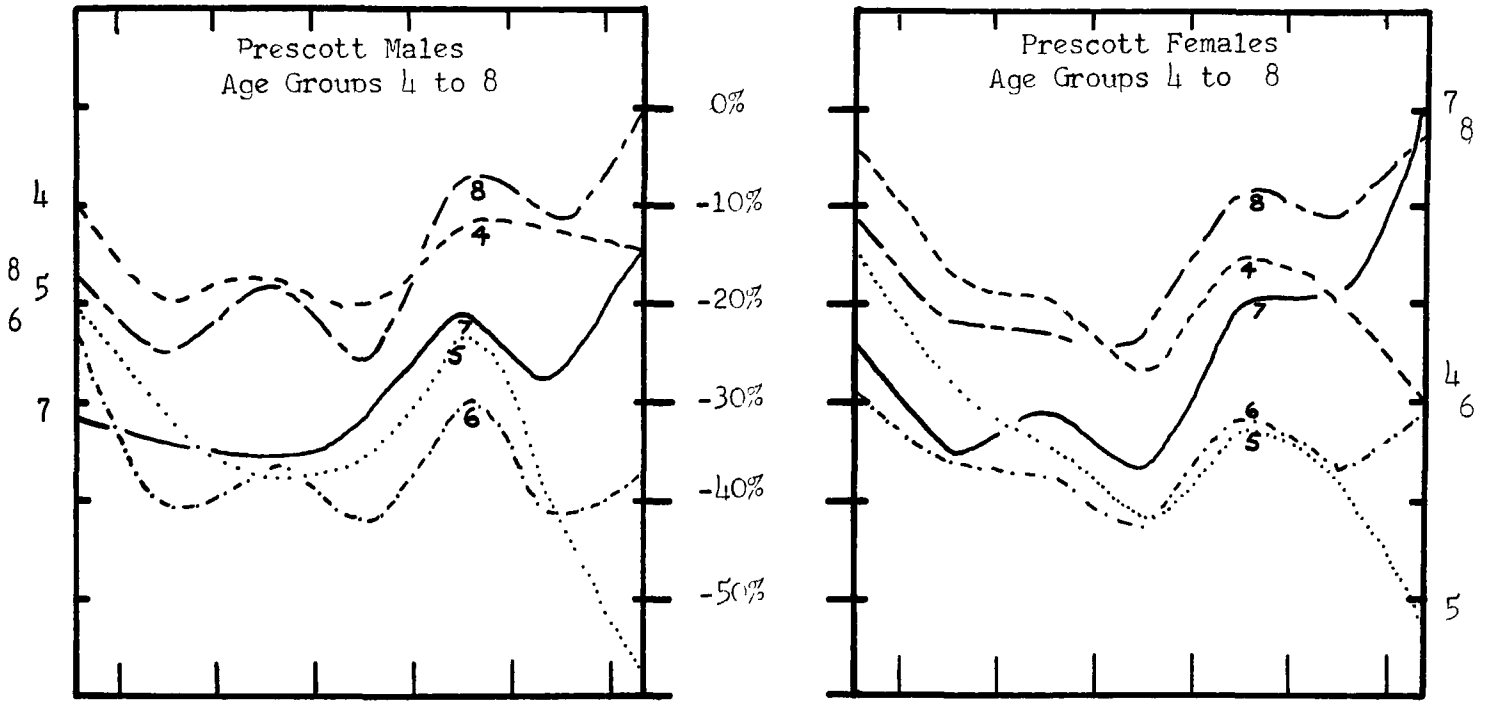
Diagrams 2.3 contd.

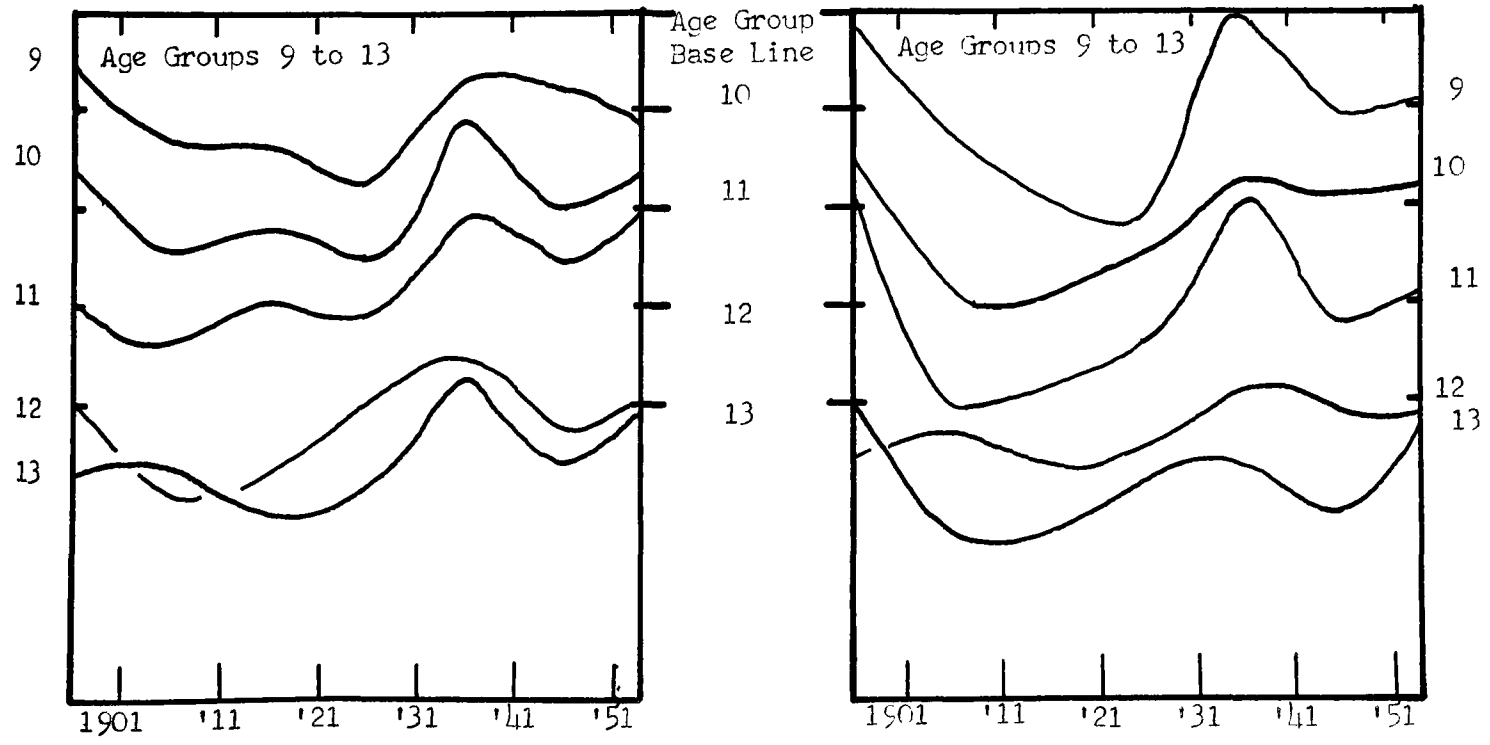


Graphs to Show Migration Ratios by County, Sex and Intercensus Period 1921-1956. Diagrams 2.4



Diagrams 2.4 contd.





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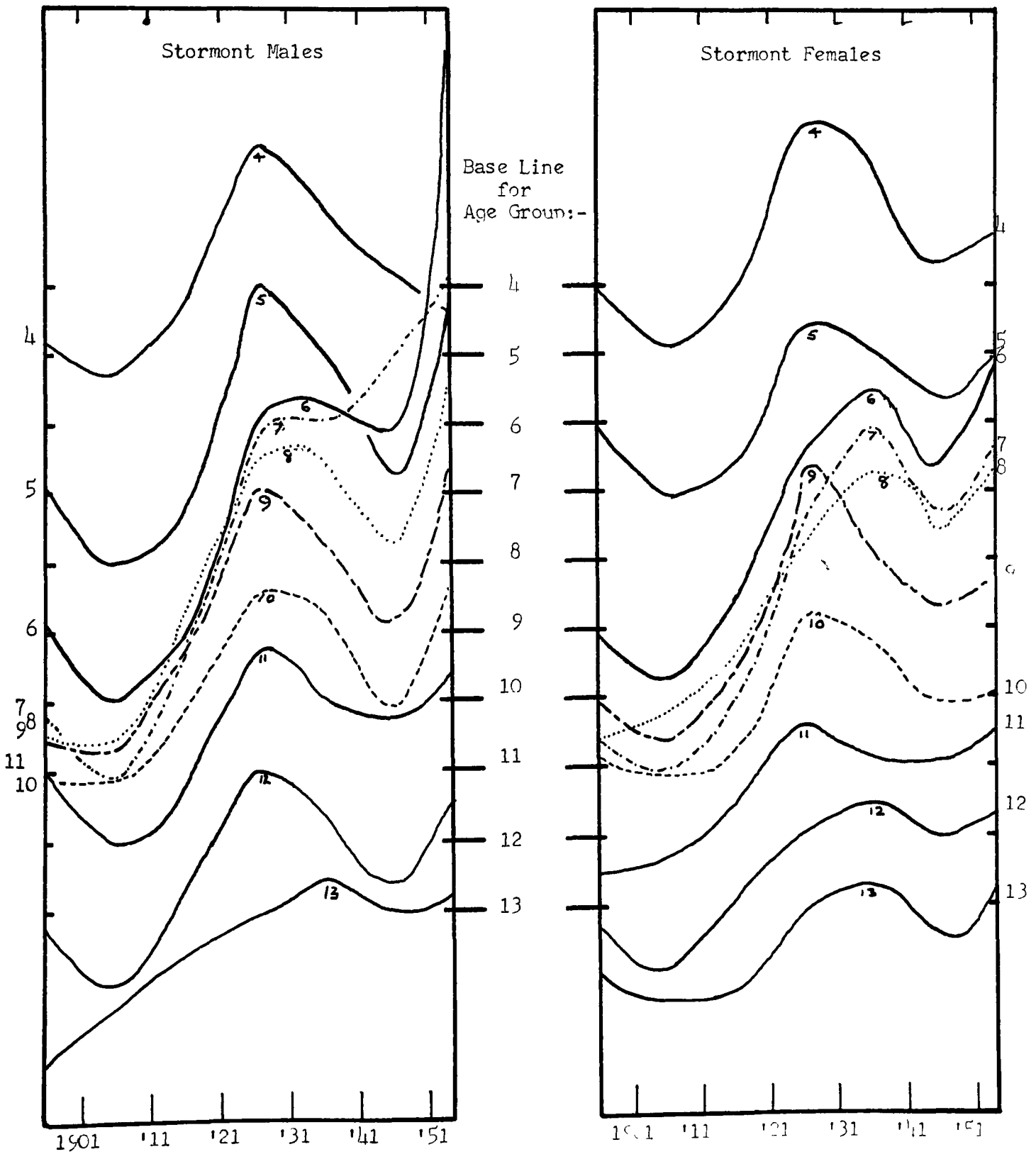
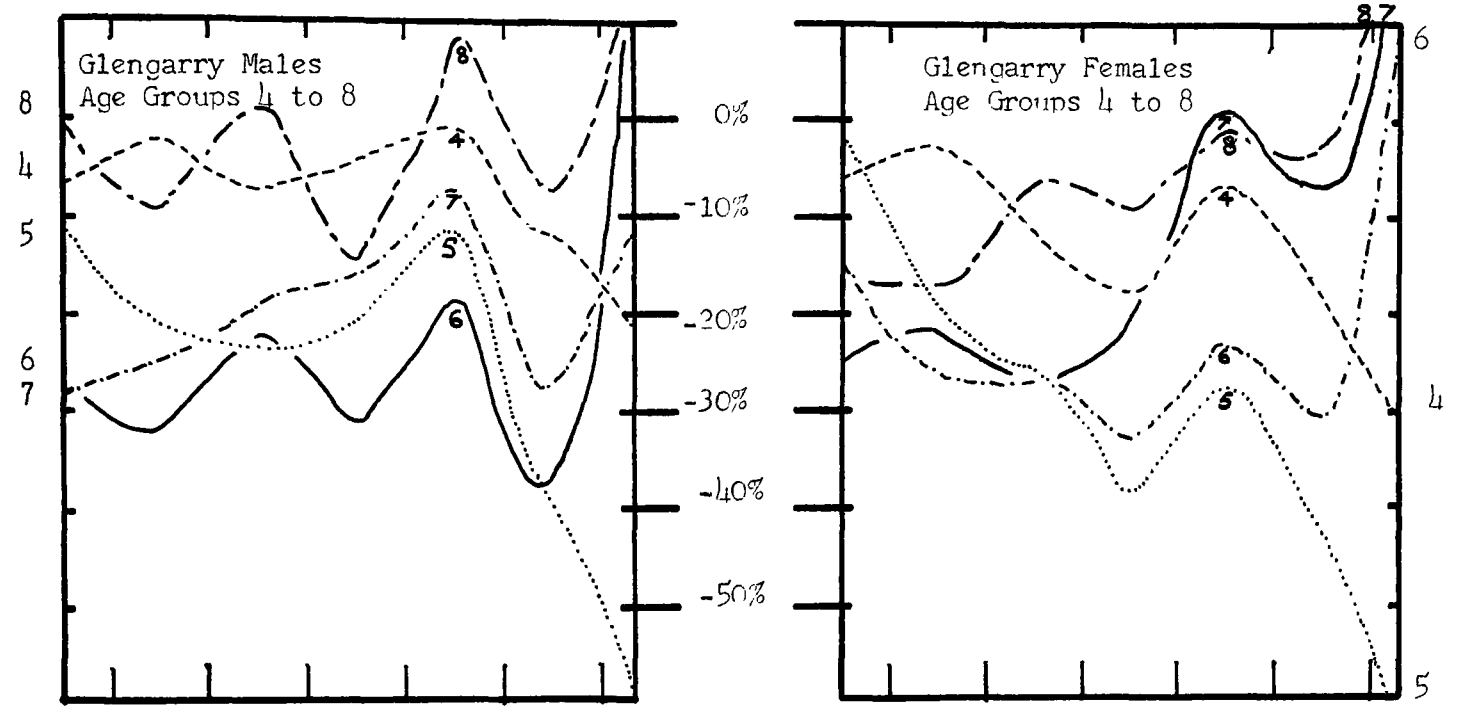
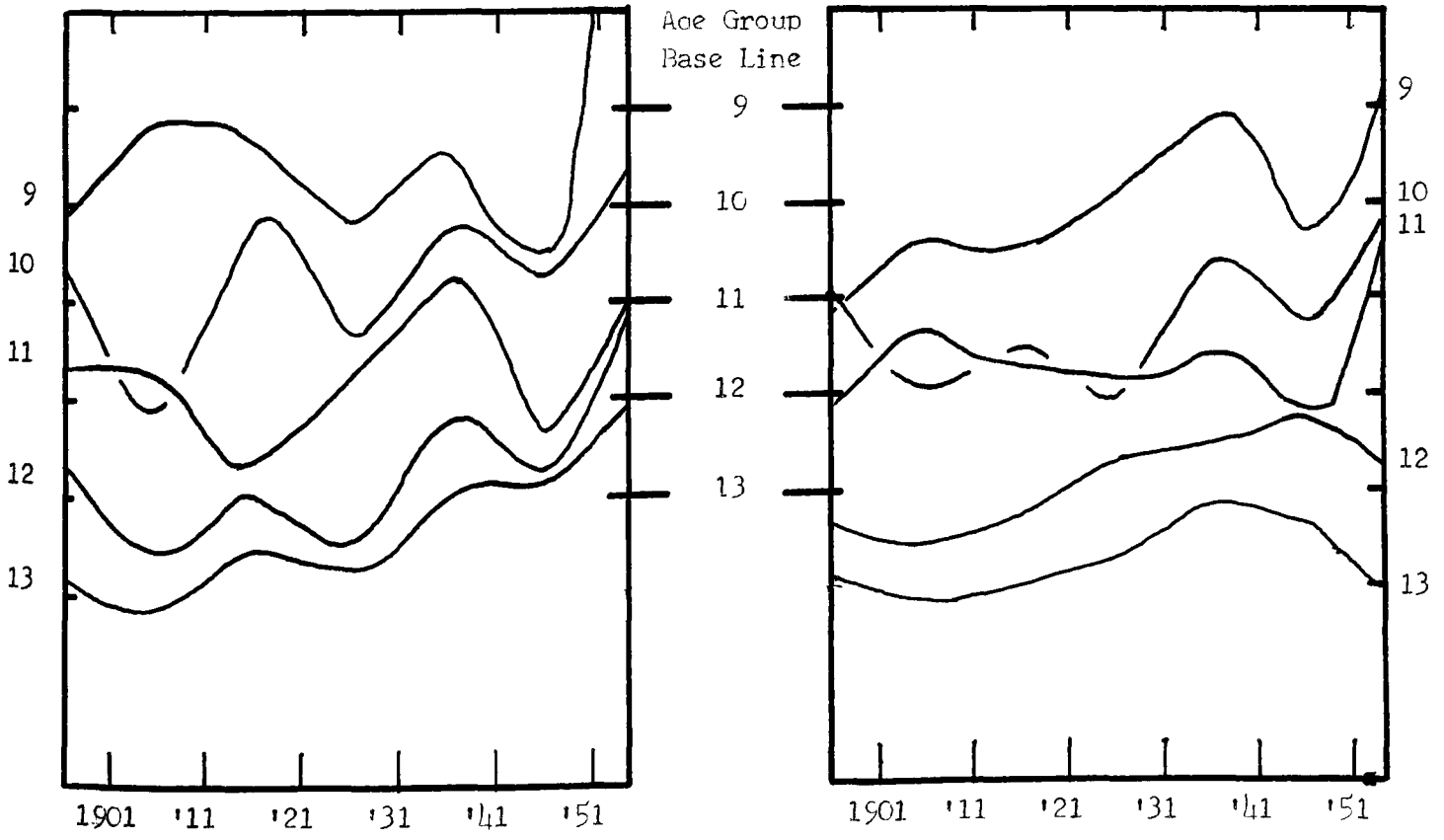


Diagrams 2.4 contd.





Bibliography on measuring net migration

Books

Hauser, P. M. & Duncan, O. D. (ed.) The Study of Population University of Chicago Press, Chicago 1959.
The chapter on Internal Migration (Chapter 21, pp 486 - 510) by Donald J. Bogue offers a very clear statement on the importance of internal migration, methods of measuring it and factors affecting it. Other chapters such as Ch. 19 "Mortality" by Harold F. Dorn are interesting but less relevant to this thesis.

Smith, T. L. Population Analysis McGraw Hill Publications in Sociology, McGraw Hill 1948.
The most valuable part of this book in connection with the present work is the chapter on "Mortality Measurement and Data" pp 233 - 250 which explains the construction of Life Tables in some detail.

Thompson, W. S. Population Problems McGraw Hill Series in Sociology and Anthropology McGraw Hill 1953.
A later book than Smith's and of considerable value and interest to the geographer. Chapter 11, Mortality, pp 228 - 261 & Chapter 14, Internal Migration Migration pp 294 - 315 are the most useful.

Articles on methods of measuring net migration

Hamilton, C. H. and Henderson, F. M. Use of the Survival Ratio Method in Measuring Net Migration. Journal of the American Statistical Assoc. XXXIX 1944, pp 197 - 206.

A critical study of the survival ratio method suggesting the computing of new life tables from census data. This could not be done in Canada where external migration is substantial and significant.

Siegel, J. S. and Hamilton, C. H. Some considerations in the use of the Residual Method of Estimating Net Migration Journal of the American Statistical Assoc. No. XLVII, 1952, pp 475 - 500. This presents one of the most detailed but complicated accounts of the survival ratio and vital statistics residual methods of measuring net migration. The authors set up a model which subdivides cohorts and migrants according to residence

and changes in residence, and number of non-migrants, in-migrants and out-migrants who die. This model makes possible definition of (exact net migration). The authors are able to prove algebraically that the survival ratios method actually measures net migration only among survivors. (pp 488 - 489).

Wendall, B. A Migration Schema Theories and Observation, Lund Studies in Geography, Series B. Human Geography No. 9, Dept. of Geography University of Lund, Sweden.
This work deserves mention as one of the few detailed studies based on an actual sample, in this case, 1,897 migrants who were born in the Parish of Arbas 1896 - 1905. Each stage of migration receives equal attention and indicates prevailing patterns of single and multi-migrantion movements.

Sources of Data

a) Life Tables

1. Canada Abridged Life Tables 1871, 1881, 1921 and 1931 Ottawa, 1931.
2. Life Tables for Canada and Regions 1941 and 1931 Ottawa 1947
3. Provincial and Regional Life Tables 1950 to 1952 and 1955 to 1957 Ottawa 1960 Cat. No. 84 - 510 occ.
4. Canadian Life Tables 1950 to 1952 and 1955 to 1957 Ottawa Cat. No. 84 - 510 occ.

b) Population Data

1. Data for 1891 to 1921 compiled and provided by the Dominion Bureau of Statistics, Ottawa.
2. Data for 1931 to 1956 from the Census of Canada.

Chapter Three

The Emerging Pattern of Net Migration and the Causal Factors

A. The Emerging Pattern

1. Introduction

An examination of the net migration data computed in the second chapter reveals a pattern of net migration which, from decade to decade, is largely constant in age and sex composition, but which has major variations in volume and net migration rates. The details of this pattern are of paramount importance to the understanding of the geography of the region. Not only is net migration the product of the geographic forces involved, including physical, economic and demographic, but the precise nature of this net migration provides the only means by which the effectiveness of each causal factor can be determined. Necessarily, therefore, a description of the net migration pattern must precede a discussion of the causal factors.

2. Volume of Out-Migration

The outstanding fact about net migration in Easternmost Ontario is the large outward flow of population throughout the period 1891 to 1956. The actual volume of net migrants aged 15 to 64 at the beginning of each intercensus year is given in Table 3.1. These figures should be compared with those of Table 3.2 which give total and rural population and the percentage rural population for these counties. It is clear that net migration has not only been absolutely but also

relatively large. The worst intercensus period for Russell and Prescott was 1921 to 1931. Russell lost 5,139 migrants in the to year age interval 15 to 64, and its 1931 population fell by 2,634 to 18,487. Prescott lost 5,199 leaving its 1931 population at 24,596 a drop of 1,882. The heaviest losses occured two decades earlier, 1901 to 1911, in Stormont and Glengarry and were some what smaller, particularly in Glengarry. Here a loss of 3,483 net migrants caused a population decline of 872 between 1901 and 1911 in Glengarry.

Table 3.1

Totals of Net Migration of Males and Females aged 15 to 65 at beginning of Intercensus Periods - Easternmost Ontario - 1891 to 1956

Period		1891 1901	1901 1911	1911 1921	1921 1931	1931 1941	1941 1951	1951 1956
County								
Russell	M.	-	-	-	-2477	-1562	-1632	-357
	F.	-	-	-	-2662	-1718	-1459	-385
	T.	-	-	-	-5139	-3280	-3091	-742
Prescott	M.	-1381	-2462	-2310	-2446	-1236	-2015	-800
	F.	-1024	-2300	-2424	-2753	-1490	-1881	-738
	T.	-2405	-4762	-4734	-5199	-2726	-3896	-1538
Stormont	M.	-1862	-2436	-1051	-1105	+970	-650	+1100
	F.	-1772	-2167	-1275	+694	+1119	-412	+462
	T.	-3634	-4603	-3326	+1799	+2089	-1062	+1562
Glengarry	M.	-1549	-1738	-1441	-1590	-840	-1794	-376
	F.	-1526	-1745	-1815	-1875	-1003	-1475	-335
	T.	-3075	-3483	-3256	-3465	-1843	-3269	-711

Table 3.2

County Populations, total and rural for Easternmost Ontario for 1891 to 1956

Russell County

	1891	1901	1911	1921	1931	1941	1951	1956
Total	18,289	20,282	21,121	21,121	18,487	16,448	17,666	18,994
Rural	-	-	-	16,648	15,374	14,387	14,160	14,996
o/o Rural	-	-	-	78.8	83.2	82.5	80.2	79.0
o/o Males R.	-	-	-	79.6	84.0	83.2	80.3	79.8
o/o Females R.	-	-	-	77.9	82.3	81.7	79.4	78.1

Prescott County

Total	24,173	27,035	26,968	26,478	24,596	25,261	25,576	26,291
Rural	21,129	20,185	19,644	18,137	16,918	16,445	16,902	14,391
o/o Rural	96.4	74.7	72.8	68.4	68.8	65.1	66.1	54.7
o/o Males R.	-	-	-	69.2	69.7	66.3	67.9	56.2
o/o Females R.	-	-	-	67.8	67.8	63.8	64.2	53.2

Stormont County

Total	27,156	27,042	24,775	25,134	32,524	40,905	48,458	46,452
Rural	-	20,338	17,766	17,332	21,012	26,391	20,764	13,428
o/o Rural	-	74.9	71.7	69.0	64.6	64.5	42.9	23.8
o/o Males R.	-	-	-	70.2	65.2	65.8	44.0	24.5
o/o Females R.	-	-	-	67.7	64.0	63.8	41.7	23.0

Glengarry County

Total	22,447	22,131	21,259	20,518	18,666	18,732	17,702	18,693
Rural	20,133	18,888	17,553	16,926	15,275	15,069	15,498	16,206
o/o Rural	89.7	85.3	82.6	82.5	81.8	80.4	87.5	86.7
o/o Males R.	-	-	-	83.6	82.9	81.4	88.4	87.6
o/o Females R.	-	-	-	81.4	80,7	79.4	86.6	85.8

N.B. o/o Rural - $\frac{\text{Rural Population X 100}}{\text{Total Population}}$

o/o Males Rural - $\frac{\text{Male Rural Population X 100}}{\text{Total Male Population}}$

o/o Female Rural - $\frac{\text{Female Rural Population X 100}}{\text{Total Female Population}}$

Notes on Table 3.2

The 1951 figures are not comparable with the 1941 figures in the counties of Prescott, Stormont and Glengarry. This is due to changes in the definition of urban population introduced in the 1951 census. Up to 1941, urban population was defined as the population living in incorporated towns and cities. Since 1951, urban population has been defined as population living in villages, towns and cities of 1,000 population or over, whether incorporated or not.

In Prescott, the population of l'Orignal, county seat for Russell and Prescott counties, fell from 1118 in 1941 to 967 in 1951. Thus by both definitions it would have been considered urban in 1941, but in 1951, rural by the 1951 definition. Table 3.2 indicates the rural population for Prescott in 1951 as 16,902. By the 1941 definition, it would have been only 15,935, that is a decline and not an increase since 1941. In Stormont, the rural population for 1941, 26,391, includes over 8000 urban population living just beyond the limits of Cornwall City. Thus by the 1951 definition, the 1941 rural population was only 18,068.

In Glengarry, the incorporated villages of Lancaster and Maxville had a population of 548 and 778 respectively in 1951. This was included as part of the rural population for that year. By the 1941 urban definition, however, Glengarry 1951 rural population would have been 14,172, not 15,498 as shown in Table 3.2

Table 3.3

Table to Show Intercensus Population Changes
and Density per square mile, by County in Easternmost Ontario.

	Russell County		Prescott County	
	% Change	Density	% Change	Density
1851	-	7.1	-	21.2
1861	137.8	16.8	47.8	31.4
1871	27.4	21.4	13.9	35.7
1881	50.4	32.1	29.5	46.3
1891	39.8	44.9	5.8	48.9
1901	10.9	49.8	11.8	54.7
1911	6.7	53.2	-0.3	54.6
1921	-2.4	51.9	-1.8	53.6
1931	-12.5	45.4	-7.1	49.8
1941	-5.6	42.9	2.7	51.1
1951	1.2	43.4	1.2	51.8
1956	7.5	46.7	2.8	53.2

	Stormont County		Glengarry County	
	% Change	Density	% Change	Density
1851	-	35.5	-	36.8
1861	23.8	44.0	20.4	44.3
1871	4.7	46.1	-3.1	42.9
1881	22.2	55.3	8.3	46.5
1891	17.1	65.9	1.0	47.0
1901	-0.4	65.6	-1.4	46.3
1911	-8.4	60.1	-3.9	44.5
1921	1.5	61.0	-3.5	42.9
1931	29.4	78.9	-9.0	39.1
1941	25.2	99.3	-0.4	39.2
1951	18.5	117.6	-5.5	37.0
1956	16.5	137.0	5.6	39.1

% Change - % Change in population from previous census
Density - Density of population per square mile.

These tables also suggest that the large population loss is a reflection of the predominantly rural character of Easternmost Ontario and that the exception to the general decline in the case of Stormont is due to the overriding position of Cornwall city which is in that county. Census data indicates a very considerable growth for Cornwall, namely 171 per cent between 1901 and 1956. In the whole of Eastern Ontario only four cities grew faster, Ottawa (271%), Eastview (509%), Pembroke (199%), and Renfrew (174%). Only one other city, Kingston (145%) approached this rate of growth. The actual population figures for Cornwall city were:-

1891	1901	1911	1921	1931	1941	1951	1956
6,805	6,704	6,598	7,418	11,126	14,117	16,899	18,158

Thus Cornwall city more than off-set rural depopulation in Stormont County after 1921 with the exception of the decade 1941 to 1951 which was a period of particularly heavy rural outmigration. The only other large settlement in Easternmost Ontario is Hawkesbury, but this had a population of only 7,929 in 1956, and a growth of 91 per cent from 1901 to 1956. Both figures have been too small to noticeably reduce net outmigration from Prescott County.

The first result of this large net population outflow has been an overall reduction of population. The total population of Russell, Prescott and Glengarry was in each case lower in 1956 than it had been in 1901. Detailed figures are given in Table 3.3. The percentage population change 1901 to 1956 was Russell - 6.4%, Prescott - 2.8% and Glengarry - 15.5%. Of the eleven counties in Eastern Ontario only two

others showed decline: Dundas - 14.1%, and Grenville - 2.2%. This rural decline of population in the four easternmost counties has mainly occurred during the present century though it began earlier for the two southern counties, Stormont and Glengarry. In both these counties, the 1901 population was smaller than the 1891 population. On the other hand Prescott's highest population was in 1901 and Russell's in 1911. Since the population of Russell, Prescott and Glengarry has actually declined in the present century net migration has been greater than population increase and cannot be entirely explained by a levelling off of employment opportunity in the area.

3. Age and Sex Composition of Migrants

Not only has net outmigration been considerable but, equally significant, it has also been selective. Net migration varies with sex and particularly with age. For most periods, female outmigration has been greater than male. The totals for migration from Easternmost Ontario are:-

	Russell 1921-1956	Prescott 1891-1956	Glengarry 1891-1956
Male	6,028	12,650	9,328
Female	6,224	12,610	9,774
Total	12,252	25,260	19,102

These figures indicate a reversal of normal trends in Prescott County, though the difference is within the margin of error.

The effect of the sex differential in internal migration is to disturb the male to female balance in the population giving an excess of females in urban areas and of males in rural areas.

The excess of females in urban areas is partly off-set by immigration which is normally male dominated and urban orientated.

Table 3.4.

No. of Males to each 100 Females
1891 to 1956, in Easternmost Ontario.

Area	1891	1901	1911	1921	1931	1941	1951	1956
Russell	109	108	104	106	107	108	105	105
Prescott	105	105	103	103	105	107	106	106
Glengarry	97	99	100	104	110	111	107	107
Stormont	101	100	98	101	104	102	100	102
Cornwall City	107	103	91	96	103	99	93	98
Ontario	102	101	106	102	104	103	101	101
Canada	104	105	113	106	107	105	102	102

In 1956, the Canadian sex ratios were as follows:

Area	Males per 100 Females
Canada	102.2
Rural	119.0
Rural Farm	121.9
Rural non Farm	116.2
Urban	95.5
100,000 plus	94.7
30,000 to 99,999	96.2
10,000 to 29,999	94.8
less than 10,000	98.0

These statistics indicate that the sex differential in migration from Easternmost Ontario is smaller than usual and that the ratio has been disturbed. less than is typical for Canadian rural areas.

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2 For details Census reports including 1956 Census: Rural and Urban Population Bull. 3.2 pp 23 and 24 and 1951 Census, Vol. I, pp 48 to 50. Note that 1941 to 1951 was exceptional in that female immigrants exceeded male. This was due to the substantial number of war brides.

Nevertheless, the proportion of males in the three rural counties is higher and in Stormont lower than in Ontario for the period 1921 to 1956. The sex ratio is mainly of sociological importance though it does affect crude birth and death rates and marriage opportunity.

The age differential has been more consistent and of a much greater magnitude than the sex differential in migration from Easternmost Ontario throughout the period 1891 to 1956. The extent of the age differential is indicated in tables 2.6 and 2.7 and illustrated by diagrams 2.3. Net outmigration increases rapidly with age until a peak is reached for those aged 20 to 34 at the beginning of their migration period. Over the period 1891 to 1956 this peak has tended to occur earlier and in post war years migration has been highest for those aged 20 to 24. In contrast to this marked outflow of population in their twenties and early thirties there has been in many cases a small inflow of population of retirement age.

Age and sex pyramids have been constructed of the net migrants and the county populations for the entire period. (See diagrams 2.1 and 2.2). Diagram 2.2 illustrates the volume of net migration, the slight preponderance of female migrants and the concentratio of rural out-migration among people of younger working age. This volume and com-position of net outmigrants has been sufficient to unbalance the age and sex pyramids of the population remaining in Easternmost Ontario[3].

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3 These pyramids also reflect the maturing of the population, general decline and variations in the birth rate and increasing life expectancy. See Census 1956, Bulletin 3-3.

Thus, as can be seen in diagram 2.1 the proportion of population of working age has decreased in Russell, Prescott and Glengarry and in later census years the pyramids have become steep sided. The effect of migration on age group composition can also be gauged from Table 3.6. Of the five counties represented Carleton's age composition appromimates most closely to the total of the Provincial and Canadian totals. The proportion of children aged 0 to 14 is higher in Russell, Prescott, Stormont and Glengarry than for the Province or Canada. The lower proportion for Glengarry than for the total Canadian rural population is explained by the low crude birth rate in Glengarry. Similarly, the comparatively high proportion for Stormont is explained by its relatively high birth rate. The proportion of the population in the working age group is low in Russell, Prescott and Glengarry as compared with Provincial, Canadian and Canadian rural proportions. The proportion of population aged 65 plus in these same counties is higher than in Stormont, Carleton and Canada. The migration of population of working age in the three counties has lowered the median age to well below that for Canada as a whole (29.8 in 1956).

4. Variations in Migration Rates

While the age and sex composition of the net migration flow from Easternmost Ontario has remained fairly constant, the migration rates have fluctuated widely during the period 1891 to 1956. Moreover, while these fluctuations largely coincide for all the age groups of working age, the correspondance is not complete. Significant changes in the relative magnitude of the migration rates for different age groups have occurred.

Migration rates are given in Table 2.7, and these ratio have been graphed in diagram series 2.4. Difficulty in graphing these rates arises through the number of rates involved, and the similarity of the rates. Where possible a common base line has been used for age groups represented. Alternatively the graph lines for each age group have been progressively staggered up or down to avoid excessive intercrossing and confusion. These graphs suggest a similar pattern of migration rate fluctuations for Russell, Prescott and Glengarry but a fundamentally different one for Stormont.

In Prescott and Glengarry, net migration rates were high and increasing until the First World War. The highest single rate for Prescott and Glengarry between 1891 and 1911, was for age group 6 (25 to 29 years) in the period 1901 - 1911. Just over 40 per cent of the males in this age group left both counties during this decade. Net migration rates were lower during the next decade, 1911 to 1921, but rose sharply 1921 to 1931 to reach new records. The rate for Prescott males 25 to 29 was 42.4% and for the corresponding female group 42.9%. 1921 to 1931 was also a period of very heavy net outmigration in Russell where 49.6% of the males and 50.4% of the females aged 25 to 29 left and in Glengarry where the rates were 40.6% for males, 42.4% for females. During the depression net outflow was stemmed but there was no net inward movement of working age people during the decade 1931 to 1941. Since the Second World War, migration rates for people aged 15 to 24 in Russell, Prescott and Glengarry have been the only rates to show any marked increase and in fact the net migration rates have increased precipitously for these two age groups making them by far the highest.

Table 3.6

(a) Percentage Distribution of Population by Age Group 1956

	Russell	Prescott	Glengarry	Stormont	Carleton	Ontario
Age Group 0 - 14	39.9%	37.2%	36.6%	34.0%	30.0%	30.0%
15 - 64	52.0%	54.6%	52.2%	59.1%	62.3%	61.6%
65 +	8.1%	8.2%	11.2%	6.9%	7.7%	8.4%
Median Age	21.1 yrs.	22.9 yrs.	26.0 yrs.	25.5 yrs.	29.2 yrs.	-

(b) Percentage distribution of the Population by Age Group in Canada 1956 by Rural Urban and Metropolitan

	0 - 14	15 - 64	65 +	Total
Total	32.4	59.8	7.7	99.9
Rural	37.0	55.3	7.6	98.8
-Farm	37.7	55.3	6.9	99.9
-Non Farm	36.2	55.5	8.3	100.0
Urban	30.3	61.9	7.8	100.0
Metropolitan	28.1	63.9	8.0	100.0

(c) Crude Birth Rates: Births per thousand population 1956

Russell	Prescott	Glengarry	Stormont	Carleton
28.4	27.6	25.1	29.5	26.8

Thus the situation has been almost reversed since 1891. In 1891 the range of rates for the groups of working age was comparatively small and the highest rates were for groups 6 and 7 (ages 25 to 34 yrs.), though all showed a net loss through migration. In 1956 the range in rates had widened, the biggest losses through migration were for age groups 4 and 5 but some age groups showed either no loss at all through migration (as in Prescott) or a net gain (in Russell and Glengarry).

In Stormont, the influence on net migration of Cornwall City was only effective, as has been seen, after 1911. Up to 1911 the migration pattern in Stormont paralleled that of the other three counties with increasing outmigration rates until 1911 and with highest rates for groups 6 and 7. Then migration rates fell and continued to fall until the depression. Losses through net migration were reduced 1911 to 1921 and 1921 to 1931 saw an increase in population through net inmigration 1931 to 1941, the rate of male inmigration was, on balance slightly reduced though the rate for females continued to rise. The interwar migration rate fluctuations were opposite therefore, in Stormont to those of Russell, Prescott and Glengarry. The 1941 to 1951 period brought losses through net migration to all four counties though the rates of loss were much smaller for Stormont and its actual loss only a third of that in each of the other counties. In the 1951 to 1956 period there was a renewed inflow with the ratio for males aged 25 to 49 (groups 6 to 10) and females aged 25 to 39 (groups 6 to 8) exceeding the precious highs attained between 1931 and 1941.

5. Summary of the Migration Pattern

Thus the pattern emerging from the study of net migration in Easternmost Ontario can be summarised as one of heavy outflow from Russell, Prescott and Glengarry during the period 1891 to 1956 and from Stormont during the period 1891 to 1921. This net outmigration began before the counties achieved their maximum population, and with the exception of Stormont, reached a peak soon afterwards.

The age and sex composition of the net migration movement has been fairly constant throughout the period with migration rates for people of younger working age being the highest. In fact migration rates of those aged 15 to 24 have continued to rise sharply in the post-war period while net outmigration as a whole has been reduced.

Net migration has increased the proportion of males to females even though the sex differential has been less than typical for rural outmigration. Net migration has also reduced the proportion of working-age to non-working-age people.

The pattern for Stormont is different. While net migration for Stormont paralleled that of the other three counties from 1891 to 1911 and from 1941 to 1951, during the interwar and postwar years it has been the reverse, thus reflecting the primary influence of Cornwall City.

This net migration has been set in motion by forces which may be classified as push and pull, and as physical, economic and demographic. With the nature composition and volume of net migration established, we can now proceed to analyse each of these forces that has been at work.

B The Causal Factors

Push Factors

The pattern of net migration in Easternmost Ontario has been set in motion by, and represents a partial adjustment to push and pull forces. Push factors are the internal causes, operative within a region itself which induce people to migrate from that region. Under normal circumstances the major push factors are physical, economic, technical and demographic. Physical push factors are important in regions such as Easternmost Ontario where the economy is based on primary industry. They directly operate as push forces where the first appraisal of physical resources proves to be unduly optimistic or where the physical resources become partially exhausted. Physical resources act indirectly as push forces where their value is reduced by economic changes or technical development. Regional economic conditions serve as push factors where they offer insufficient employment for the regional population. This may be caused directly by a change in the economy, a downswing in the business cycle or by mechanization and other technical d evelopments. It may be caused indirectly where the expansion of the economy and employment opportunity is slower than population growth. In that rapid population growth can itself create insufficient employment opportunity, demographic and economic push factors are linked. In that economic set-backs or technical advances can reduce absolute employment the two are distinct.

It is difficult to isolate the influence of any one push factor because they are interlinked. It is difficult to determine the influence of any one push factor because this constantly varies.

Figs. 1 and 2

Flooding in August south of Clarence Creek on the Russell and Prescott Clay Plain. Poor drainage is a major agricultural problem throughout Easternmost Ontario.

Physical factors assume different values. The business cycle is never steady. Population growth is variable. Moreover, the force of each push factor is reduced when outmigration takes place and a better adjustment between population and resource is achieved. It would, therefore, be very difficult to analyse the influence of each push factor even if all the data were available. Since our present knowledge of the push factors is fragmentary, and since the statistics on net migration are available just on a county basis, only a partial analysis, and a few tentative conclusions on the influence of push factors can be made.

6 The Physical Push Factor.

A proper analysis of the physical push factor would require a break down of migration data according to natural regions or crop adaptability ratings. The importance of this factor can be indicated, however, by some examples and an attempt has been made to determine the variations in the influence of the physical push factor in the four counties.

The physical push factor is reflected in area farm land abandonment as well as in some isolated cases. The amount of farm abandonment in Easternmost Ontario has been steadily increasing. Between 1911 and 1921 the acreage of occupied farms decreased by more than 500 acres in 4 townships. For succeeding intercensus periods the number of townships was 7 (1921-1931), 8 (1931 to 1941), 15 (1941 to 1951) and 15 (1951 to 1956).

The soils on which most farm abandonment has taken place are:-

(i) Very poorly drained soils including muck, peat, bottom soils and some areas of till and clay.

(ii)Till soil with too many boulders to permit cultivation.

(iii) Coarser soils developed on sands or kames.

(iv) Shallow soils.[1]

The most extensive area of poor soils is the Russell and Prescott coarse sand plain extending eastwards from near Ottawa to Hawkesbury. Originally this plain supported one of the finest white pine stands in Ontario. It was extensively logged in the early 19th century and the vegetation completely destroyed by fire in 1879. Attempts to farm the land failed and in 1928, 1,200 acres of land were bought by the Province to establish the "Larose Forest". This "Agreement Forest"[2] has, since then been increased by the Department of Lands and Forests to nearly 24,000 acres and it is one of the largest reforestation projects in Ontario. County and township forests have also been established on abandoned farm land.[3] This poorer land is of greater value for lumbering than for agriculture. Reforestation also retards and evens-out the spring run-off of melt-water thus reducing the amount of spring flooding which is a serious problem throughout Easternmost Ontario.[4]

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1. Descriptions of these soils are given in the County Soil Reports for Carleton Report No. 7, Stormont Report No. 20 and Glengarry Report No. 24 of the Canada and Ontario Departments of Agriculture.
2. An "Agreement Forest" is one in which the Province buys the land, plants the trees and cares for the forest for usually fifty years.
3. Details on reforestation and land abandonment are given in the South Nation Valley Interim Report in the Chapters on Forest. Also see "Forest Resources Inventory 1957" Report No. 17 Kemptville District.
4. See S. Weitzman and R.R. Bay "Snow Behaviour in the Forests of Northern Minnesota and its Management Implications". Lake Statts Forest Experiment Station Paper 69, Jan. 1959. Forest Service U.S. Department of Agriculture.

Fig. 3

Reforestation on the Russell and Prescott Sand Plain.

Fig. 4

Abandoned farmland on the Till Plains near Lexington, Stormont. A quarry can be seen in the background.

The relationship of farm abandonment to physical factors in Easternmost Ontario is demonstrated by the work of Woods.[5] Two contrasted agricultural regions which he distinguished were marginal dairy farming on areas of badly drained till, of coarse sand and of kames, and dairy and cash grain farming on the central part of the Dundas clay plain.

Agricultural Region	No.of occupied Farms	No.of Consolidated Farms	No.of Abandoned Farms
Marginal Dairying	425	36	124
Dairying Cash Grain	250	9	6

In the marginal dairying region nearly a third of the farms had been completely abandoned and a substantial number consolidated with occupied farms. The dairying and cash grain region, on the other hand, had the lowest relative incidence of farm abandonment and consolidation. Of the abandoned farms Woods writes, "Actually of the six abandoned farms, five are found on stoney till ridges, or poorly drained pockets of sand that are not typical of the region. The sixth is on the border of the only large swamp."[6] This suggests that while a number of factors can lead to farm consolidation, abandonment of farm land is normally caused by physical factors.

A survey of Church of England parishoners, farms in the Diocese of Ottawa is probably indicative of the relative importance if the physical factor in the reduction in the number of farms.[7] Out of approximately 700 farms in 1930, 23 farms had been abandoned, 24 consolidated and 12 otherwise sold by 1955.

5. H. A. Woods. "The St. Lawrence Seaway and Agricultural Geography in the Cornwall-Cardinal Area, Ontario". Geographical Bulletin No. 8, 1956, pp 74 to 98.
6. H. A. Woods, Ibid. p. 88.
7. "What Happened to Ottawa Valley Farmers From 1930 to 1955" The Canadian Federation of Agriculture. News and Information Bulletin April 1960.

An attempt has been made to distinguish any major county variations in the physical push factor using 1951 Agricultural Census Data. This data indicates a major difference between the two northern and the two southern counties in the percentage of :-

(i) Farm area which is owner operated.

(ii) Farm owners to farm operators.

(iii) Total land which is improved and

(iv) Unimproved land not forested.

The percentage of farm land owner operated is higher in the northern two counties (87 to 96 per cent) than in the southern (75 to 81 per cent). The percentages of farm owners to all farm operators is lower than the proportion of land owner-operated but higher in the two northern than in the two southern counties. The percentages of farm land unimproved, and of unimproved land not forested similarly show marked contrasts between the northern and southern counties.

The townships have been ranked according to these criteria as follows:-

(1) Farm area owner operated

Rank	Percentage
1	95-100
2	90-95
3	85-90

(ii) Farm owners to all farm operators

Rank	Percentage
1	90-100
2	85-90
3	80-85

(iii)Land Unimproved

Rank	Percentage
1	10-15
2	15-25
3	25-35
4	35-45
5	45-50

(iv) Unimproved Land not Forested

Rank	Percentage
1	30-45
2	45-55
3	55-65
4	65-75

The ranks for the Counties and Townships

County or Township	(i)	(ii)	(iii)	(iv)
Russell County	2	1	1	1
Cambridge	1	1	1	2
Clarence	2	2	1	1
Cumberland	2	1	3	2
Russell	2	2	1	2
Prescott County	1	1	1	2
Alfred	1	1	2	2
Caledonia	1	1	1	4
Hawkesbury E.	2	2	1	1
Hawkesbury W.	2	2	3	2
Longueuil	1	2	3	2
Plantagenet N.	1	1	3	1
Plantagenet S.	2	2	1	2
Stormont County	3	4	4	4
Cornwall	4	4	5	4
Finch	3	3	2	4
Osnabruck	3	4	4	4
Roxborough	3	3	4	3
Glengarry County	3	4	4	3
Charlotten-burg	3	4	4	3
Kenyon	3	4	5	3
Lancaster	3	3	3	3
Lochiel	3	3	3	3

(i) Farm area owner operated

(ii) Farm owners to all farm operators

(iii) Land unimproved

(iv) Unimproved land not forested

These ranks are consistently higher for the northern counties. There are also large differences between average farm size, and proportion of improved land per farm between the northern and southern counties. Northern county farms tend to be smaller in total size but have a larger improved acreage than southern county farms. As expected, the smaller the acreage of improved land per farm, the greater the proportion of improved land used for crops. In that these criteria are a product of physical factors they indicate that physical push factors are stronger in the two southern counties.

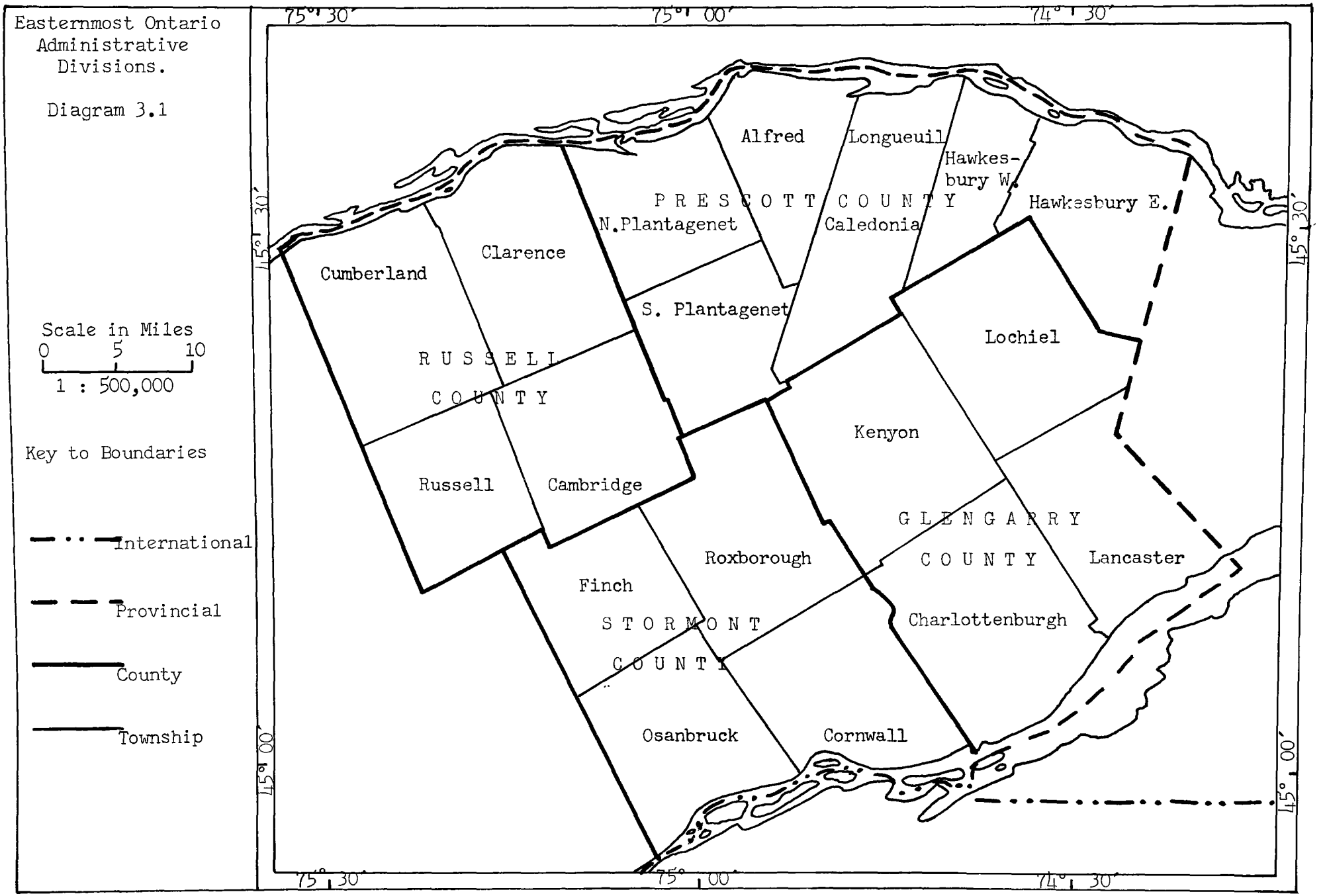
7 Demographic Push Factor

Natural population increase became a push factor in Easternmost Ontario after 1891 when most of the land had been settled. Since 1891 it has tended to increase in force for while average family size in Ontario has been declining, the rate of natural increase has become greater.

Ontario	1901	1911	1921	1931	1941	1951	1955
Average Family Size	4.8	4.6	4.3	3.4	3.6	3.4	3.5
Annual percentage natural increase	.77	.96	1.35	.98	.87	1.54	1.81

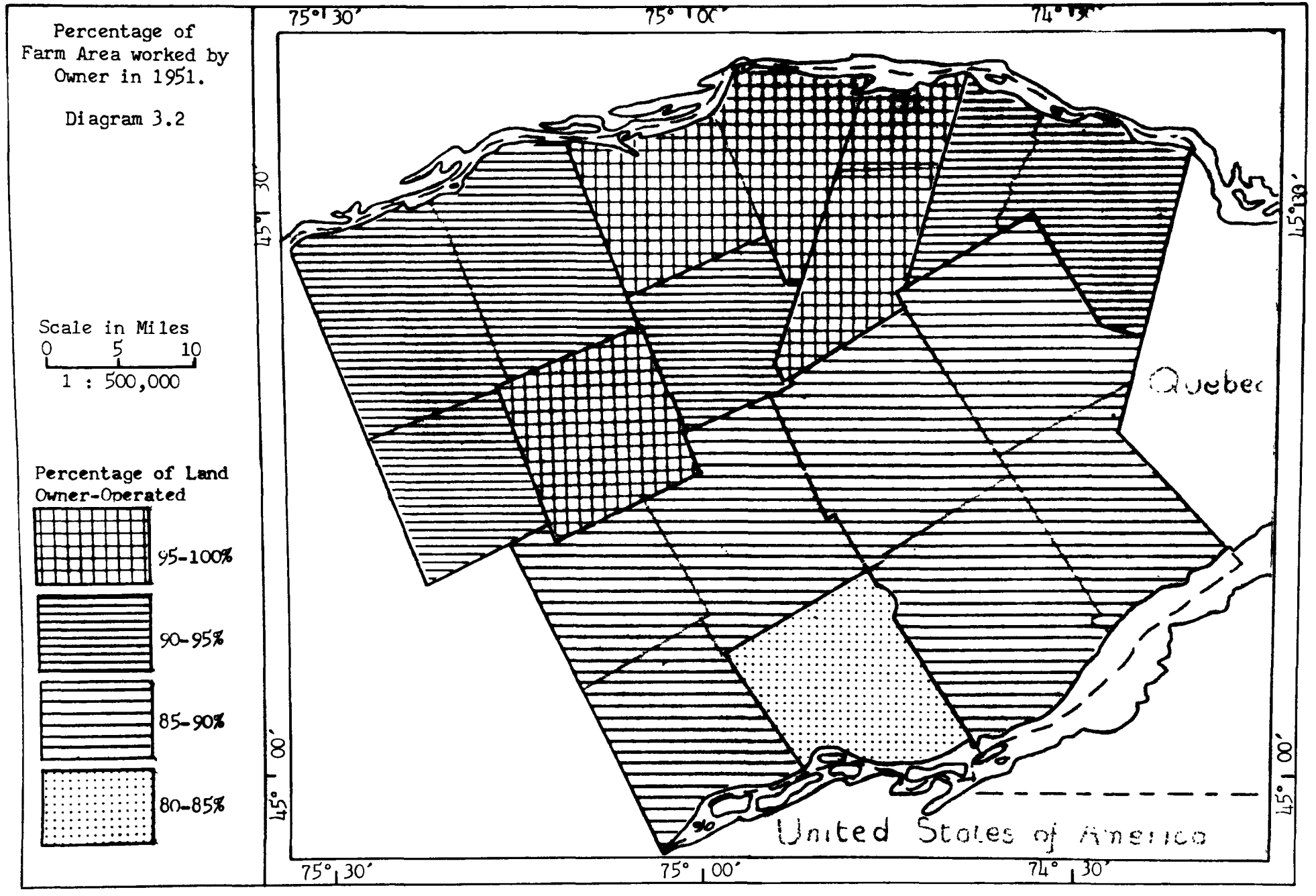
Easternmost Ontario Administrative Divisions.

Diagram 3.1



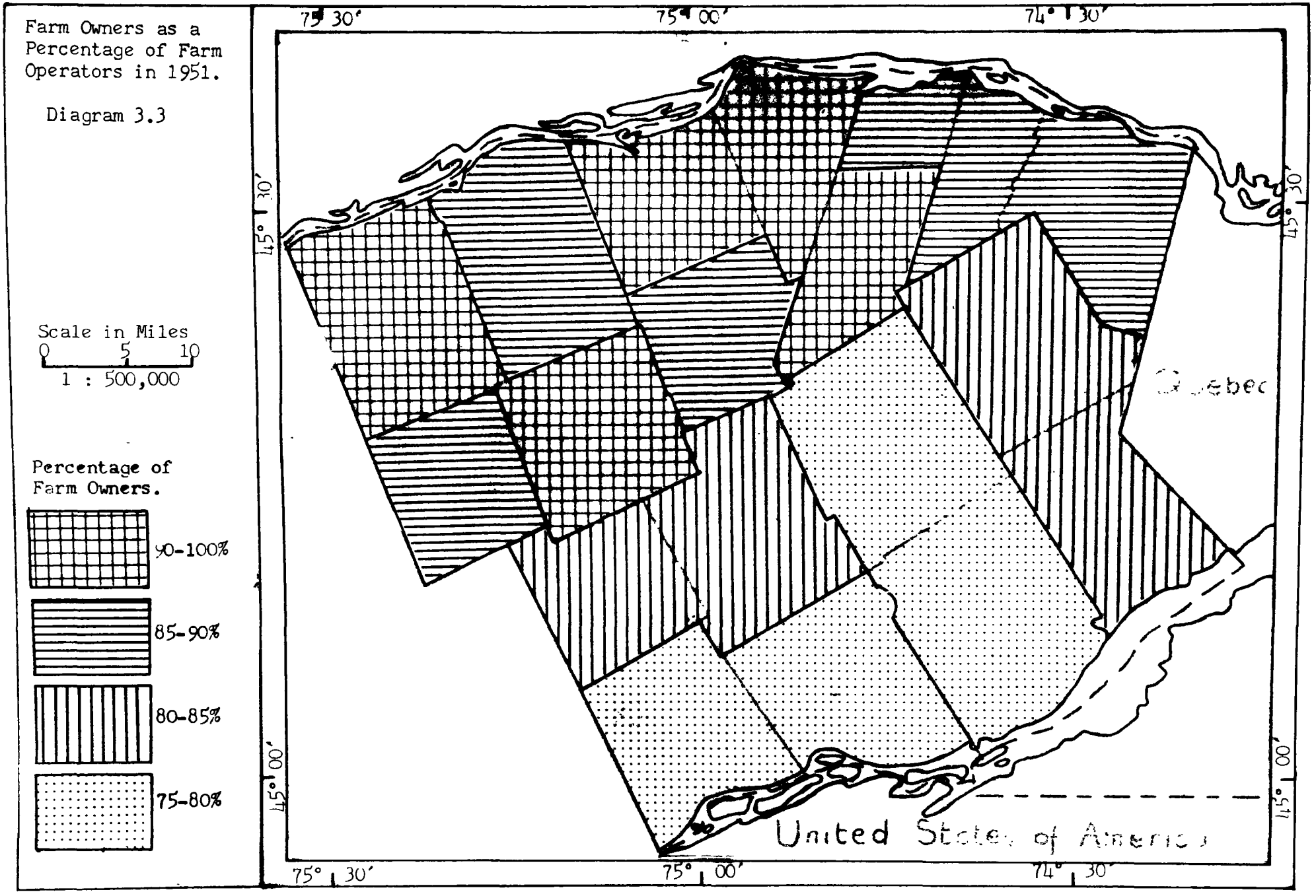
Percentage of Farm Area worked by Owner in 1951.

Diagram 3.2



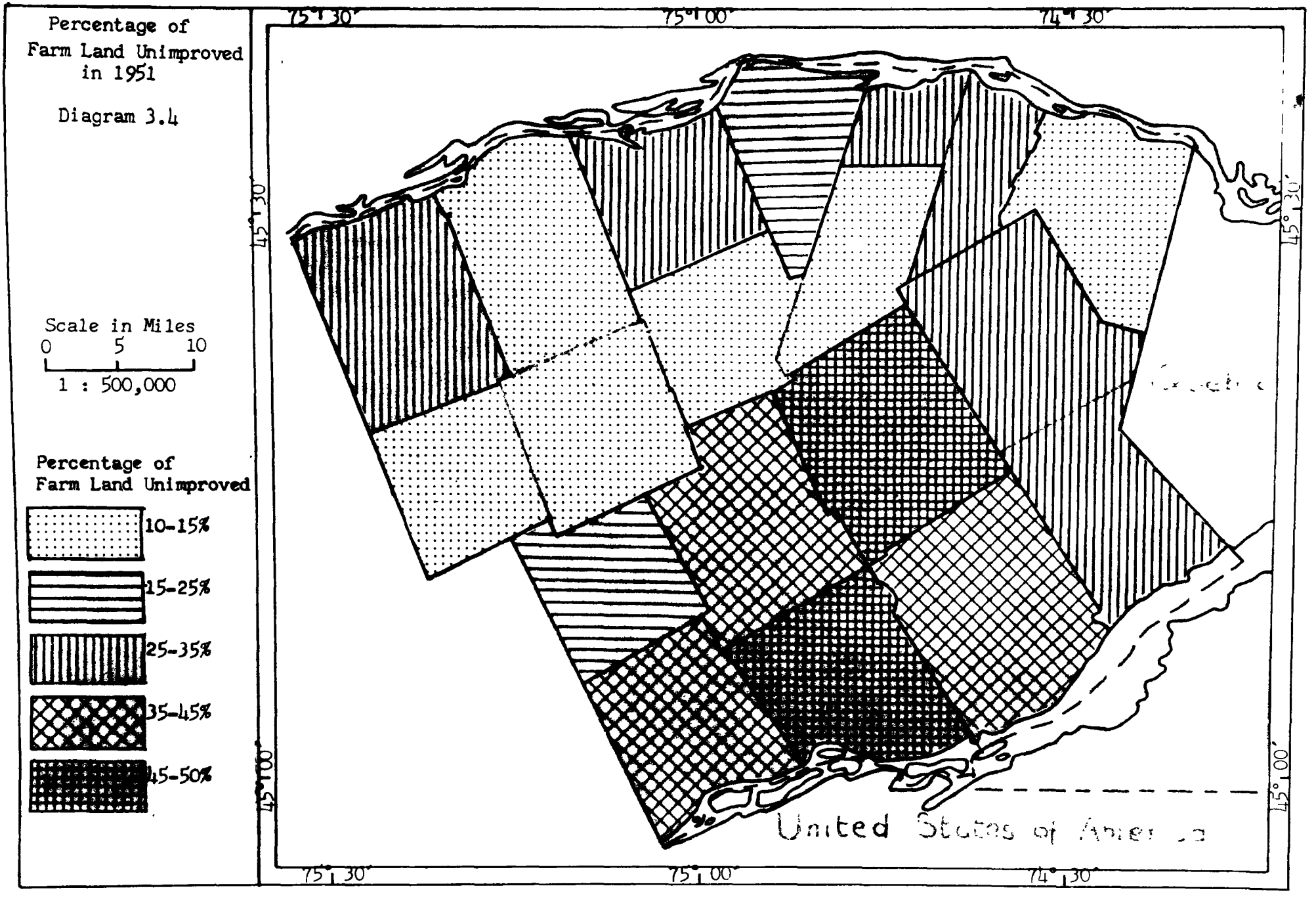
Farm Owners as a Percentage of Farm Operators in 1951.

Diagram 3.3



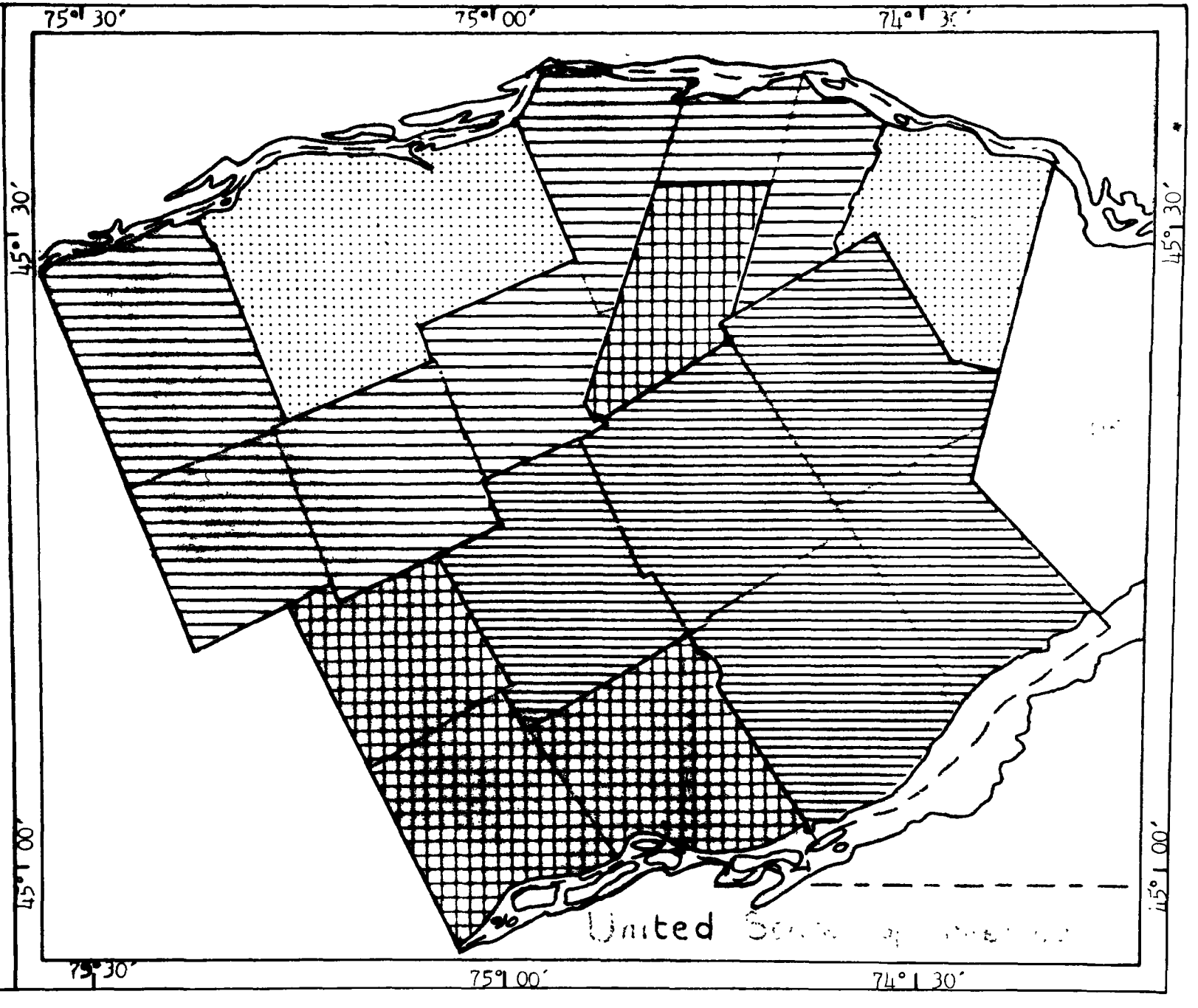
Percentage of
Farm Land Unimproved
in 1951

Diagram 3.4



Percentage of Unimproved Land not Forested in 1951.

Diagram 3.5



Scale in Miles
0 5 10
1 : 500,000

Percentage of Unimproved Land not Forested.

65-75%

55-65%

45-55%

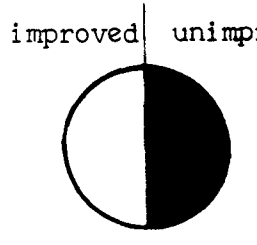
30-45%

Pie Graphs to show Average Farm Size and Proportion of Improved Land in 1951

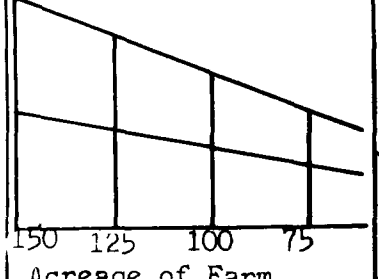
Diagram 3.6

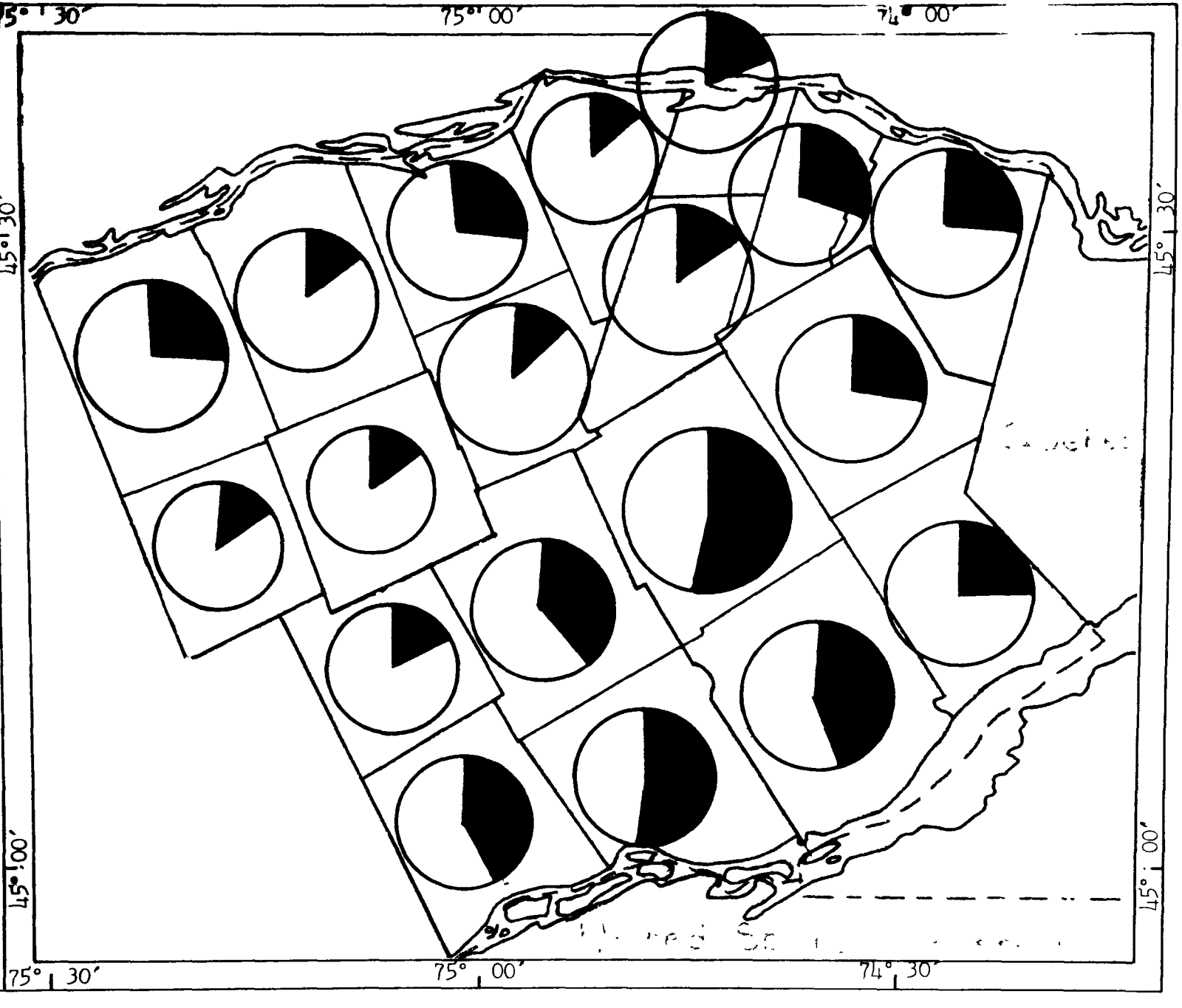
Scale in Miles
0 10

1: 500,000



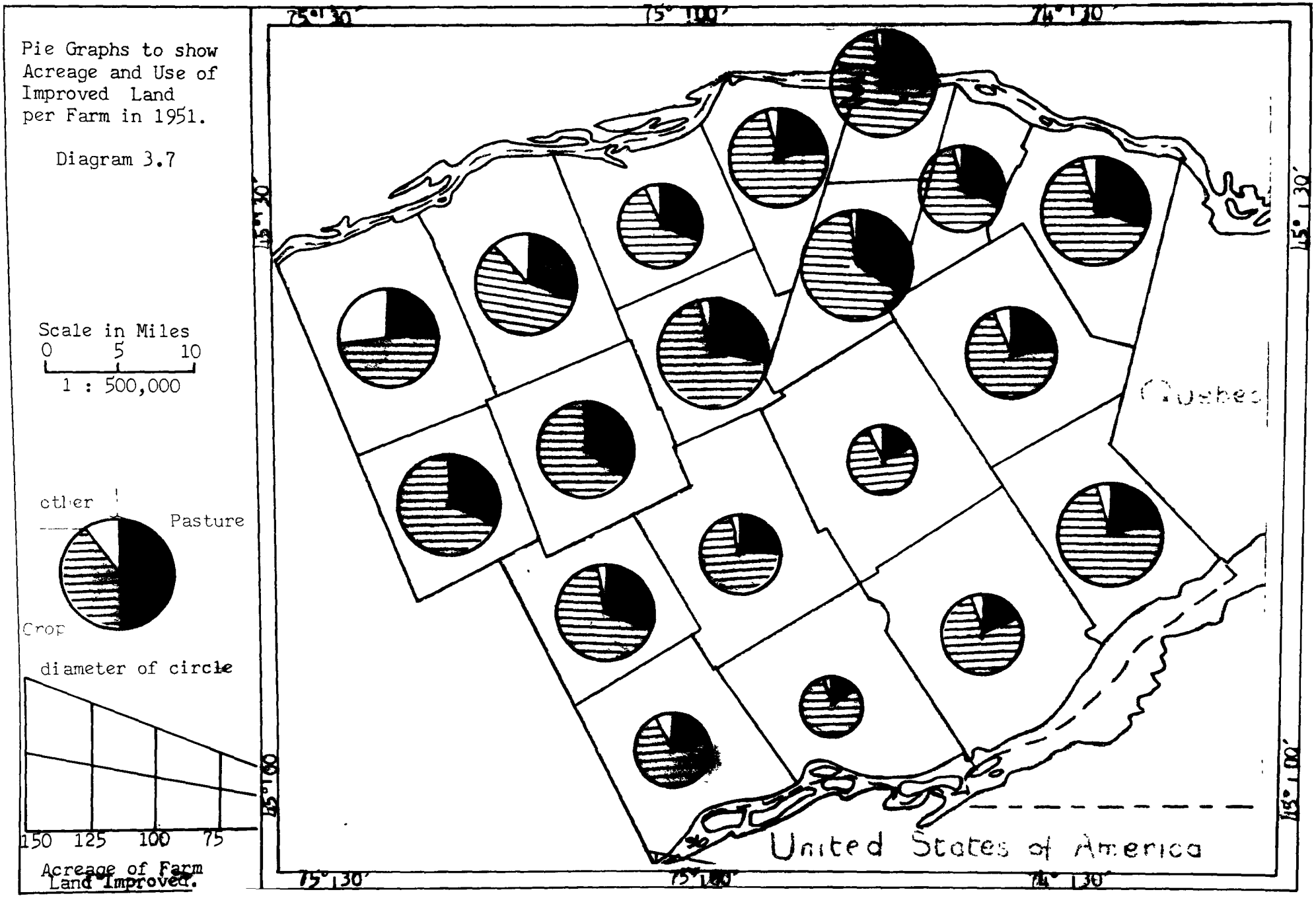
diameter of circle





Pie Graphs to show Acreage and Use of Improved Land per Farm in 1951.

Diagram 3.7



The push force exerted by natural population increase is approximately suggested in the following Table.

Table of Natural Increase by County 1931 to 1956

	1931-1941		1941-1951		1951-1956
	Male	Female	Male	Female	Male & Female
Russell births	2319	2152	2518	2346	2585
deaths	1095	938	963	817	882
Natural increase	+1224	+1214	+1555	+1529	+1703
Prescott births	3443	3180	3864	3682	3813
deaths	1773	1538	1751	1346	1432
Natural increase	+1670	+1642	+2113	+2336	+2381
Stormont births	5001	4708	6200	5927	7399
deaths	2683	2327	2759	2218	2481
Natural increase	+2318	+2381	+3441	+3709	+4918
Glengarry births	1597	1519	2013	1836	1290
deaths	1111	966	1077	947	1027
Natural increase	+486	+553	+936	+891	+1163

Natural increase must have been responsible for much of the outmigration though this was less than the natural increase from 1931 to 1956. The push of natural increase is not as strong for boys as for girls whose employment opportunities in rural areas are limited. This is indicated in the Table below based on interviews of senior high school students in Easternmost Ontario in 1960. Twice as many girls as boys plan to work in towns when they leave school. The proportion of these girls who want to commute daily to their work is slightly higher than for boys.

Future Plans of Easternmost Ontario Children 1960

Plans	Male No.	Male %	Female No.	Female %
To work on farm	46	42	3	3
To live at home and work in city	17	15	32	35
To live and work in city	31	28	46	51
Not sure	15	14	10	11
Total	109	99%	91	100%

3 Economic Push Factor

The economic and technical push factors in Easternmost Ontario depend on market outlet for milk, mechanization, farm size and farm income. Dawson has correlated farm management and farm income in Easternmost Ontario with three classes of milk outlet, fluid, condenseries and cheese and butter. [8] Farm income in 1948 averaged $1,777 for fluid milk farms, $1,066 for condensery farms and $997 for cheese and cream farms. This reflects differences in prices paid. The 1960 provincial average prices were $4.84 per hundred-weight for fluid milk, condensery and ice-cream milk $2.63 and cheese $2.48.

The prices paid by cheese factories are hardly remunerative and constitute a push factor. Most of the milk produced in Easternmost Ontario is used for cheese and the four counties of Easternmost Ontario together with Dundas, Leeds and Hastings are by far the largest Ontario producers of cheddar cheese.[9]

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8. J. A. Dawson "The Dairy Farm Business in Eastern Ontario". Federal Department of Agriculture, Ottawa 1951.
9. See "Agricultural Statistics for Ontario" Ontario Dept. of Agriculture.

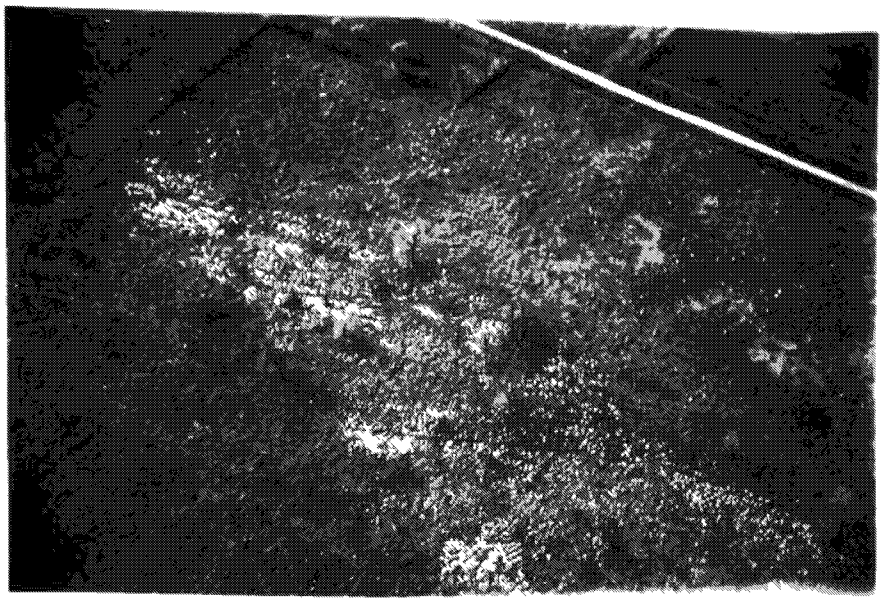

Fig. 5

Thin soil on a limestone plain, Prescott. The land has been abandoned.

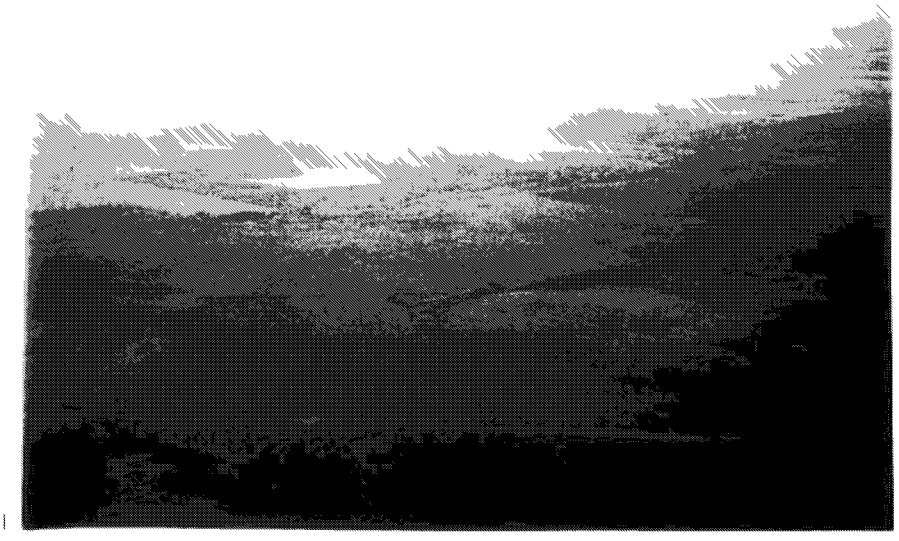

Fig. 6

Mer Bleue, a Bog on the Russell and Prescott Clay Plain.

While push factors are stronger on cheese farms they are not absent on fluid milk farms. Fluid milk farms must fulfill a fixed quota throughout the year which demands the provision of supplementary fodder in winter. If this cannot be grown on the farm it must be bought. For surplus milk, above the quota, farmers receive only about $2.25 a hundred weight. If they fail to reach their quota it is reduced. Fluid milk producers must also satisfy strict specifications on the design and location of their milk houses and must generally install a bulk tank system. The capital costs involved are large and only justified on larger farms with generally over 100 acres and more than 20 milch cows. Farmers with smaller production are under economic pressure to increase the farm size or sell out. Fluid milk producers must, in fact, operate on a larger scale and more efficiently than cheese milk producers. Push factors are, therefore, operative whatever the market, but for different reasons. Push factors are weaker in the case of fluid milk producers and the increase in the fluid milk market in Ontario is greatly advantageous. In 1941 26 per cent of Ontario's milk was used for fluid consumption. In 1958 the percentage had risen to 34. The main fluid milk markets for Easternmost Ontario farmers are Ottawa, Montreal and Cornwall.

9 Mechanization

Mechanization has also been responsible for some rural-urban migration. Farm mechanization began in the first half of the 19th century. In 1834 the first reapers, the McCormick and the International Harvester were used in Canada. They were not immediately popular. The McCormick required eleven men to operate it and the International Harvester's construction was too flimsy. By the end of the century

great progress had been made in the construction of farm equipment. Dairy farming does not lend itself as easily to mechanization as grain farming and little progress had been made in Easternmost Ontario before World War II.

	Total No. of Tractors		Tractors Per Farm		Tractors Per Total Labour	
	1941	1951	1941	1951	1941	1951
Russell	205	1177	0.098	0.713	0.035	0.528
Prescott	237	1346	0.100	0,708	0.034	0.438
Stormont	305	1157	0.143	0.686	0.049	0.489
Glengarry	399	535	0.153	0.69	0.052	0.178
Province			0.199	0.968	0.073	0.653

	Total No. of Combines		Combines Per Farm		Combines Per Total Labour	
	1941	1951	1941	1951	1941	1951
Russell	0	53	.000	.032	.000	.024
Prescott	5	74	.002	.039	.001	.024
Stormont	1	41	.001	.024	.000	.017
Glengarry	5	49	.002	.026	.001	.016
Province			.004	.118	.002	.080

By 1941 mechanization had proceeded further in Stormont and Glengarry than in Russell and Prescott, but was nowhere substantial. The number of tractors varied from one tractor per eight farms to one tractor per ten farms compared with the provincial average of one per five farms. Between 1941 and 1956 mechanization in Russell and Prescott

was more rapid than in Stormont and Glengarry and the Province as a whole. Russell and Prescott did not catch up with the Province but they did go ahead of Stormont and Glengarry. Mechanization in Glengarry was slow during this period and far from the gap between mechanization in Glengarry and in the Province as a whole being narrowed it was actually widened. In 1956 Glengarry had the lowest number of tractors per non-operator and total labour in the Province. Only Grenville had fewer tractors per farm.

It is difficult to estimate the push factor exerted by this mechanization. Many observers believe it to be quite small. Dawson[10] concludes his study of 185 dairy farms in Eastern Ontario in 1937 and 1947 with these words:-

> "Mechanization. There was a small increase in the amount of work per man. However, a considerable increase in mechanization occurred on these farms during the ten year period. The average investment in machinery was $1,424 in 1937 and $3,132 in 1947; this represents a considerable increase in mechanization even when changes in value are taken into account.
>
> While the increase in the number of tractors was accompanied by some decrease in the number of horses kept, the increase in mechanization did not result in any increase in the size of the farm business or in the intensity of farming operations and the increase in labour efficiency was not great.
>
> Even on the farms where tractors were bought between 1937 and 1947 there was very little increase in the acreage cropped or decrease in the amount of labour. Thus, from the purely financial point of view there is some doubt as to whether this mechanization was entirely justified. However, there is no doubt that the increase improved working conditions and enabled farmers to work shorter hours".

Since 1947 mechanization has led to outmigration by displacing some farm labour and by causing some farm consolidation and abandonment of stonier land. In that mechanization was more rapid in Russell and

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10. J. A. Dawson, Op. Cit. pp 27 to 28.

Prescott from 1941 to 1956 and proceeded further than in Stormont and Glengarry, the push force exerted by mechanization has been more powerful than in the southern counties. Its influence has probably been smaller than and insufficient to offset that of the physical push factor.

10 Farm Income

	Farms with value Products $250 to $2499 1950		Sold Equal to $250 to $1,199 in 1956	
	Number	Percentage	Number	Percentage
Russell	727	41	210	13
Prescott	880	40	212	11
Stormont	775	41	375	22
Glengarry	831	43	351	19
Province	46,170	31	26,786	19

On over 40 percent of Easternmost Ontario farms the value of farm products sold in 1950 was under $2,500. This figure of $2,500 is significant for it has been considered the minimum satisfactory gross income for Ontario farms.[11] There is no marked variation between the four counties and in all of them the proportion of farms in this income category is substantially higher than for the Province as a whole.

The farm income differences between the northern and southern counties become apparent only at a lower level, less than $1,200

11. Ontario Department of Agriculture. "Brief in Respect to the Small Farm Problem". Submitted to the Senate Investigation Committee at Ottawa June 25th, 1959

Fig. 7

The Casselman cheese factory. The milk is brought in by the local farmers and by contractors.

Fig. 8

A Street in Casselman. The first house on the right is a former cheese factory. The remainder of the houses were moved there from abandoned and consolidated farms. Most farm houses being moved at present are being located on main highways within easy commuting distance of Ottawa - creating incipient "ribbon development."

The percentage of farms in this income category in the southern counties is nearly double that of the northern.[12]

11 Farm Size and Number of Farms

Farm size becomes very critical at two stages in a farmer's career. The first is when he is still working on his father's farm and wants to get married. Only the very large farms can support two families and the son usually has to buy more land or a farm of his own before he gets married. Farm size also becomes critical when the farm is sold.

A study of farm title transfer in Ontario, by Noble[13], shows that 66 per cent of all owner operated farms are mortgaged at time of acquisition. The situation varies little between family transfers and outside sales. Two thirds of the sons taking over the family farm have to assume mortgages at the time of transfer. The amount of gross farm income available for living is reduced by the amount of mortgage that has to be paid. Smaller farms that could support a family unburdened by mortgage sometimes fail to do so when the farm is sold. This then is a further cause of farm abandonment and consolidation.

The following statistics indicate the tendency for average farm size to increase with most farm size groups below 130 acres decreasing and most groups above 130 acreas increasing. Increasing farm size is

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12. R. I Wolfe, Planning Division, Department of Highways has maps of Agricultural Production in Southern Ontario pp. 9 to 10 in "Relation between Agricultural Productivity and Rural Population Density in Ontario", 1958. The Ontario Department of Agriculture Brief in Respect to the Small Farm Problem Submitted to the Senate Investigation Committee 1959 also discuss low farm income and relates it to land use. Hay yields one of the lowest incomes per acre.

13 A. F. Noble "Farm Title Transfer Survey". Farm Economics and Statistics Branch Ontario Department of Agriculture, Toronto 1955, pp. 24 to 30.

Changes in Farm Size in Easternmost Ontario 1951 to 1956

			Size of Farms in Improved Acres					
		All Farms	Change 1951-1956	Under 10	Change 1951-1956	10-69	Change 1951-1956	70-179	Change 1951-1956
Russell	1951	1770	-120	66	-10	483	-88	886	-94
	1956	1650		56		395		792	
Prescott	1951	2176	-276	72	-52	469	-113	1,114	-151
	1956	1900		20		356		963	
Stormont	1951	1908	-222	106	-23	825	-185	767	-86
	1956	1686		86		640		681	
Glengarry	1951	1913	- 26	48	+15	724	- 74	884	-73
	1956	1887		63		650		811	

		130 - 179 acres		180 - 239 acres		240-399 acres		400 + acres	
Russell	1951	201	+ 59	97	+16	35	- 1	2	- 2
	1956	260		113		34		0	
Prescott	1951	354	+ 11	120	+18	44	+11	1	0
	1956	365		138		55		4	
Stormont	1951	139	+ 40	58	+ 6	13	+23	0	+ 3
	1956	179		64		36		3	
Glengarry	1951	177	+ 61	54	+32	24	+14	2	0
	1956	238		86		37		2	

due to physical and economic factors. Larger farms have lower unit costs and greater efficiency. Land and labour are the only costs which tend to reamin stationary with increasing size. Most costs, including building, machinery equipment and feed costs tend to decrease with increasing farm size. An unpublished study by the Federal Department of Agriculture [14] suggests that the cost curve, or unit cost at different production levels, has not been great enough to bring a rapid expansion in farm size. The gentleness of the cost curve also makes if difficult to define optimum farm size.

A large reduction in the total number of farms has, nonetheless, resulted from the combined effects of farm consolidation and farm abandonment. Figures for total number of farms 1941 to 1956 are given below.

County	No. of Farms 1941	1951	1956	Change 1941-1956	County	No of Farms 1941	1951	1956	Change 1941-1956
Russell	2092	1770	1650	-442	Stormont	2139	1908	1686	-453
Prescott	2375	2176	1900	-475	Glengarry	2287	1913	1887	-400

The amount of outmigration resulting from this farm abandonment is considerable. By multiplying the number of farms abandoned 1941 to 1956 by the 1956 county average family size we obtain a total of over 7,000 outmigrations.

County	1956 Average Family Size	Estimate of Outmigration
Russel	4.4	1,945
Prescott	4.3	2.043
Stormont	3.9	1,767
Glengarry	4.1	1,640

14. V. Gilchrist. Farm Economics Division. Federal Dept. of Agriculture

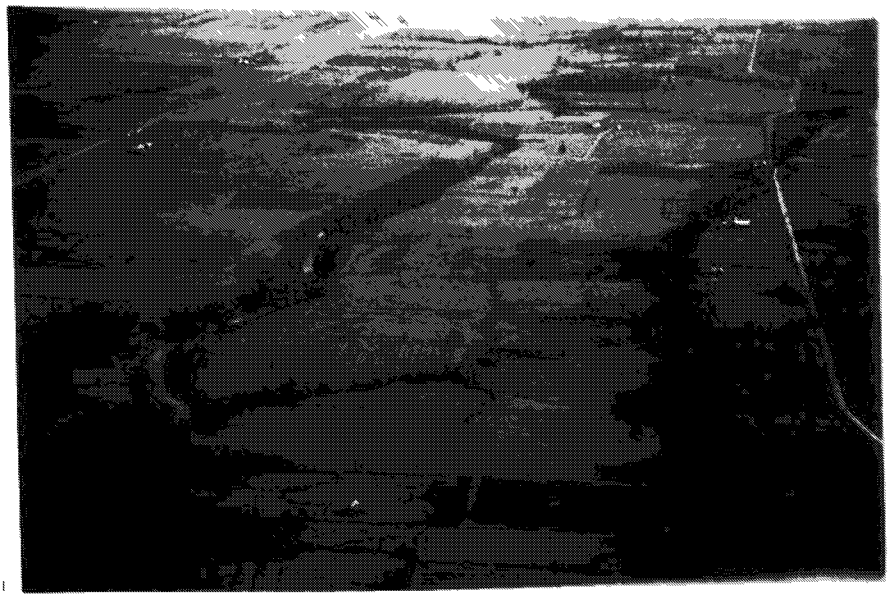

Fig. 9

The wooded escarpment between the Russell and Prescott Clay Plain and Sand Plain. The river is the Bear Brook Creek, a tributary of the South Nation River.

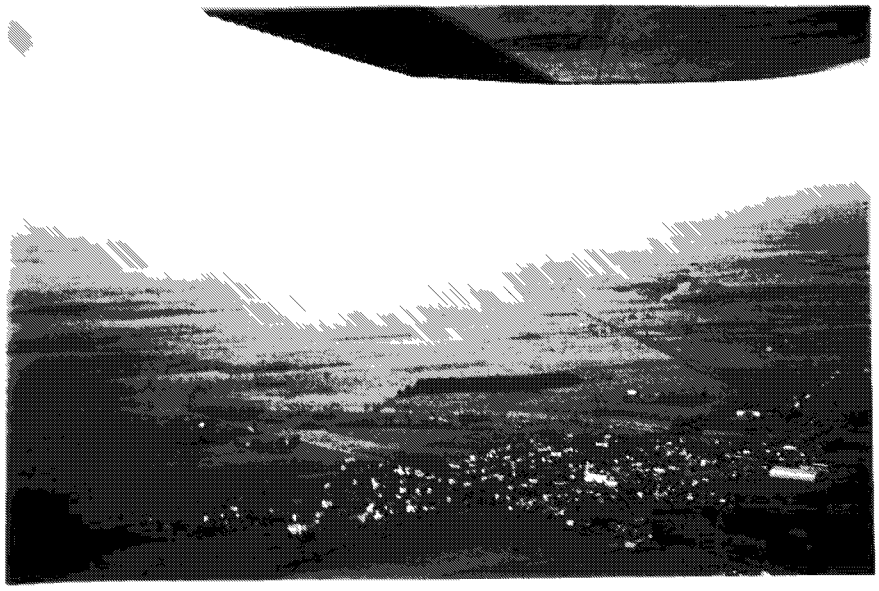

Fig. 10

View southwest over Casselman and the Dundas Clay Plain.

These estimates of outmigration are certainly too low because farm families are normally larger than the county size, and because the 1956 averages used are a little lower than those for 1941. Moreover, these estimates take no account of the reduction in employment among farm laborers and workers in local service industries resulting from the loss of farm population and abandonment of some of the farm land. Comparison of these estimates with those of total net outmigration suggests that farm abandonment and consolidation, for whatever reasons, is a major cause of rural depopulation. It is, therefore, significant that no great variations have been discerned between the counties in the change in farm numbers 1941 to 1956. There have, however, been variations in the timing of the reduction of farm numbers. Decline in farm numbers was highest in Glengarry from 1941 to 1951 and in Prescott

Decline in Farm Numbers 1941-1951 & 1951-1956

	1941-1951	1951-1956		1941-1951	1951-1956
Russell	322	120	Stormont	231	222
Prescott	199	276	Glengarry	374	26

from 1951 to 1956. Russell had the second highest decline 1941 to 1951 and Stormont 1951 to 1956. A study of county variations in net migration rates for working age groups showa a corresponding variation between the counties. Of the twenty net migration ratios for each intercensus period Glengarry had twelve of the highest ratios including one tie with Russell, Russell had seven and Prescott two for the decade 1941 to 1951. In the next period 1951 to 1956 Prescott had thirteen, Glengarry six and Russell one of the highest ratios. Thus variations between the counties in net migration are primarily linked with the reduction in the number of farms. It is difficult to explain why the

the overall decline in farm numbers from 1941 to 1956 should be the same in all counties and more research is required on this topic. Two suggestions can be made. It may be that while each push factor varies in strength from part to part of Easternmost Ontario in sum total effect they counter-balance each other. The physical push factor has been unimportant in Russell and Prescott. This is partially off-set by greater and more rapid mechanization in Russell and Prescott than in the southern counties. Low prices paid by cheese factories have acted as a strong push factor but in the milk sheds farm consolidation has been prompted by the capital costs of installing the bulk tank system. A second explanation for the lack of variation in the reduction of farm numbers between the counties is that push factors are, in any case, secondary in importance to pull factors. Push factors are often very localized in effect and their influence may not show when diluted to the county level. Net migration takes place primarily in response to pull factors which would not vary in strength within Easternmost Ontario. Thus differences in the forces of the push factors is likely to become clear only in local studies or in the comparison of strongly contrasted regions.

(b) The Pull Factors and Variations in Migration Rates 1891 to 1956.

Pull factors are those external economic conditions and other circumstances that attract migrants out of a region. It is doubtful whether any substantial migration can occur unless push and pull factors are both operative. Of the two sets of factors, however, pull factors are the more critical. Regional push factors including employment opportunity and population pressure are judged by the potential migrant

relative to conditions beyond the region. Thus it is the pull factors which call the push factors which call the push factors into effective existence.

The greater importance of pull factors has been clearly demonstrated by the International Labour Office in its world survey of "Why Labour Leaves the Land".[15] This survey states that the main reason for rural to urban migration is the difference in "net advantages" between agriculture and other sectors of the economy. It emphasizes that the rate at which migrants can leave agriculture is governed by employment opportunity in these other sectors.

There is a marked correlation in Easternmost Ontario between variations in net outmigration ratios and economic changes. Net migration from Easternmost Ontario can, therefore, be divided into periods determined by economic changes. The division of net migration in Easternmost Ontario into periods is not hindered by the inability to break down county migration data for smaller areas. It is made more difficult by the fact that this data is available only for intercensus periods. As a result of this the impact of pull factors on outmigration can be only broadly determined.

12 1867 to 1891

For two decades before heavy outmigration began in Easternmost Ontario, the pull forces had been weak. Soon after Confederation in 1867, Canada's economy began to stagnate. World trade was declining and

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"Why Labour Leaves the Land". A comparative study of the movement of Labour out of Agriculture". International Labour Office. Geneva 1960 p. 14.

agricultural prices were falling. Moreover, there was little interest in the Canadian Prairies until the United States West had been settled and this took until about 1890. Up to 1890 immigrants and capital were flowing into the United States rather than Canada. If children born to Canadians living in the United States are included, Canada itself lost about two million immigrants to the United States between 1871 and 1901. Canada's population growth was consequently small and it increased from 3.6 million in 1871 to only 5.4 million in 1901.

13 1891 to 1931

Towards the end of the 19th century the World economy began to recover, due in part to the South African gold discoveries. The American West was largely settled and capital and immigrants were being directed to Canada. The Canadian West was opened with the completion of the transcontinental Canadian Pacific Railway in 1885. The basis for the wheat economy was laid with technical developments in growing, storing and transporting wheat. Between 1885 and 1930 some five million immigrants reached Canada, many of them settling in the Prairies. Within Canada itself there was a marked migration to the Prairies and the development of wheat farming in the Prairies was the first strong pull factor felt in Easternmost Ontario.

It should be noted that the outlet for population and settlement, provided by the opening of the Canadian Prairies, extended the limits of agriculture just when they appeared to have been reached in most of Ontario and Quebec. Thus after 1891 both push and pull factors were in force and 1891 and 1901 was the first decade of heavy outmigration from all four counties of Easternmost Ontario.

Fig. 11

A large prosperous farm near Casselman, Russell, with a fluid milk market.

Fig. 12

An example of the small farm problem. This small run-down farm, south of Berwick, Stormont, will be abandoned when the present owners, an elderly couple, die. It could not provide a livelihood with the added burden of repairs and mortgage payments.

The number of migrants to the Prairies from Easternmost Ontario is not known. Hurd[16] has analysed the interprovincial movements for the three decades 1901 to 1931. The figures are interesting in that they provide some indication of the movement from Easternmost Ontario.

These figures are based on the number of native born Canadians in each Province minus the number born in each Province. They indicate that by 1911 the balance of internal migration was away from Ontario and

Accumulated Number of Surviving Net Migrants

Province	1901 to 1911	1911 to 1921	1921 to 1931
Prince Edward Island	-12,755	-15,299	-14,488
Nova Scotia	-20,645	-26,905	-36,459
New Brunswick	-12,423	-12,935	-19,332
Quebec	-84,314	-98,943	-74,937
Ontario	-219,106	-221,820	-170,468
Manitoba	+54,101	+35,570	-486
Saskatchewan	+133,832	+141,857	+100,274
Alberta	+81,593	+101,012	+88,497
British Columbia	+78,703	+ 95,954	+126,110

Eastern Canada to the Prairie Provinces and British Columbia. The number of migrants in the West had not substantially changed during the period 1911 to 1921. The tables indicate that in every Province net migration was smaller from 1911 to 1921 than from 1901 to 1911 or from 1921 to 1931. There was already a net outflow from Manitoba 1911

16. W. B. Hurd "Population Movements in Canada 1921 to 1931 and their implications". Proceedings of the Canadian Political Science Association 1934, pp. 220 to 237.

to 1921 and this net loss spread to the other two Prairie Provinces in the next decade. Hurd's[17] estimates for Canadian net migration for the decade 1921 to 1931 are:

Prince Edward Island	-970	Manitoba	-29,076
Nova Scotia	-12,995	Saskatchewan	-31,753
New Brunswick	- 7,487	Alberta	- 5,535
Quebec	+ 9,426	British Columbia	+41,016
Ontario	+35,702		

Thus by 1921, a significant phase, the heavy net migration of Canadians to the Prairies had ended.

Migration to the Prairies was closely limked with its varying economic fortunes. Economic recovery at the end of the 19th century was followed by increasing prosperity in the first decade of the present century. 1903 to 1913 was a time of boom. The second decade was one of unstable wheat prices with depressions from 1913 to 1915, and 1920 to 1921. This explains why migration to the Prairies increased until 1911 and was lower in the second decade 1911 to 1921. In Eastern-most Ontario, too, outmigration was higher from 1901 to 1911 than from 1891 to 1901, but much lower from 1911 to 1921.

The second major migration within Canada was the rural to urban migration. The began soon after the development of wheat farming in the West and reflected the need for manufactured produce by Prairie farmers as well as the increased prosperity in general. In Ontario the urban population was larger than the rural population by 1911. Between 1921 and 1931 the rural to urban migration in Ontario already outweighed the western migration. The net inmigration of some 36,000

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17. W. B. Hurd. Op. Cit. See pp. 222-266. These figures are considered accurate to the nearest on thousand.

Canadians from other Provinces to Ontario in that decade is accounted for by urban growth. In Canada as a whole, 550,00 Canadians left rural for urban areas in 1921 to 1931. An inflow of some 142,000 immigrants to rural areas left a net loss of 408,000.

The change in direction of flow of ontario migrants from 1921 to 1931 is important. It explains why, in a decade when Ontario was once more gaining population by Canadian net inmigration,outmigration from Easternmost Ontario reached new heights. It also explains the tendency for younger migrants to dominate. To move out west and establish a farm, a man had to have some experience and capital. Highest migration rates from 1891 to 1921 were for age groups 6 aged 25 to 29 at the beginning of their migration period, 35 to 39 at the end of it. The preconditions of capital and experience no longer applied once migration became urban orientated. Thus the increasingly pronounced tendency for age groups 4 and 5 (aged 15 to 24 years at the beginning of their migration period) to have the highest migration rates. Finally the rural to urban migration that occurred between 1891 to 1931 helps to explain the sex composition of the migrants. It is likely that migration to the West was male dominated. Most of the rural to urban migrants, however, were females and on balance there were slightly more female than male migrants from Easternmost Ontario after 1911.

Heavy outmigration from Easternmost Ontario was accompanied by an actual decline in farm population and occupied farm land. The decline in farm population has been computed by Haythorne[18]. In Haythorne's Ottawa-St. Lawrence Region maximum farm population was

18 G. Haythorne "Land and Labour" Oxford University Press 1941 p. 24.

Ontario Farm Population in Thousands

	1871	1881	1891	1901	1911	1921	1931
Ottawa-St. Lawrence	167.7	189.2	187.2	172.0	170.6	141.2	131.0
Ontario Total	680.4	766.6	813.6	768.9	821.9	788.8	777.0

attained in 1881. In Ontario as a whole the maximum farm population recorded was for 1911. The later Provincial maximum was due to the development of agriculture in Muskoka, Algoma, Cochrane and Lake Superior districts.

The composition of the farm labour force in Ontario was also changing. Between 1891 and 1931 the number of uppaid family workers or farms decreased, and the number of wage earners increased. By 1931 there were more wage earners on Ontario farms than unpaid family workers. In Easternmost Ontario in 1931 Prescott and Stormont had more wage earners than upaid family workers but Russell and Glengarry had slightly less.

The decline in the number of family workers is clear testimony to the strength to the pull factors. Had these been weak family labour would not have been replaced by hired workers.

The increase in the number of hired workers suggests that mechanization was not a significant push factor 1891 to 1931. Lemieux and others[19] considered that the amount of mechanization in Eastern Canada had been too small up to 1931 to account for the scale of outmigration and stated that the number of farm workers required by the big increases in livestock numbers and the production of special crops.

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19. O. A. Lemieux, S. A. Cudmore, M. C. MacLean, A. J. Pelletier and W. R. Tracy. "Factors in the Growth of Rural Population in Canada". Papers and Proceedings of the Canadian Political Science Association Vol. VI 1934.

Two other push factors were operative - physical and demographic. The push force exerted by the physical factor is in part indicated by the decline in occupied farm acreage.[20] The demographic push factor is indicated by the fact that only half the farm boys could hope to ultimately farm in the local area. Local employment opportunities for girls were worse.

14 1931-1941

Net outmigration rates which rose to new heights 1921 to 1931 fell to new lows in the decade 1931 to 1941 as a result of the Great Depression. The Great Depression brought a halt and even temporary reversal in the rural to urban migration. From June 1930 to 1931 Ontario Migration was:-

Rural to urban	10,866	
Urban to rural	11,112	
Net movement	- 246	urban to rural

Figures for Canada as a whole are not available but in the United States there was a net return to the farms in the one year of 1932.

The return flow was the product of "back-to-the-land" programmes and the return of farmers' sons who had lost their city jobs. The outflow from the farms was reduced by lack of urban employment opportunity. Agriculture was considered as a labour reservoir supplying labour in times of boom, re-establishing the unemployment in time of depression. During the decade 1931 to 1941, labour was dammed up on the farms and under-employed rather than re-established.

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20. For maps of change in Ontario occupied farm acreage see the maps prepared by H. Noble, Ontario Department of Agriculture.

Figs. 13 and 14

Abandoned farm houses on consolidated farms near Casselman.

The Great Depression brought considerable changes in the composition of the farm labour force. Unpaid family labour in Easternmost Ontario nearly doubled and hired labour was nearly halved from 1931 to 1941. In 1941 unpaid family farm labour was the largest single category of farm workers and nearly four times larger than the hired labour group.

15 1941 to 1956

The Second World War ended the depression and the unemployment problem. The flow of migrants from the farms was increased and, as during the First World War, male migrants were temporarily more numerous than female. Unpaid family labour was considerably reduced by 1956 but remained greater than hired labour.

Farm Labour in Easternmost Ontario 1931, 1941, and 1956.

	Oper-ator	Unpaid Family	Hired	Oper-ator	Unpaid Family	Hired	Oper-ator	Unpaid Family	Hired
Russell	2,282	1736	1381	2092	3089	616	1770	384	195
Prescott	2,532	2028	2033	2375	3560	1111	2176	737	437
Stormont	2,294	1549	1687	2139	3245	863	1908	436	243
Glengarry	2,434	2097	1689	2287	3403	1021	1913	737	375

Operator Labour equals number of farms.
Family Labour equals all family labour minus operators.
Hired Labour equals non-operator labour paid wages whether hired on a permanent or temporary basis.

Part Time Work by Farm Operators 1951 and 1956

	1 month or less			2-4 months			5-6 months		
	1951	1956	% Change	1951	1956	% Change	1951	1956	% Change
Russell	57	50	-12	102	159	+56	57	87	+53
Prescott	26	73	+181	60	129	+115	38	54	+42
Stormont	79	37	-53	101	85	-16	48	80	+67
Glengarry	64	32	-50	77	74	-4	44	47	+ 7
Province	7,448	2976	-60	9480	7253	-23	5609	4040	-28

	7-9 months			10-12 months			Total		
	1951	1956	% Change	1951	1956	% Change	1951	1956	Change
Russell	67	82	+22	67	126	+88	350	504	+44
Prescott	44	33	-25	55	70	+27	223	359	+61
Stormont	60	62	+ 3	91	181	+99	379	445	+17
Glengarry	39	-52	339	39	94	+141	263	299	+14
Province	4,965	3556	-28	12,274	16,085	+31	39,776	33,913	-15

The period 1941 to 1951 is characterised, however, by a very weak response to pull factors. In none of the Easternmost Ontario Counties was total migration for people working age as high as it had been in each of the three decades from 1901 to 1931. Migration in the period 1951 to 1956 was lower still.

The failure of the population in Easternmost Ontario to respond to strong pull factors in the period 1941 to 1956 is due to two factors. First, half a century of continued heavy outmigration from Easternmost Ontario has reduced the effect of pull factors even though they were strong. It has already been noted that push and pull factors lose their

force as adjustment to them takes place by population migration. Second, adjustment to pull, and push factors is assuming a new form, and an increasing number of farmers are taking part-time employment off their farms.

Census data shows a marked increase in off-farm work in the period 1951 to 1956. Part-time employment has particularly increased for the periods two to four months and ten to twelve months. Over half the operators doing part-time work in Russell, for example, were employed for these two periods in 1956.

Operators working more than ten months off their farm can regard it as little more than a useful hobby. Significantly enough, however, the percentage of farmers in this category has been growing faster than any other group in all the counties of Easternmost Ontario with the exception of Prescott.

The number of operators taking off-farm work, particularly for ten to twelve months, reflects non-farm employment opportunity. The table of percentages of part-time employment shows that figures are highest in every case for Russell and Stormont. Farm operators in Russell commute to Ottawa for work. In Stormont county, Cornwall offers factory and other

	Percentage of all Operators doing part-time work	Operator: working 10-12 months as a percentage of all farm operators	Operators working 10-12 months as a percentage of all part-time operators
Russell	30	8	25
Prescott	19	4	20
Stormont	26	11	41
Glengarry	16	5	31

employment opportunity. Prescott and Glengarry have much smaller percentage of operators doing part-time off-farm work. The lack of opportunities for off-farm work in Prescott and Glengarry probably explains why farm abandonment and net migration rates have been higher in these two counties than in Russell and Stormont in the period 1941 to 1956.

Thus the most striking feature of the period 1941 to 1956 is the lack of response to pull factors. The fact that net migration out of Easternmost Ontario has been lower from 1941 to 1956 than might have been expected is due to an increasing amount of part-time off-farm work together with the reduced effect of pull factors after half a century of heavy outmigration. The period 1941 to 1956 is thus clearly distinguished from the period 1891 to 1931, when new powerful pull factors were first coming into operation and the period 1931 to 1941 when economic depression weakened the force of the pull factors.

Bibilography Chapter III

Books

International Labour Office. "Why Labour Leaves the Land. A Comparative Study of the Movement of Labour out of Agriculture." Geneva, 1960.

Lee, Everett "Migration Differentials. Vol. I, Preliminary Rivision of Research Memorandum". University of Pennsylvania. Philadelphia, 1953.

Haythorne, George V. "Land and Labour A Social Survey of Agriculture and the Farm Labour Market in Central Canada" McGill Social Science Research Series No. 11, Oxford University Press, 1941.

United Nations "The Determinants and Consequence of Population Trends. A Summary of the Findings of studies on the Relationships between Population Changes and Economic and Social Conditions." ST/SOA/Ser. A A/17 New York, 1953

Articles

Baker, O. E. "Rural - Urban Migration and the National Welfare". Annals of the Association of American Geographers Vol. XXIII No. 2, June 1953, pp. 59-126.

Baker, O. E. "Rural and Urban Distribution of the Population in the United States". Annals of the American Academy of Political Science U.S.A. Vol. 188, Nov. 1936, pp 264-279.

Haywood, M. J. and Sharp E. F. "Rural-Urban Migration in Wisconsin 1940-1950" Research Bulletin 176, University of Wisconsin, August 1951.

Lemieux, O. A. et alia. "Factors in the Growth of the Rural Population". Proceedings of the Canadian Political Science Association, Vol. VI, 1934.

Hurd, W. B. "Population Movements in Canada 1921-1931 and their Implications". Proceedings of the Canadian Political Science Association, 1934, pp. 220-237.

Taeuber, C. "Recent Trends in Rural-Urban Migration in the United States". Milbank Memorial Fund Quarterly, XXV 1947 pp. 203-213.

Taeuber, C. "Migration and Rural Population Adjustment". Rural Sociology Vol. V, 1940, pp. 399-410.

Ontario Government Publications

Department of Agriculture

Agricultural Statistics for Ontario. Published annually.

Brief in Respect to the Small Farm Problem, Submitted to the Senate Investigation Committee at Ottawa June 25, 1959.

Nelson, J. B. and Nicolson, D. N. "Ontario's Shrinking Farm Lands". 1960.

Noble, H. F. "Farm Title Transfer Survey 1900 to 1950" 1955.

Noble, H. F. "Social Problems of Land Use in Ontario Series" Changes of Acreage in Occupied Farm Land by Township and Intercensus Period 1911-1956.

Noble, H. F. "A Statistical Appendix to the Full Report of the Survey of Social Problems of Land Use in Selected Areas of Ontario 1810-1956" 1961.

Patterson, H. L. "Preserving Our Best Rural Land". No. date.

Patterson, H. L. "A Seminar on Land Use Problems in Ontario" 1958.

Soil Survey Reports by the Canada Department of Agriculture and the Ontario Department of Agriculture. Published reports include

Carleton County: Report No. 7. by G. A. Hills, N. R. Richards and F. F. Morwick 1944.

Stormont County: Report No. 20 by B. C. Mathews and N. R. Richards 1954.

Glengarry County: Report No. 24 by B. C. Mathews, N. R. Richards and R. E. Wicklund 1957.

Other Ontario Departments.

Ontario Department of Economics. Annual Economic Surveys of Ontario, and Economic Survey of the Eastern Ontario Region. 1960.

Ontario Department of Highways. "Relation between Agriculture Productivity and Rural Population Density in Ontario. R. I. Wolfe, 1958.

Ontario Department of Lands and Forests. Annul Reports and Forest Resources Inventory Reports of the Kemptville District

Ontario Department of Planning and Development "South Nation Valley". Interim Report 1948.

Government of Canada Publications

Department of Agriculture.

Boucher, G. P and Packman, D. J. "The Dairy Farm Business in Eastern Ontario 1947-1948" Economic Analist. June 1949, Vol. XIX No. 3, pp. 63-67.

Dawson, J. A. "Changes on Eastern Ontario Dairy Farms between 1937 and 1947". Economic Analist. April 1950, Vol. XX No. 2 pp. 45-46.

Lane, G. A. and Carson J. G. "Agricultural Statistics by Type of Farming Areas Ontario". Ottawa, 1956.

Levitt, Kari Population Movements in the Atlantic Provinces, A. P. Ec. Council 1950.

Shipley, W. C. "Dairy Factories in Eastern Ontario and Southern Quebec" Economic Analist. February 1949, Vol. XIX No. 1, pp. 17 to 20.

Other Government of Canada Departments.

Department of Defence Production. "Economic Zoning of Canada and the D.C.P. Geographic Code". Ottawa, 1953.

Department of Labour. "Trends in the Agricultural Labour Force in Canada from 1921 to 1959". Ottawa, 1960.

Department of Mines and Technical Surveys, H. A. Woods, "The St. Lawrence Seaway and Agricultural Geography in the Cornwall-Cardinal Area, Ontario". Geographical Bulletin No. 8, 1956, pp. 74-98.

Royal Commission on Canada's Economic Prospects. Chairman W. L. Gordon. "Progress and Prospects of Canadian Agriculture". W. M. Drummond and W. Mackenzie, Ottawa,1957.

United States Department of Agriculture:

Forest Service.

Striffer, W. D. "The Effects of Forest Cover on Soil Freezing in Northern Lower Minnesota". Lake States Forest Experiment Station, Paper No. 76 Nov. 1959.

Weitzman, S and Bay R. R. "Snow Behaviour in Forests of N. Minnesota and its Management Implications." Lake States Forest Experiment Station, Paper No. 69 Jan. 1959.

Miscellaneous

Boileau, Gilles. "Saint-Albert, Etude de Geographie Humaine." La Societe Canadienne D'Etablissement Rural et L'Union des Cultivateurs Franco-Ontariens. Montreal 1958.

CONCLUSION

The European occupance of Easternmost Ontario can be divided into two periods. The first period, 1783 to 1891 is one of advancing settlement and expanding population. The second period, 1891 to 1956 is characterized by continuously heavy rural outmigration and some farm land abandonment.

The first period can be further subdivided into three stages on the basis of differences in the source of settlers, advance of settlement and causal factors. The three stages are distinct but their divisions are transitional.

The first stage, 1783 to 1804, marks the beginning and establishment of European settlement in Easternmost Ontario. Political events determined the date of the first settlement and the source of the settlers while strategic considerations governed the location of settlers along the St. Lawrence Valley.

From 1804 to 1850 settlement progressed northwards from the St. Lawrence in the counties of Stormont and Glengarry. In the Ottawa Valley settlement by-passed Russell and Prescott to take advantage of the sheltered cash market for farm produce provided by the large timber shanties further upstream.

From 1850 to 1891 the extensive inmigration of French Canadians from east to west across Prescott and Russell completed the settlement of Easternmost Ontario.

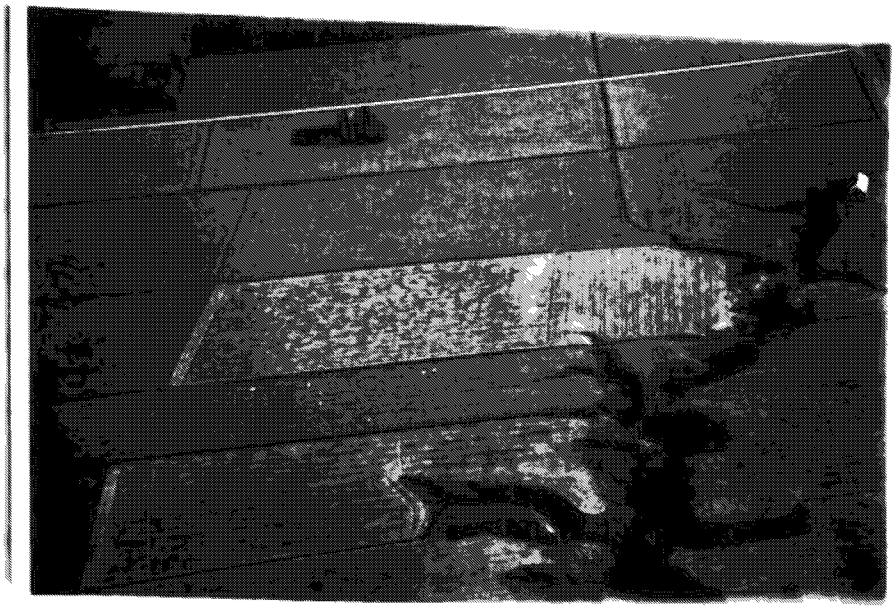

Fig. 15

Gullying on the Russell and Prescott Clay Plain. Little is being done to reduce soil erosion in Easternmost Ontario.

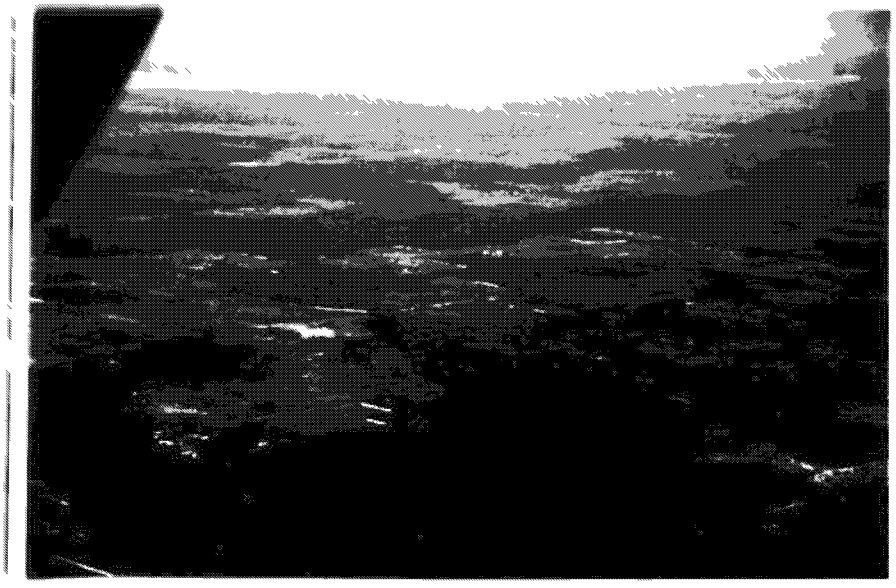

Fig. 16

The St.Lawrence Valley near Cornwall. The till plain is partially covered by the Lancaster Clay Flats. The Lancaster Flats are cultivated, the till plain wooded.

The beginning of substantial outmigration from all four counties of Easternmost Ontario after 1891 represented a response to push and pull forces. Natural population increase became a push factor once land settlement was completed. Increases in farm size and farm abandonment on poorer land has also been important. Farm mechanization has contributed to some outmigration since World War II.

Pull factors were more critical than push factors. The development of the Canadian Prairies attracted large numbers of migrants from 1891 until 1921 when outmigration became urban orientated. Later migrants were consequently of younger age and predominantly female.

Migration was considerably lower from 1931 to 1941 as a result of the Depression and the amount of unpaid family labour was nearly doubled, hired labour nearly halved.

By 1941 the rural population of Easternmost Ontario had been declining for half a century and the response to strong pull factors from 1941 to 1956 has been both weak and modified. Net outmigration rates have been generally low though sharply increased rates for age groups 4 and 5 (aged 15 to 24) at the beginning of their migration period) represent important exceptions. The amount of outmigration has been inversely related to the amount of accessible city employment. In Stormont and Russell, where farmers have substantial urban employment opportunity, approximately ten percent of them have ten months or more off-farm work. Significantly, rural outmigration and reduction in farm numbers has been lower than in Glengarry and Prescott where such opportunities are limited.

While the force of the pull factors has varied, the age and sex composition of migrants has been fairly constant. Migration rates have been highest for people aged 15 to 35 whether male or female. Selective migration has had an unbalancing effect on the remaining population. It has reduced the proportion of working age people to those of non-working age, and the proportion of females to males. Adjustment of population to push and pull forces by outmigration may be generally beneficial where this movement is moderate. But where this movement is substantial and long-continued it can weaken still further the economy of the out-migration region. It is, therefore, important to determine the future influence of push and pull factors and the probable future rates of outmigration from Easternmost Ontario.

This evidence available suggests that the influence of push and pull factors is likely to be weaker in the future. An expanding urban population is increasing the demands for dairy and market garden produce. Easternmost Ontario is selling an ever greater quantity of its milk to Ottawa, Montreal and Cornwall and less to local cheese factories. This tendency is of paramount significance for the higher prices paid for fluid milk can raise the status of poorer farms to above a marginal level. Poorly drained land unsuited to dairying can be used for market gardening and already part of the Moose Creek Peat Bog has been drained and cleared for this purpose to serve the Montreal market. Mechanization continues but is passing the stage of displacing farm labour. Further mechanization is shortening the working hours and lightening the burden of those who remain on the farm.

However, there remains the problem of the small farm. Older farmers, with no mortgage to pay and with no farm improvements can

make their living. With the death of the owner such farms are abandoned or consolidated for the younger generation cannot consider a small run-down farm as an economic proposition, particularly if there is a mortgage to pay.

The immediate future of Easternmost Ontario is probably for a continuing slight decline in farm numbers. Outmigration is likely to maintain its present age and sex composition but should be reduced in amount, particularly where opportunities for urban employment exists. Substantial rural population increase in Easternmost Ontario would depend on the growth of manufacturing industry.. The chances for such growth are beyond the scope of this work. However, little progress has made so far despite the efforts of the Eastern Ontario Development Association. Some plants, such as the Carnation Powdered Milk Factory in Alexandria, have been established but on the whole industry has been reluctant to locate in a declining rural area.

ABSTRACT

This thesis deals with the European settlement of, and rural out migration from Easternmost Ontario, which comprises Russell, Prescott, Stormont and Glengarry. Substantial settlement was begun in 1783 by United Empire Loyalists along the St.Lawrence Valley. Settlement expanded northwards across Stormont and Glengarry from 1804 to 1850. The in migration of French Canadians across Prescott and Russell completed the settlement of Easternmost Ontario by 1891.

Substantial out migration from all four counties of Easternmost Ontario after 1891 was a response to push and pull forces. A county correlation was found between out migration and the reduction in farm numbers but not between county variations in out migration and in the push factors.

The first strong pull factor was the development of the Canadian Prairies which attracted many migrants from 1891 to 1921. By 1921 out migration was urban orientated and out migrants, consequently, younger in age and predominantly female. Out migration was reduced by the Depression but increased little from 1941 to 1956 when pull factors were a gain strong. Two exceptions were migration rates for age groups 4 and 5 (aged 15 to 25 at the beginning of their migration period) which increased significantly. Migration rates have been lowest for Russell and Prescott where off-farm employment opportunities are greatest and about ten percent of the farmers work ten months or more off-farm. Thus, after half a century of rural depopulation, the response in Easternmost Ontario to strong pull factors has been both weak and modified.