THE HISTORICAL GEOGRAPHY OF THE SAGUENAY VALLEY

A Thesis

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Master of Arts

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by

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CHAPTER I

THE PROBLEM AND DEFINITIONS OF TERMS USED

I. THE PROBLEM

Statement of the Problem. The aim of the historical geographer is to reconstruct and interpret past landscapes (i.e. the physical and cultural aspects of the surface of the earth) at significant cross-sections in the historical development of a region. The landscape at any point of time is the result of the historical processes gone before, and will itself change, with time, into a new landscape with different physical and cultural characteristics. The historical geographer thus hopes to explain the development of each landscape, including that of the present, and its transformation into the next. By means of maps and diagrams, comparisons can be made of the spatial distributions of various units at different periods.

The historical geographer also hopes to show to what extent the past and present landscapes are the result of the geographic characteristics of the region. The location, climate, surface configuration, soils, and natural resources of a region determine in a large measure the type of economy which may develop. However, human factors may direct the pattern of development in many ways within the physical limits, the natural resources of a region will be of different values at various stages in the technology and organization of a people, and the physical characteristics will themselves be affected during the historical process.

Importance of the Study. The Saguenay region today has the greatest concentration of developed hydro-electric power in the world, and more is available for development. It is the site of the world's largest aluminum plant, and is a centre of pulp and paper production, which absorb the hydro-electric power produced. The western section is a fertile agricultural region, and the whole is easily accessible by water, rail, highway and air.

Just over one hundred years ago the region was undeveloped and uninhabited except by Indians, furtraders, and missionaries. The first permanent settlers did not arrive until 1838. No study of this rapid development, tracing the transformation of past landscapes into that of the present, and the processes of change which brought this about, has been undertaken. In fact geographical studies of any kind concerning the region have been few.

II. DEFINITIONS OF TERMS USED

A problem is met in defining the term "Saguenay Valley", for the titles Saguenay Valley, Saguenay Lowland, and Lake St. John Lowland have been applied throughout their history to the whole and to various sections of the region.

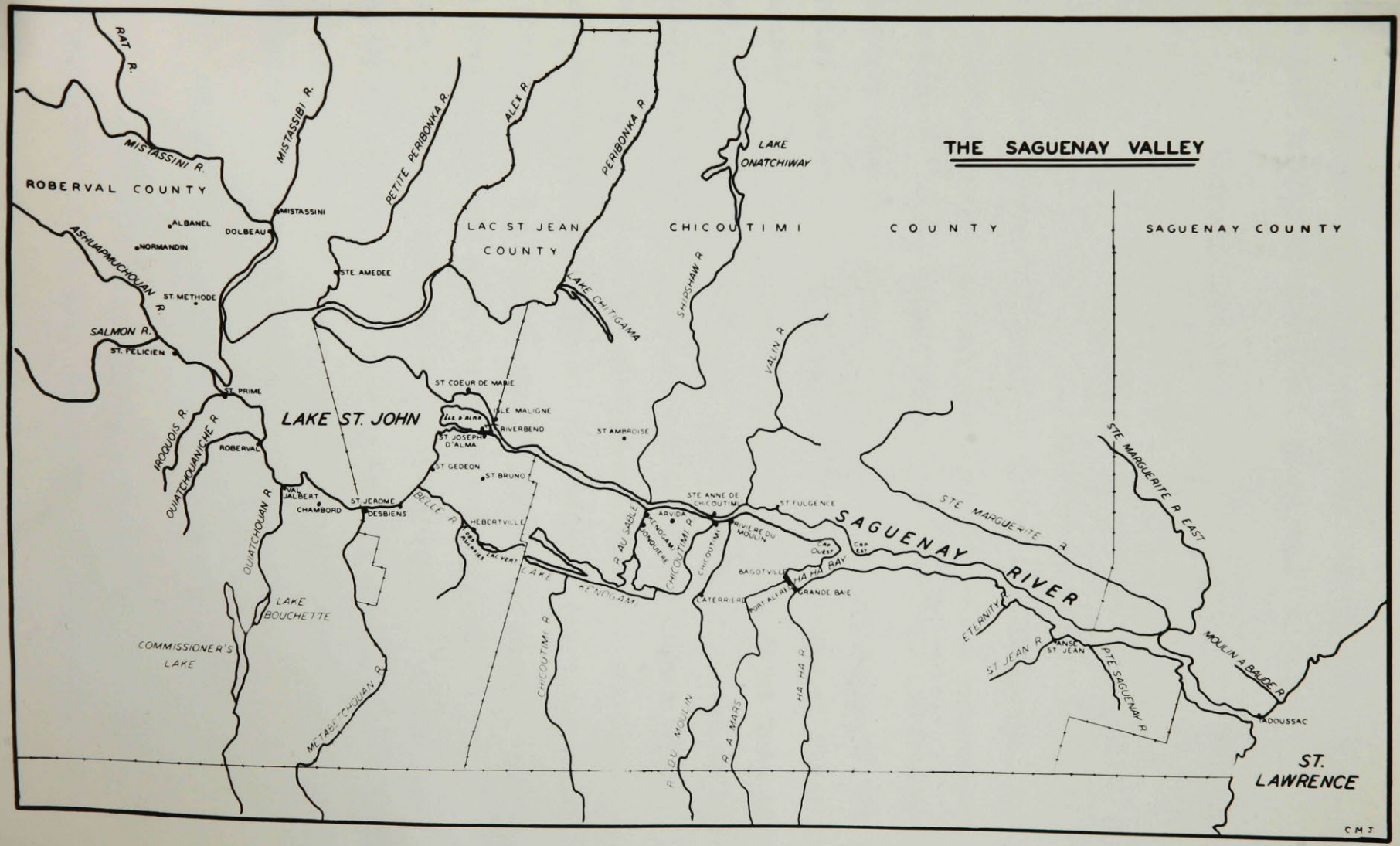
The Region Under Study. The Lake St. John-Saguenay Lowland forms a depression in the eastern rim of the Canadian Shield. Lake St. John lies 125 miles north of Quebec City. It is a natural reservoir into which flow rivers from a drainage area of 27,889 square miles, which lies between the 48th. and 51st.

degrees of latitude, and between 70 degrees and 70 degrees 30 minutes of longitude. The Saguenay River, the outlet of this lake, flows slightly south of east for one hundred miles to join the St. Lawrence 120 miles north of Quebec City. The lowland surrounding Lake St. John is a fertile agricultural area; the lowland of the upper Saguenay is an important industrial area, and the site of large hydro-electric power developments; the lower sixty miles of the Saguenay is a fiord of considerable scenic beauty.

The Lake St. John Basin and Saguenay Valley. Two main divisions of this region are apparent - the Lake St. John basin, and the Saguenay Valley or lowland. A definite division between the two, however, is difficult to draw, and many authors have referred to the whole region as "The Saguenay", whereas others have used various dividing lines. There is no well defined boundary, economic or physical, to divide what is in reality one valley. There is a minor and indistinct physical boundary running from east of Hébertville, north across the Saguenay, which can be taken as a physical division. (Place names may be located on the Identification Map, Figure 1). However, it has more meaning to take as a division the eastern shore of Lake St. John at its discharge into the Saguenay River, terming the western section the Lake St. John Basin, and the eastern section the Saguenay Valley. The latter can be further divided into two parts - the upper Saguenay lowland to the west, and the lower Saguenay fiord (which is not a lowland area) to the east. Using this division, the economy of the lowland east of the lake is easily recognized as industrial

Figure 1. Identification Map

This map, to which the reader may refer throughout the text, locates most of the place-names to which reference is made.


THE SAGUENAY VALLEY
ROBERVAL COUNTY
LAC ST JEAN COUNTY
CHICOUTIMI COUNTY
SAGUENAY COUNTY
LAKE ST. JOHN
SAGUENAY RIVER
LAKE ONATCHIWAY
LAKE CHITGAMA
LAKE BOUCHETTE
LAKE KENOGAMI
COMMISSIONER'S LAKE
RAT R.
MISTASSINI R.
MISTASSIBI R.
PETITE PERIBONKA R.
ALEX R.
PERIBONKA R.
SHIPSHAW R.
VALIN R.
ASHUAPMUCHOUAN R.
SALMON R.
IROQUOIS R.
OUIATCHOUANICHE R.
OUIATCHOUAN R.
METABETCHOUAN R.
BELLE R.
CHICOUTIMI R.
R. AU SABLE
R. DU MOULIN
R. A MARE
HA HA R.
ETERNITY
ST JEAN R.
PTE SAGUENAY R.
MOULIN A BAUDE R.
STE MARGUERITE R.
STE MARGUERITE R. EAST
HA HA BAY
ST. LAWRENCE
MISTASSINI
ALBANEL
DOLBEAU
NORMANDIN
STE AMEDEE
ST METHODE
ST PELICIEN
ST PRIME
ROBERVAL
ST COEUR DE MARIE
ILE MALIGNE
ILE D'ALMA
RIVERBEND
ST JOSEPH D'ALMA
ST AMBROISE
ST GEDEON
ST BRUNO
VAL JALBERT
CHAMBORD
ST JEROME
DESBIENS
HEBERTVILLE
LAC VERT
ARVIDA
KENOGAMI
CHICOUTIMI
RIVIERE DU MOULIN
STE ANNE DE CHICOUTIMI
ST FULGENCE
CAP OUEST
CAP EST
BAGOTVILLE
PORT ALFRED
LA TERRIERE
GRANDE BAIE
ANSE ST JEAN
TADOUSSAC
C M J

and predominantly urban, whereas that of the lowland to the west is almost purely agricultural and rural.

Interdependence of the Two Sections. It is possible to study the geology, physiography, history, and economy of these two sections of the lowland separately, without sacrificing the real unity. However, there is no distinct physical division; there has been a common geological history; the historical development has been one process; and the two regions are interdependent and conscious of their larger unity. The economic interdependence has resulted chiefly from the physical characteristics of the two areas. The water powers developed on the Saguenay River in the eastern section are produced by water which flows into Lake St. John from its large drainage basin, and is marketed in both sections. The western lowland supplies agricultural produce to the industrial cities of the eastern section, and the drainage basin surrounding provides much of the pulpwood for their mills. These cities absorb the surplus population of the western basin as well as foodstuffs, and have brought prosperity and progress to the whole, which the agricultural lowland alone would not have achieved For these reasons, the region is treated as a whole, but later chap ters, discussing the period after urban development became marked, emphasize the role of these industrial cities.

III. ORGANIZATION OF THE REMAINDER OF THE THESIS

The following chapter (Chapter II) describes the physical background and natural resources of the Saguenay region, which

formed the original landscape and most of which has remained unchanged. With this description, the effects of the landscape on later development, and any changes in the landscape resulting from development, can be better understood. The physical characteristics of the region have been fundamental in its development (which has been based on forest products, agriculture, and hydroelectric power), and therefore warrant description and explanation.

The remaining chapters reconstruct the region at different significant periods in its history, and describe the processes by which one landscape has been transformed into the next.

The first of these chapters (Chapter III) describes the region before the establishment of the first colonists in 1838. During this time the chief inhabitants were the native Indians, and the economy was based on the fur trade, organized by a sprinkling of white population at the trading posts. Not until the end of the period was information of the fertility and valuable forest resources of the region generally known, the delay being due to distance from settled areas and lack of communication, and also to the exclusive control of the fur companies, which wished to discourage settlement.

In 1838 the first colonists arrived, and the development of the region during the early period of settlement, when lumbering was the basis of the economy, is treated in Chapter IV. The lumber industry began to suffer from shortage of supplies about

1870, and agriculture, which had been carried on during the period, became a comparatively more important source of income. During the period, settlement, chiefly rural, spread from Ha Ha Bay, the site of the first settlement, west through the lowland and around Lake St. John. Improved transportation to outside areas had barely been established before the end of the period.

The construction of the first small pulp mill of the region in 1897 ushered in an industrial era based on pulp and paper production, which is discussed in Chapter V. This led to great population growth, which became predominantly urban in the upper Saguenay lowland where the industry concentrated, although that of the Lake St. John lowland remained predominantly agricultural and rural in character. The pulp and paper industry also resulted in the development of a portion of the great hydro-electric potential of the region, and in improved transportation facilities. By 1927 this industry had established its present pattern.

In 1923 plans to construct an aluminum refinery in the upper Saguenay area led to the development of the first large-scale hydro-electric power project of the region. Since this time expansion of the aluminum industry, further development of hydro-electric power, and continued expansion of the pulp and paper industry have characterized the economy of the region, and confirmed the previous trend of urban predominance in the upper Saguenay region. This recent era is discussed in Chapter VI, with emphasis on the urban sites.

At the end of each chapter an attempt has been made to reconstruct the region, noting changes effected during the period in the physical and cultural landscape. Maps, drawn by the author photographs, chiefly aerial views, and graphs have been used wherever understanding is so aided.

IV. REVIEW OF THE LITERATURE

Categories of Literature on the Region. The Saguenay region has been the subject of innumerable written works since the time of Cartier. These fall into the following major categories: general historical works; popular description and travel, and tourist literature; studies of the natural resources, such as forest and water power resources, agricultural reports, and geological, climatic, and other physical studies chiefly by government agencies; and technical and descriptive publications by the major industries of the region and other local interests.

Previous Geographical Studies and Their Limitations. General geographical studies of the region have been few. The only comprehensive geographical study is that of Blanchard,[1] the greater part of which, however, is concerned with geological history and description of the region at the time of his study, the early 1930's, and he presents few maps. No attempt was made to reconstruct the landscapes, although an historical summary was given. Brouillette and Dagenais[2] have recently published three

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1 R. Blanchard, L'Est du Canada Francais, 1935, Vol. II.

2 B. Brouillette, "L'Aluminium au Saguenay", L'Actualité Economique, 22, October, 1946, 417-447; "L'Habitat et la Population du Saguenay", Ibid, 22, January, 1947, 646-671.
B. Brouillette and P. Dagenais, "Quelques aspects de l'économie actuelle du Saguenay-Lac Saint Jean", Ibid. 23, January, 1948, 654-682.

articles in which they study aspects of the present region, in an attempt to bring Blanchard's work up to date. They present useful statistical information, but present no maps, and make no pretense of having produced more than a fragmentary study of the region. These are the only geographical works which have been written on the region as a whole. This study of the historical geography of the region, emphasizing past landscapes and the processes of change from the primeval landscape to that of the present, and presenting former and present distributions of various factors in map form, is an attempt to remedy this lack.

V SOURCES OF INFORMATION.

Archives. The chief sources of information have been written documents and maps of earlier periods, that is, archives. These include maps of the Dominion and Provincial archives, reports of explorers and missionaries, early census reports, and early works of an historical or descriptive nature, including numerous government publications.

Other Sources. Other sources have been recent census reports, government publications, and maps, publications of the industrial companies and other local organizations of the region, and information obtained personally from these companies and organizations, secondary historical works, the few published geographical sources, and a field trip to the region in June, 1949.

CHAPTER II

THE PHYSICAL BACKGROUND

The original landscape of a region is purely physical; there are no cultural aspects. The role of this primeval landscape is important in encouraging and permitting certain types of activity.

Because the Saguenay Valley is a downfaulted depression in the Laurentian plateau, it was invaded by the Champlain Sea and covered with deposits of fertile alluvial soil. These deposits, together with favorable climatic conditions, permitted a mixed forest growth and presented an important agricultural potential; the climate of this lowlying region being less severe than that of the plateau surrounding. This plateau, with poor soil and a more severe climate, permitted coniferous forest growth and presents ideal conditions for water power development. Sites for development occur chiefly at the drop in level along the edge of the lowland, between Lake St. John and tide water on the Saguenay, and on tributaries of the upper Saguenay .

The distinctive physical features of the region, then, i.e. its surface configuration, soils, natural vegetation, and drainage pattern, on which its agricultural, forest, water-power and industrial potential are in a large measure dependent, result from the fact that it constitutes a depression in the plateau.

I. PHYSIOGRAPHY AND DRAINAGE

Geological History. In Ordovician times, limestones and shales were deposited in shallow seas on the Precambrian rock of the plateau. After this period the region suffered down-faulting, and these younger deposits were removed from the surrounding plateau by long periods of erosion, leaving exposed the underlying granites and gniesses. Within the down-faulted region, however, the younger rocks were preserved, and were eroded much later to form the present depression occupied by Lake St. John and its outlet the Saguenay.[1] The geological map, Figure 2, shows the types of rock which underlie the region. The effect of the down-faulting, which is outlined by escarpments, in preserving the younger rocks is made apparent by the contact of younger and older rocks along much of its length.

The original bed of the Saguenay River was, according to the majority of geologists and geographers, eroded by a preglacial river which followed the line of faulting across the plateau, but the present bed of the river, with its fiord characteristics, was created at the end of Pleistocene ("ice-age") times by a local glacier.[2,3,4,5,6,and 7] This glacier was concentrated in, and

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1 J.A.Dresser and T.C.Denis, Geology of Quebec, 1944, p. 200

2 R.Blanchard, L'Est du Canada Francais, 1935, Vol. II, p. 40

3 J.A.Dresser, "Part of the District of Lake St.John, Quebec" Geological Survey of Canada, Memoir 92, 1916, p.7

4 W.Upham, "The Fiords and Great Lake Basins of North America," Bulletin of the American Geological Society, 1: 563-567, 1890.

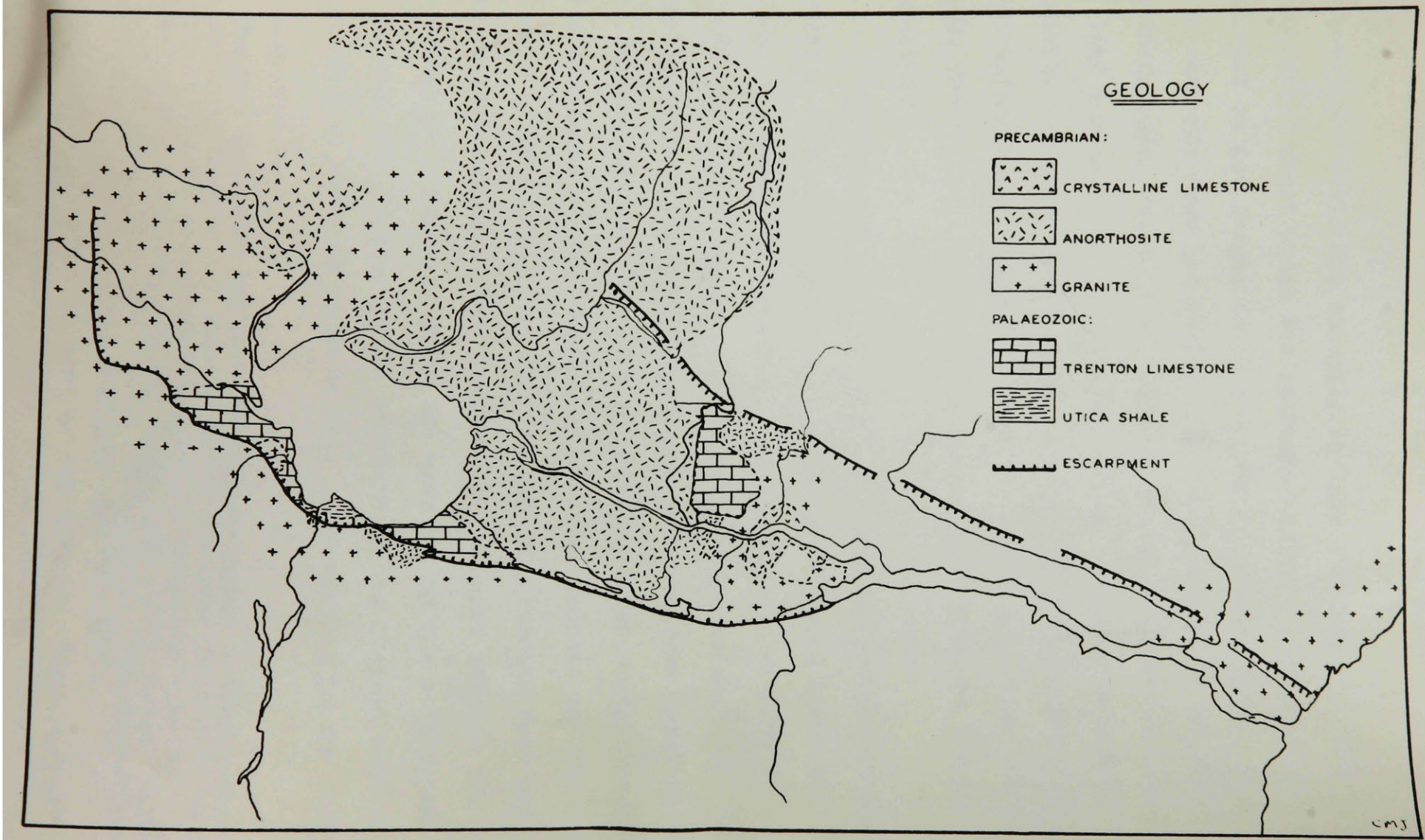
5 J.C.K. Laflamme, "Le Saguenay, Essai de Géographie Physique" Bullétin de la Société de Géographie de Québec, 1: 54-60. 1885.

6. Dresser and Denis, op. cit. p. 201.

7. R. Chalmers, "Surface Geology of Eastern Quebec," Geological Survey of Canada, Annual Report, 16: 256, 1904.

Figure 2. Geological Map

This map of bed-rock geology shows the effect of the down-faulting (marked by escarpments) in preserving younger rocks from erosion. The contact of younger and older rocks is apparent south of Lake St. John.


GEOLOGY
PRECAMBRIAN:
CRYSTALLINE LIMESTONE
ANORTHOSITE
GRANITE
PALAEOZOIC:
TRENTON LIMESTONE
UTICA SHALE
ESCARPMENT
CMJ

deepened, the basin now occupied by Lake St. John. A remnant of the main ice sheet which had retreated north of the area, it was nourished by ice fragments from a large drainage basin. As it moved seawards down the valley, it concentrated in the narrow river bed downstream, which it transformed into a steep walled fiord.[8] The land surface was at this time depressed by the weight of the glaciers, and upon their retreat the Champlain Sea invaded the down-faulted region, depositing marine sands and clays. These became fertile alluvial terraces as the land rose and the sea retreated.

The Boundary of the Lowland. The lowland has an average elevation of 350-500 feet, the highest level being about 650 feet, whereas the surrounding plateau has an elevation of 800-1200 feet, so that the lowland appears as a distinct depression.[9] The down-faulting, which preserved the younger deposits from erosion, bounds this depression, and is marked by distinct escarpments both to the north and south of the lowland. These escarpments, and the surface features of the lowland and the surrounding plateau, have been expressed pictorially in the physiographic diagram (Figure 3). Here the southern escarpment, which has been traced for a distance of 120 miles, can be seen as the boundary of the lowland west and south of Lake Kenogami to Ha Ha Bay. Also visible is the northern

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8 Popular tradition and earlier writers upheld a theory that the Saguenay trench is a fissure in the plateau created by an earthquake and was not glaciated. See for example, A.Buies, Le Saguenay et le bassin du lac Saint Jean, 1896, p.36; D.Potvin, The Saguenay Trip, 1949, p.73; P.H.Dumais, "Le Formation du Saguenay" Le Naturaliste Canadien, 22:168, 1895.

9 B.T.Denis, "North west part of the Lake St. John region" Quebec Bureau of Mines, Annual Report, 1933, p.61.

escarpment, "a marked line of hills", 90 miles in length.[10] The depression, then, lies between these two almost parallel faults, except to the north and north-west of the lake, where the land slopes up to the higher level of the plateau without faulting. The faults have affected the hydrographic pattern along their length. As can be seen in Figure 3, there are sharp westward bends in the courses of the Shipshaw and Valin Rivers where they cross the fault north of the Saguenay; and Lake Chitigama and smaller lakes, the Ste.Marguerite, and the Moulin à Baude Rivers all edge this fault. South of the Saguenay sharp bends are also obvious in the du Moulin and à Mars Rivers east of Lake Kenogami, which, with Lake Vert (also called Lake Kenogamichiche), also skirts the escarpment.

The Plateau. The surface of the surrounding plateau is typical of glaciated areas, with rounded summits, striated rock surfaces, uneven river beds, swamp and lake filled depressions, and such a confused drainage pattern that it is difficult to distinguish the sources of the rivers flowing into Lake St. John. The rivers have many falls and rapids, which favour water power development. The soils, generally morainic, sandy, and full of stones, are of low fertility and useless for agriculture, and support heavy coniferous forest vegetation. A section of this hummocky, rolling, uneven surface, bordering the lower Saguenay, is shown in Figure 4.

The Lowland. The lowland depression presents a striking contrast in appearance and characteristics. It is most conveniently divided, as previously mentioned, into three physical regions: the

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10 Dresser and Denis, op. cit. p. 195

Figure 3. Physiographic Diagram

This diagram shows pictorially the nature of the physical landscape and the physical divisions of the lowland.

The level, fertile plain surrounding Lake St. John presents a striking contrast to the rough rocky surface of the Laurentian plateau surrounding. It is bounded by escarpments except to the north, where it slopes up to the level of the plateau without faulting. The Saguenay lowland east of this basin presents an intermediate surface, rougher than the alluvial plain to the west, but more level than the plateau to the north and south, and there are some areas of alluvial deposits. East of this area the Saguenay fiord cuts through the plateau.

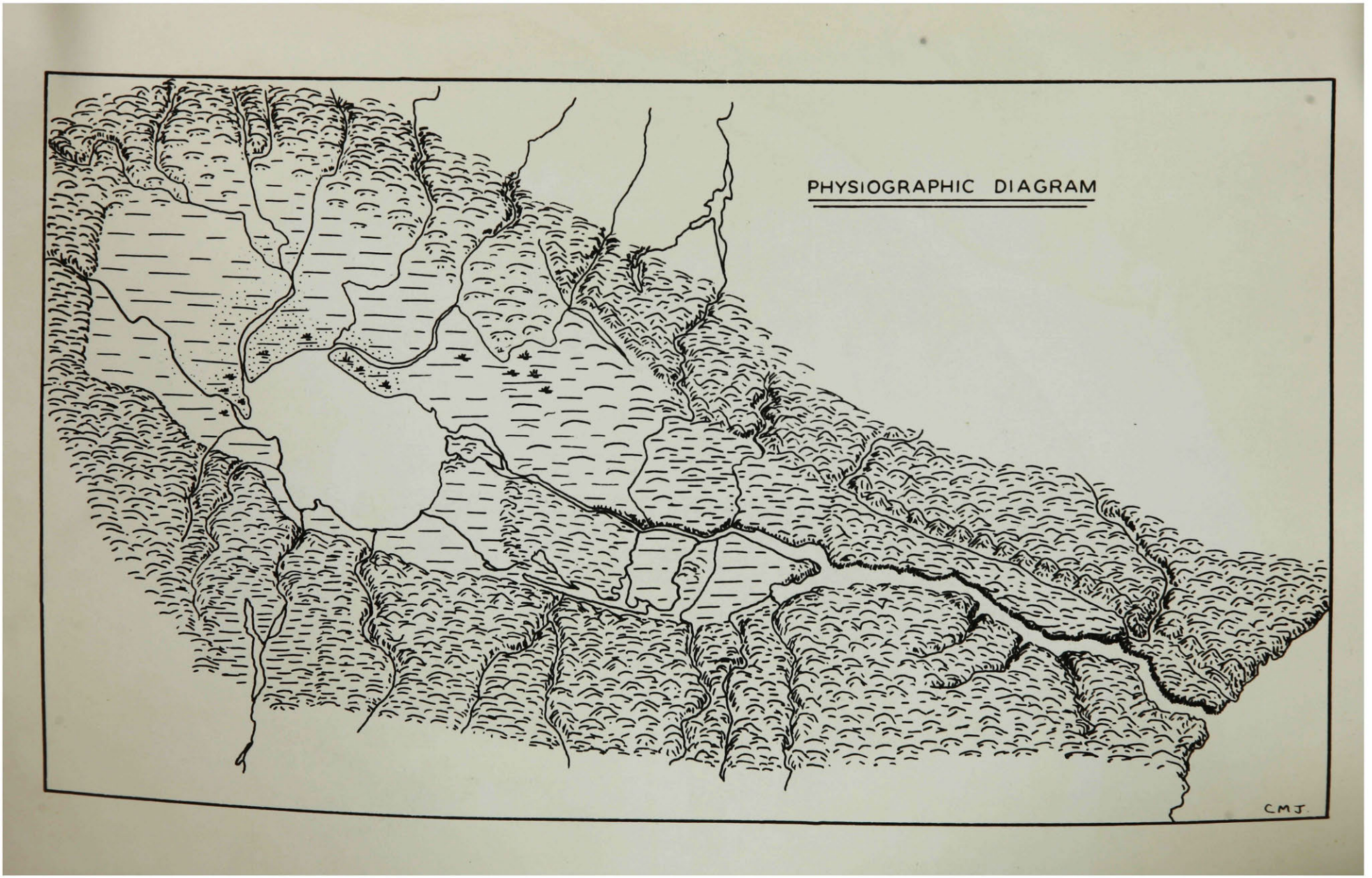
PHYSIOGRAPHIC DIAGRAM
CMJ.

Figure 4. Photograph of the Lower Saguenay, showing the surface of the plateau.

This photograph shows the rough, forested surface of the plateau bordering the Saguenay fiord, and the steep forested walls of the fiord.

(Canada Steamship Lines)

Lake St. John basin, the Saguenay fiord, and the upper Saguenay lowland - a more complex zone between, which are described in that order, and shown pictorially in Figure 3.

The Lake St. John Basin. The limits of the Lake St. John basin are marked in the west and south by the southern escarpment. East of Hébertville the boundary turns north through Labarre Township to Ile d'Alma, and continues north and west to the junction of the Alex and Peribonka Rivers, from whence it continues west and south to meet the escarpment west of the lake, but is more irregular and uneven. Except for the escarpment to the south, the rise to the highland is relatively gradual.[11]

This lowland is almost oval, it is 65 miles long, 35 wide, and has an area of 2200 square miles.[12] The drainage basin, which is much more extended to the north and northwest than to the south, covers 27,889 square miles.[13] This northward extension, together with the subdivisions of the drainage basin, can be seen in Figure 5. The rivers entering the lake have irregular profiles due to the various surfaces over which they run - some sections being almost without slope and resembling lakes, others being narrow with rapids and falls. The chief rivers emptying into the lake, starting north east of the lake and moving counter-clockwise, are as follows: the Peribonka, 300 miles long with a 12,000 square mile drainage basin,

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11 Ibid., p. 194

12 Dresser, op. cit. p.8

13 E.Racine and R.Richard, "La Forêt dans l'Economie de Saguenay-Lac St. Jean" Compte-rendu du premier Congrès provincial, l'Association Forestière Québecoise, 1944, p. 278.

and with the large tributaries of the Alex and Petite Peribonka Rivers; the Mistassini, 200 miles long with a 9,000 square mile drainage basin, and with the tributaries the Mistassibi and the Rat Rivers; the Ashuapmouchuan (or Chamouchouane), 200 miles long with a 5,700 square mile drainage basin, and with its tributary the Rivière à l'Ours; the Iroquois, Ouiatchouaniche, Ouiatchouane, and Metabetchouane Rivers, and Belle Rivière to the south, the longest of these being the 90 mile Metabetchouane.[14]

The lake itself, named Lac St. Jean by Pere DuQuen in 1647, is roughly circular in shape, measuring about 26 miles by 20 miles. Before regularization in 1925, its area varied from 413 square miles at its highest water level of 333 feet, to 312 square miles at its lowest level of 316 feet,[15] or an average of 350 square miles. It is a shallow lake (the original Indian name was Piekougami, meaning flat lake) and alluvium from the northern rivers formed sandbars at low water before regularization. The outlets on the east, the two Décharges of the Saguenay River, cross a granite outcrop, resulting in rapids and rough water.

The lowland has been covered by alluvial deposits left during the Champlain submergence, which consist of thick clay and sand terraces. The clays are fertile and excellent for agriculture. The sands occur mostly north and west of the lake, and have produced areas of dunes and marsh where they are deep. The rivers have cut small ravines through these alluvial terraces, and there are occa-

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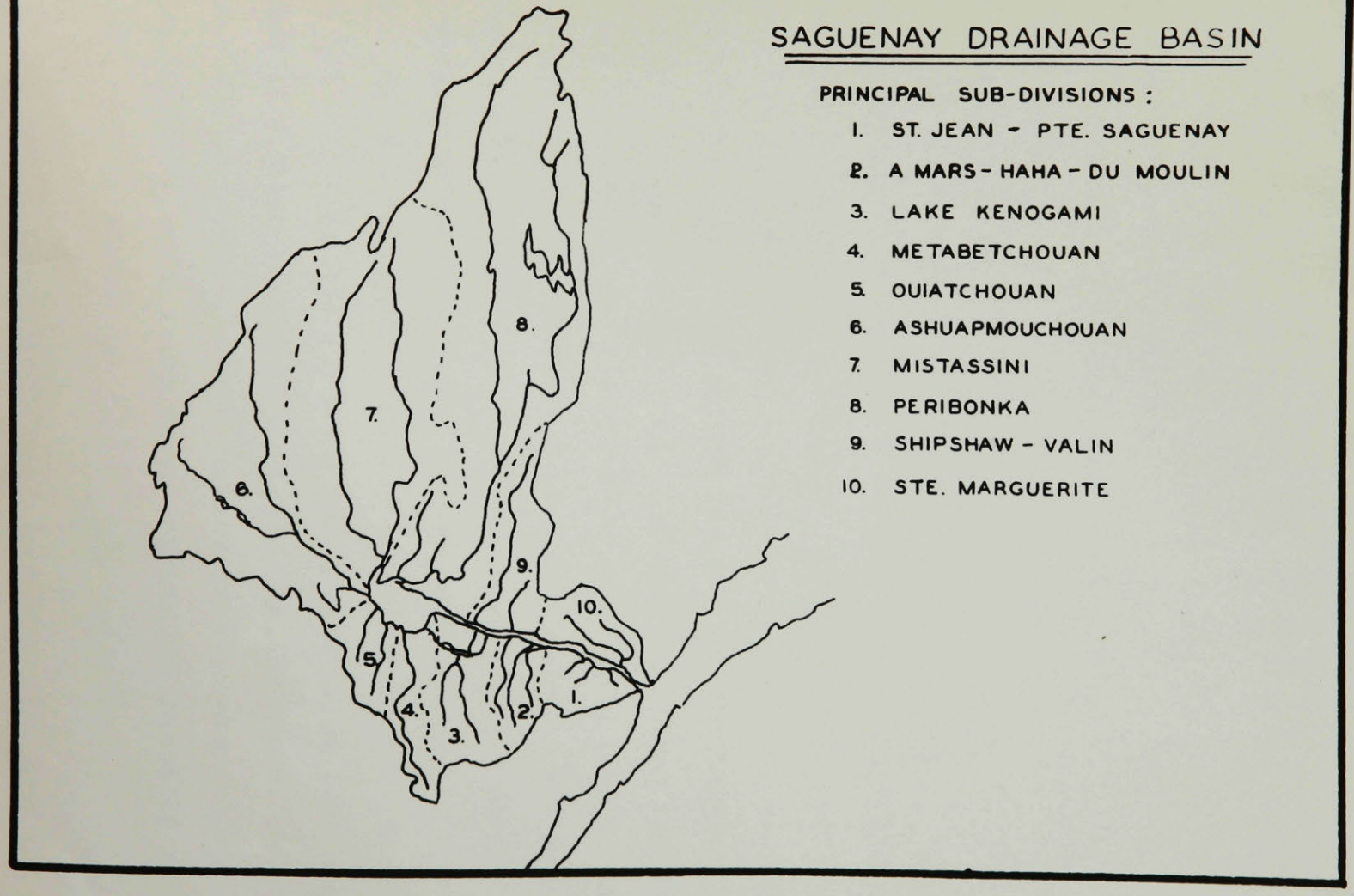
14. Blanchard, op. cit. p.21.

15 A.McN. DuBose, "The Engineering History of Shipshaw", Reprinted from The Engineering Journal, April, 1944, p.3.

Figure 5. The Saguenay drainage basin.

This sketch shows the 27, 889 square mile basin drained by the Saguenay River, and its chief subdivisions.


SAGUENAY DRAINAGE BASIN
PRINCIPAL SUB-DIVISIONS :
1. ST. JEAN - PTE. SAGUENAY
2. A MARS - HAHA - DU MOULIN
3. LAKE KENOGAMI
4. METABETCHOUAN
5. OUIATCHOUAN
6. ASHUAPMOUCHOUAN
7. MISTASSINI
8. PERIBONKA
9. SHIPSHAW - VALIN
10. STE. MARGUERITE
1.
2.
3.
4.
5.
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7.
8.
9.
10.

sional "crans" or granite outcrops, but the general appearance is that of a level fertile plain.

The Lower Saguenay Fiord. The lower Saguenay River, from Cap à l'Est, where Ha Ha Bay branches from the upper Saguenay, to Tadoussac, about 60 miles, flows almost north-west-south-east through a deep trench. It has all the characteristics of a fiord, i.e. a valley cut by a pre-glacial river along a tectonic fracture (which probably also resulted in the down-faulting of the depression to the west), which was later dug out by a glacier, and, its bed being below sea level, invaded by the sea.[16] Like all fiords, its walls are very little articulated, with long straight, unbroken stretches, and with only occasional shallow bays at the mouths of tributary rivers. The chief tributaries are the Ste.Marguerite River from the north, and the Petite Saguenay, St. Jean and Eternity Rivers from the south. The width varies from 3,600 feet at the narrowest part at Anse au Cheval, to two miles at Cap à l'Est; the high, steep walls, however, some sections bare rock, others thinly wooded, varying between 500-1,500 feet in height, make it appear narrower. Capes Trinity and Eternity, on either side of Eternity Bay, are the most impressive cliffs, being over 1,500 feet high. The sunsets are often beautifully coloured in the gorge, and the water is black and smooth. These characteristics are well illustrated in Figure 6, which shows Capes Trinity and Eternity on the right, and also in Figure 4.

The bed of the river is very irregular, the deepest sec-

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16 J.W. Gregory, The Nature and Origin of Fiords, 1913, pp. vi and vii.

Figure 6. Photograph of the Saguenay fiord.

This view shows the fiord characteristics of this section of the Saguenay River, with its high steep walls, some forested, others bare rock, and the monotonous aspect of the scenery. Capes Trinity and Eternity, the highest cliffs along its length, over 1500 feet high, can be seen at the right.

(Canada Steamship Lines)


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tion being from Anse St. Jean to Ste. Rose de Lima, where the depth is almost uniform at 145-150 fathoms, and the shallowest section is at the mouth, where the channel is 12 fathoms in depth, with depths outside the channel as shallow as 1½ fathoms.[17] The profile of the fiord along its length is shown in Figure 7.[18] Salt water and tides ascend to 6-1/3 miles above Chicoutimi. The tides produce swift currents in both the ebb and flow, and at the mouth especially there are heavy tide rips.

The Upper Saguenay Lowland. The upper Saguenay lies between the heights east of Hébertville and the commencement of the fiord at Ha Ha Bay.[19] The southern limit is the continuation of the escarpment which skirts the south of Lake Kenogami. The limit north of the Saguenay is more irregular, and runs south-east towards that river. The width of the region, then, varies from 37 miles in the west to 16 miles in the east, and the area forms a rough quadrilateral with an area of 900 square miles.[20]

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17 Charts published by the Department of Mines and Resources, Surveys and Engineering Branch, Hydrographic and Map Service, Ottawa, 1948, Nos. 1202, 1203, and 1209.

18 From Blanchard, op. cit. p. 35 from information obtained from Marine charts.

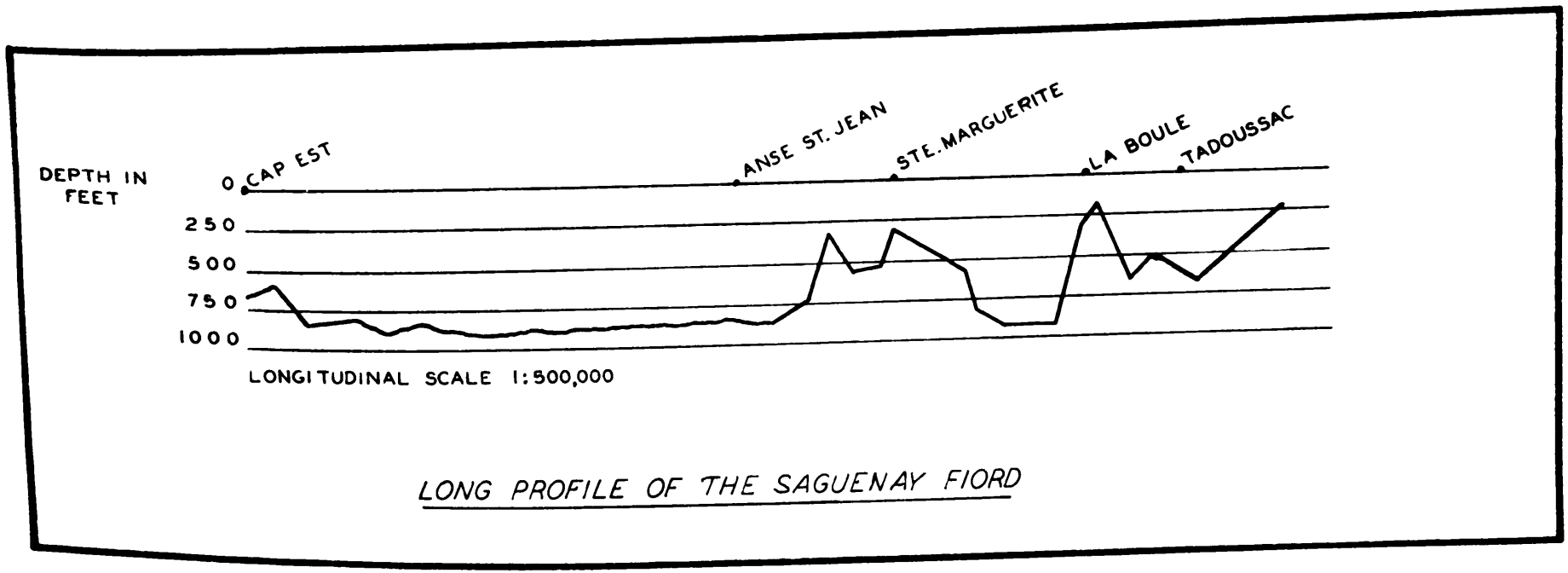
19 The origin of this unusual place name, sometimes spelled Ha! Ha!, but more usually Ha Ha, is controversial. Tradition holds that this was the cry of astonishment of the first French explorers who found it without issue. This explanation is doubtful. It may be from the word haha meaning a sunken fence or ditch, or from an older French word haha meaning a blind alley or passage.

J.W.White, "Place Names in Quebec" Ninth Report of the Geographic Board of Canada, 1910, Part II, p. 180.

20 Dresser and Denis, op. cit. p. 195.

Figure 7. Long Profile of the Saguenay fiord.

The profile shows the uneven nature of the Saguenay bed, its great depth, and the shallow sill at the mouth



LONG PROFILE OF THE SAGUENAY FIORD

Two valleys through this section join Lake St. John to the lower fiord.

The northern valley is occupied by the Saguenay River, which commences as the two Décharges - the Petite and the Grande - on either side of Ile d'Alma. The Décharges join nine miles from the lake, and the Saguenay continues east-south-east, varying in width and with many rapids and falls. The river falls 332 feet from the high water level of the lake to tidewater at Shipshaw, in its first 30 miles, the greatest single fall being the Chute à Caron near the junction of the Shipsaw River with the Saguenay, which was 114 feet high before regularization.[21] This drop in level between the lake and tidewater, together with the great volume of water of the river, was to make this section the site of one of the greatest hydro-electric power developments in the world. Below Chute à Caron the river is at sea level, and becomes an estuary, widening to two miles. This section is quite distinct from the fiord which commences at Cap à l'Est, as it has a fairly shallow channel of varying depth, with sandbars appearing at low tide. At Cap à l'Est the channel begins to deepen from about 90 to 125 fathoms. The chief tributaries of this section are the Shipshaw and Valin Rivers from the north, and the du Moulin, Chicoutimi, and au Sables Rivers from the south.

The southern valley, along the escarpment, is occupied by a discontinuous line of water. Starting from the west, it is occupied by Belle Rivière, the Rivière des Aulnaies, and Lakes Vert

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21 Plan et Profil de la Rivière Saguenay, Quebec Streams Commission, 1929.

and Kenogamichiche; it then continues by a dry valley to Lake Kenogami, which is about 16 miles long by about one mile wide, and empties northwards by the Rivière au Sables and Chicoutimi River to the Saguenay.[22] Terraces interrupt the valley for 17 miles between this lake and Ha Ha Bay, which is a continuation of the valley. It is seven miles long and about two miles wide, and is similar in characteristics to the fiord, but becomes shallower at the end, and the south shore is lower and terraced.

Many geologists[23,24,25] suggest that this southern valley was the channel of the pre-glacial outlet of the lake, later obstructed by glacial deposits so that the lake found a new outlet - the present Saguenay River. Two of the bases for this theory are that Lake Kenogami in the southern valley is deeper than the Saguenay River in the northern one, and that the rough rocky bed of the Saguenay, with many rapids and falls in this section, is characteristic of a young river bed.

An opposing theory explaining the formation of the southern valley has been put forward by Blanchard,[26] who believes that the pre-glacial river occupied the northern valley. Although both

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22 The name "Kenogami" is derived from an Indian word meaning "long lake", and "Kenogamichiche" similarly means "little long lake".

White, op. cit. p. 184.

23 Laflamme, op.cit. p. 62.

24 Dresser op.cit. p.9.

25 Frère Marie-Victorin, "Etudes floristiques sur la région du Lac Saint Jean" Contributions du Laboratoire de Botanique de l'Université de Montreal, No.4, 1925, p.16.

26 Blanchard, op.cit. pp. 50-58.

valleys were occupied by the eastward moving glacier, and later by arms of the Champlain Sea, the northern one was deeper and swifter, and retained a channel throughout its length, while the southern one became partly obliterated by alluvial deposits. As the sea retreated, Lake St. John found its outlet by the northern trench. The du Moulin and à Mars Rivers occupy short lengths of the old valley along the fault, and Lake Kenogami is the longest section to remain occupied by water. It originally emptied by three outlets, of which two remain, the Chicoutimi and Au Sable Rivers, flowing north. The third once flowed to Lake St. John by the present dry valley between lakes Kenogami and Kenogamichiche, and continued by the present Rivière des Aulnaies and Belle Rivière. However, as the level of the sea lowered. the Saguenay, being deeper than Lake St. John, captured this outlet and the river dried up, forming the present pattern of small lakes and connecting rivers.[27] This route was the early canoe route to Lake St. John from Chicoutimi, the upper Saguenay being impassable, and was edged by the first highway.

Between the two valleys is a region of complex relief. Between Lake Kenogami and the Saguenay is the Kenogami horst, which was well described by one of the earliest surveyors as "le hauteur des terres entre le Saguenay et le lac Kenogami . . . une suite de roches, de ravines, de petites lacs, et de ruisseaux".[30] This block

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27 This valley would have been filled with water again when a hydro-electric power project raised the level of Lake Kenogami thirty-two feet in 1925, had the western end of the lake not been dammed.

28 Abbé F. Pilote, Le Saguenay en 1851, 1852, p.44.

was probably lifted between transverse faults, [29] and extends from the au Sable River to east of Hébertville, and also north of the Saguenay. Being uplifted, it does not appear to have been covered by the Champlain Sea, and so has little alluvial soil.

East of this region to Ha Ha Bay is a more fertile, low-lying area of alluvial terraces with a few rock outcrops, with the exception of the peninsula of Cap Ouest, which is again rocky with only a few terraces on the south shore.

On the whole then, this upper Saguenay lowland appears to be rough and rocky country in contrast to the extensive level terraces of the Lake St. John lowland. Yet compared with the Precambrian Shield to the north and south it seems comparatively level and fertile, for the land between rock outcrops has the agricultural advantages of a plain, whereas no such features are found in the highlands.

II. SOILS

The Lake St. John lowland is covered with level alluvial Champlain terraces, broken only by small ravines eroded by the rivers and streams. The majority of the deposits are heavy clay, of high natural fertility, as they contain large quantities of phosphatic shells which provide lime. These clay terraces also have excellent arable characteristics, being generally stone-free, level, and easy to work, permitting the use of modern farm machinery. Other deposits, especially north and west of the lake along

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29 Blanchard, op. cit. p. 49.

the lower courses of the rivers and the lake shore are sandy, and are often infertile. The sand layer occurs on the upper surface, and varies in depth from two feet on the lower terraces to 100 feet on the higher.[30] If it is not too thick, it can sometimes be mixed with the underlying clay to give a good agricultural soil, but in many areas sand dunes, locally termed "l'Afrique", or marshes, resulting from the impermeable clay subsoil, occur.

The morainic soils of the Shield surrounding the lowland, and along the fiord, are thin and infertile, being stony and lacking lime . There are, however, small alluvial patches in the few bays along the lower Saguenay.

Much of the upper Saguenay lowland is rough and rocky, but there are some areas of cultivatable morainic soil between rock outcrops. Between the au Sable River and Ha Ha Bay the land was submerged by the Champlain sea and is covered with fertile alluvial deposits.

Of the total lowland area, then, approximately one-half is suitable for agriculture. About one-quarter can be eliminated as being marshy or sandy, and another quarter as being occupied by rock outcrops, ravines, lakes and rivers.[31]

III. CLIMATE

Continental Characteristics. The climate of the Saguenay depression, unchanged during historical time, is continental in character, although considerably less severe than that of the plateau surrounding.

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30 Ibid, p. 29

31 Ravine and Richard, op. cit., p. 295.

The mean annual temperature is 36°, as compared with 34° on the Shield surrounding. the mean July temperature is 65° as compared with 60°-62°; the mean maximum July temperature is 88°-91° as compared with 82°-88°, and the mean temperature for the four warmest months is 58°-60° as compared with 50°-58°. The frost-free period is 100-125 days as compared with 60-100.[32]

Table I gives the monthly averages of daily mean temperature for four typical stations in the region. Kenogami and Arvida are stations within three miles of each other in the upper Saguenay region, with Arvida being slightly more inland. Roberval is in the Lake St. John basin, on the south-west shore of the lake. The effect of this large body of water in delaying the spring rise and fall drop in temperature is apparent. Mistassini lies about 200 miles north-west of the lake and is a typical station of the plateau surrounding the lake, with its more severe climate.[33]

Table I MONTHLY AND ANNUAL AVERAGES OF DAILY MEAN TEMPERATURE.

	Arvida	Kenogami	Roberval	Mistassini
Total number of years of observation:	10	17	13	14
Monthly average of daily mean temperatures:				
January	4	2	-1	-2
February	6	5	3	0
March	20	20	18	15
April	36	36	34	33
May	50	49	48	48
June	60	60	59	57
July	65	65	65	64
August	63	62	62	60
September	54	52	53	52
October	42	41	42	40
November	28	26	26	24
December	10	10	10	8
Annual Average of daily mean temperature:	36	36	35	33

32 G.O.Villeneuve, "Climatic Conditions of the Province of Quebec and their Relationship to the Forests", Province of Quebec, Department of Lands and Forests, Forest Protection Service, Bulletin No. 6, 1946, pp. 17-30.

33 Figures courtesy of the Quebec Streams Commission, 1949.

This oasis of warmth in the Shield has a climate not far distant in summer from that of the Montreal area, 300 miles to the south, which has a mean July temperature of 70°. However, the frost-free period, which averages 150 days in Montreal, is shorter in the Saguenay area, and the annual precipitation is less, being 30-35 inches as compared with about 40 in Montreal. The region has a warmer summer than that of Quebec, however, with the mean maximum of the three warmest months being 4° higher, and the mean minimum of these months being only 1° less. (94° and 30° against 89 and 31 at Quebec).[34] The mean monthly precipitation of the four warmest months is high, being 4-5 inches, but evaporation during this period is also high, due to high temperatures and strong winds.[35] Figure 8 compares the average total precipitation of the Montreal, Quebec, Lake St. John, and upper Saguenay (Arvida) districts based on the total years of observation. This graph shows clearly the low winter precipitation of the last two districts, and the high level of precipitation from June to September. The great range between low winter and high summer temperatures, which is about 120°, the summer maximum of precipitation, and the short frost-free season, are characteristic of a continental climate.

The Effects of the Climate. These effects were to be of importance in two aspects of the economy which developed - agriculture, and the production of hydro-electric power, and were also reflected in forest distribution. (Cf. post p. 26)

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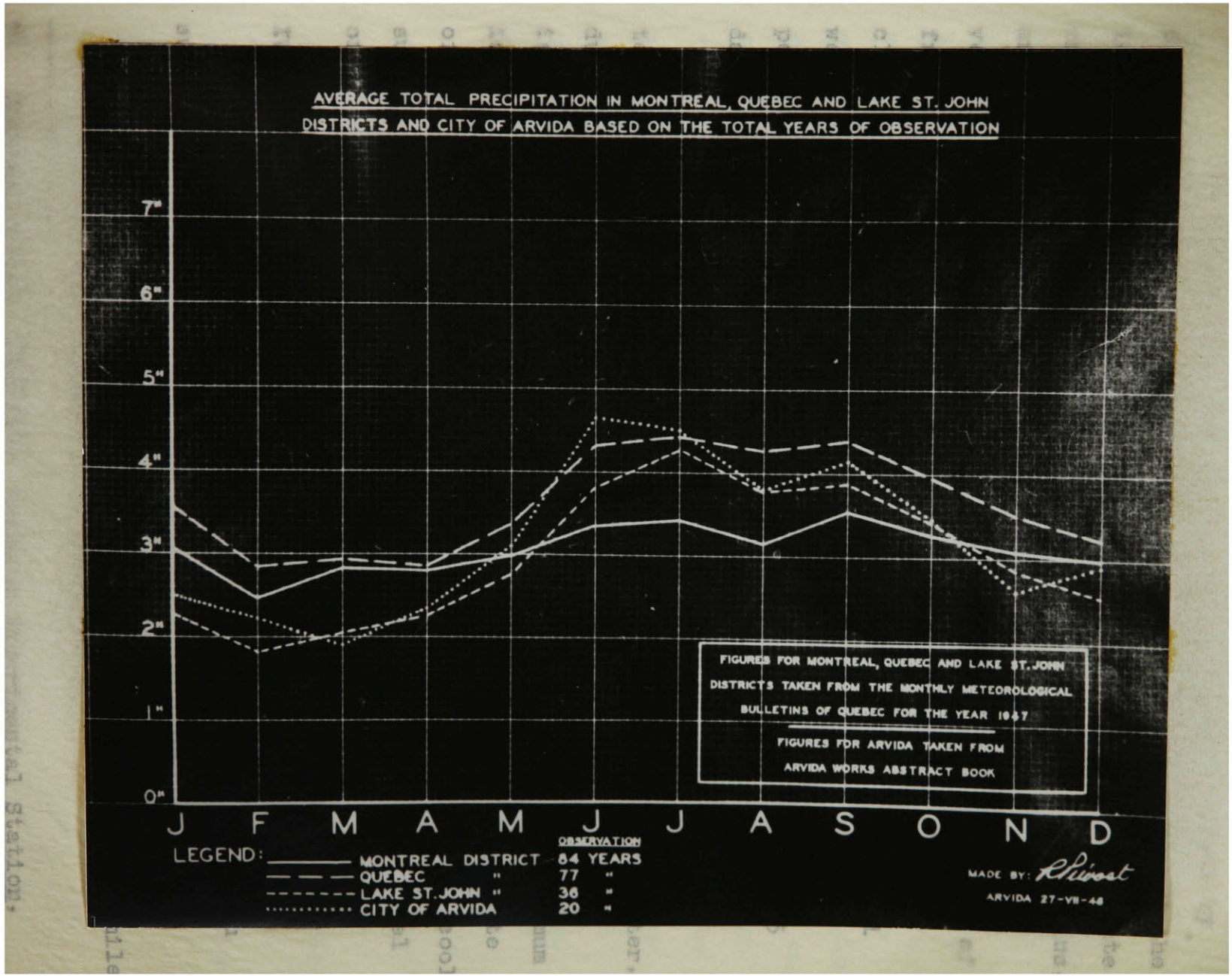
34 Racine and Richard, op. cit. p. 282.

35 Villeneuve, loc. cit.

Figure 8. Average total precipitation in Montreal, Quebec, Lake St. John districts, and City of Arvida, based on the total years of observation.

This chart shows the low level of precipitation of the Lake St. John-Saguenay region during the winter months, and the high level from June to September. The difference between the winter minimum and summer maximum is more marked in this region than at Montreal or Quebec. Such a high summer maximum is typical of a continental climate.


AVERAGE TOTAL PRECIPITATION IN MONTREAL, QUEBEC AND LAKE ST. JOHN
DISTRICTS AND CITY OF ARVIDA BASED ON THE TOTAL YEARS OF OBSERVATION
7"
6"
5"
4"
3"
2"
1"
0"
J F M A M J J A S O N D
FIGURES FOR MONTREAL, QUEBEC AND LAKE ST. JOHN DISTRICTS TAKEN FROM THE MONTHLY METEOROLOGICAL BULLETINS OF QUEBEC FOR THE YEAR 1947
FIGURES FOR ARVIDA TAKEN FROM ARVIDA WORKS ABSTRACT BOOK
LEGEND:
OBSERVATION
MONTREAL DISTRICT 84 YEARS
QUEBEC " 77 "
LAKE ST. JOHN " 36 "
CITY OF ARVIDA 20 "
MADE BY: R. Priest
ARVIDA 27-VII-48

In agriculture, the short growing season is offset by the hot summer which hastens maturity of the crops in spite of the late start. The conditions permit the cultivation of cool climate crops as in the St. Lawrence lowland, chiefly pasture, hay, grains, and root crops. The cultivation of corn and tender fruits and vegetables, which need a longer growing season, and in the case of fruit trees, a less severe winter, is not possible. Numerous climatic difficulties are encountered by agriculturalists - cool wet summers, severe summer droughts, and varying frost-free periods, sometimes as short as 71 days, sometimes as long as 135 days.[36]

In hydro-electric development both precipitation and temperature are of importance also. The minimum flow is in winter, due to the frozen rivers and frozen precipitation; the maximum is in May, with snow melt and low evaporation; the summer minimum is higher than the winter, due to the heavy rainfall and in spite of a high rate of evaporation, so that this is more marked in cool summers; the fall brings a second maximum, due to the high level of precipitation and low evaporation.[37]

IV NATURAL VEGETATION

The depression of the Saguenay lowland and the plateau surrounding were originally forest covered.

With the exception of the lowland, the 27,889 square mile

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36 Progress Report, 1936-1946, Dominion Experimental Station, Normandin, Quebec, 1949, pp. 5-9

37 Maurice Pardé, "Hydrologie du St. Laurent et de ses Affluents" Révue Canadienne de Géographie, 2: 47, 1948.

drainage basin of the Saguenay, of which 86% is forested, is covered with northern coniferous forest. Five-sixth of the forest of the basin is thus classed as coniferous.[38]

Coniferous Forest of the Plateau. This forest surrounds the mixed forest zone of the lowlands. The bulk of the trees in the coniferous zone are black and white spruce, balsam fir, and jack pine, with the dominant species in any area being one or several of these. Black spruce and balsam fir predominate south of Lake St. John, with black spruce, balsam fir and jack pine predominant north and west of the lake, and black and white spruce east of it. Jack pine is dominant on dry sandy soils and after forest fires, black spruce generally on swampy or rocky soils, and white spruce on the best drained and richest soils. White birch, aspen, and balsam poplar are secondary species, occurring most often on lake and river shores, and on the better soils. Tamarack, northern white cedar, and yellow birch occur occasionally. [39,40,41]

It is this coniferous forest which came to be exploited for pulpwood, with spruce, balsam and some jackpine being cut wherever accessible. The relatively few species result from the cool climate, the acid nature of the rocks, and the effects of the glaciation, which removed most of the topsoil, leaving only a thin stony layer of soil.[42] The distribution of species in the conifer-

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38 Racine and Richard, op.cit., p.284

39 Ibid., pp. 283-284.

40 Villeneuve, op.cit., pp. 39-42.

41 W.E.D.Halliday, A Forest Classification for Canada, 1937, p.12.

42 Marie-Victorin, op.cit., p. 33.

ous forest is believed by one expert[43] to be controlled by climatic vsriations, although different soils may differentiate associations within a homogeneous climatic zone. The coniferous region has a shorter growing season, lower summer temperatures, and more severe winters than the mixed forest zone of the lowlands.

Mixed Forest of the Lowland. The original mixed forest on the fertile lowlands presented a strong contrast to the coniferous forests surrounding, although today most of the area has been cleared. The dominant species were red and white pine (the basis of the lumber industry of the nineteenth century), yellow birch, white elm, sugar maple, black ash, white cedar, basswood, and balsam poplar. Dominant and secondary species of the coniferous zone also occur, especially on the moister, colder soils, and at higher elevations along the peripheries of the lowland, and also tend to replace mixed-forest species after fires. These are chiefly white spruce, white birch, balsam fir, and aspen. Occasionally, in favoured locations, black ash, linden, poplar and American elm are found.[44,45,46]

The forests of the drainage basin renew themselves in about 70 years if cut, but require about 100-125 years if burnt, due to the destruction of seedlings, and, to some extent, of the

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43 Villeneuve, op.cit., p.55.

44 Halliday, op.cit., p.33.

45 Villeneuve, op.cit., pp. 45-48.

46 Racine and Richard, op.cit. p. 284.

soil.[47] Annual increase per acre of the forests is usually estimated at 16 cu.ft. for coniferous, and 3.7 cu.ft. for deciduous species. These figures are considered by some foresters to be over-estimates for regions north of the 49th parallel, where most of the Saguenay drainage basin lies (due to the short growing season) who believe an annual increase of 10 cu.ft. per acre is more accurate.[48]

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47 L'Histoire du Saguenay, publication of the Société Historique du Saguenay, 1938. p.15.

48 Racine, and Richard, op.cit., p. 288.

CHAPTER III

THE PRE-COLONIAL AND FUR ERA, ENDING 1838

The economy of the Saguenay Valley from its earliest history to 1838, the date of the arrival of the first colonists, was based on the fur trade. The efforts of the fur companies to keep out intruders, and isolation from settled areas, caused the agricultural and forest potential of the region to be almost unknown to outside areas. In spite of encouraging reports by explorers and missionaries, then, it remained uninhabited by white men except for the personnel of the fur posts and missions. The face of the landscape therefore suffered little change during the period.

I. HISTORY OF DEVELOPMENT DURING THE PRE-COLONIAL AND FUR ERA

Early Fur Trade Explorers. The Montagnais (meaning "Mountaineers") Indians occupied the rough Shield country of the Saguenay drainage area, between the St. Maurice and Sept Iles, and west to the height of land dividing the St.Lawrence and Hudson Bay drainage. These Indians were a member of the Algonkian language group, and,like the other members, were ignorant of agriculture and had no permanent settlements, living exclusively by hunting and fishing. They hunted in small groups in the interior in the winter, for moose and fur-bearing animals, and in the summer fished and sealed along the Saguenay and St.Lawrence shores. They had no tribal organization, having only temporary war chiefs. Their numbers were probably considerable, as they were able to muster as

many as one thousand warriors at the mouth of the Saguenay.[1] There were nine divisions of the Montagnais, named according to the region they occupied. Their names and distribution are shown in Figure 9.[2] Tadoussac, at the mouth of the Saguenay, was the site of their regular summer fair, where they traded furs with Indians from south of the St.Lawrence, in exchange for corn and tobacco.

According to the historians Lescarbot[3] and Charlevoix[4], Basque, Breton, and Norman fishermen were trading along the east coast of the continent and in the St.Lawrence gulf, and presumably at Tadoussac, before the time of Cartier. This explorer, however, is the first white man who is known definitely to have stopped at Tadoussac, on September 1, 1535, on his second voyage to the New World. He described the lower fiord with its steep, granite, forested walls, and poor soil, as "un rivière fort profonde et courante . . . est icelle rivière entre hautes montagnes de pierre nue, sans y avoir que peu de terre, et nonobstant y croit grande quantité d'arbes, et de plusieurs sortes".[5] He continued on to Hochelaga (the island of Montreal), where the Indians described to him the wealthy region of "the Saguenay", and the two rivers by which it might be reached, the Saguenay and the Ottawa, the latter

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1 D.Jenness, The Indians of Canada, 1932, pp. 270-274.

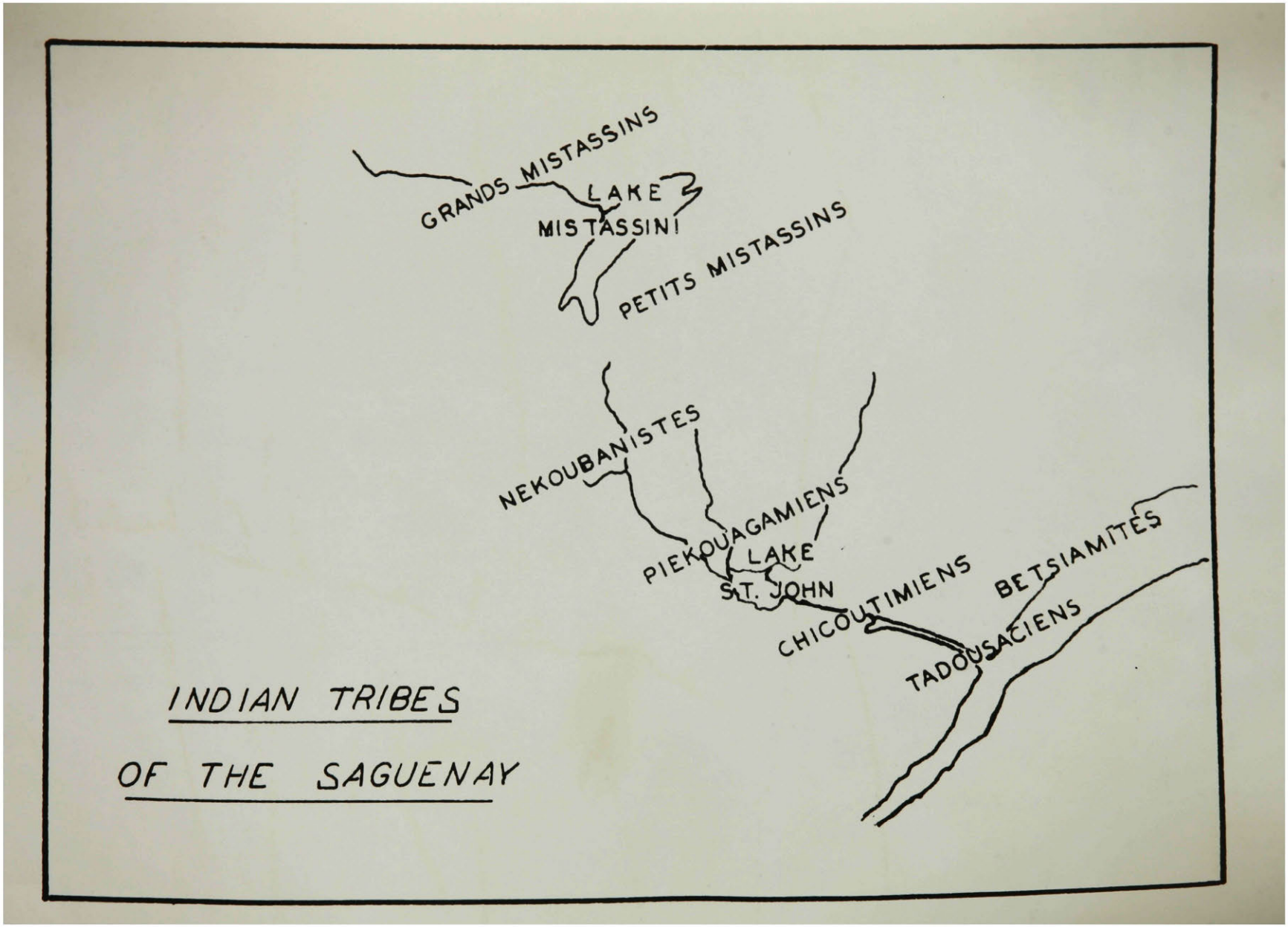
2 N.Bellin, "Carte de la Partie Orientale de La Nouvelle France," in Rev.P.Charlevoix, History and General Description of New France, 1744, translated by J.G.Shea. 1900, Vol.IV, p. 9.

3 M.Lescarbot, Histoire de la Nouvelle France, 1608, New Edition 1866, Vol.I. p. 220.

4 Charlevoix, op.cit., Vol.I, p. 115.

5 H.P.Biggar, The Voyages of Jacques Cartier, 1924, pp.114-116.

Figure 9 Divisions of the Montagnais Indians of the Saguenay region.


GRANDS MISTASSINS
LAKE
MISTASSINI
PETITS MISTASSINS
NEKOUBANISTES
PIEKOUAGAMIENS
LAKE
ST. JOHN
CHICOUTIMIENS
BETSIAMITES
TADOUSACIENS
INDIAN TRIBES
OF THE SAGUENAY

being the more direct route. They described it as a fabulous region, where men dressed like the French, "lived in cities and have much gold, rubies, and copper".[6] The extension of the region as they described it, stretching west to Lake Superior, is shown in Figure 10.

Cartier in a later expedition tried to reach this region by the Ottawa River, and Roberval in 1542 also is believed to have attempted it unsuccessfully.[7]

The fur trade continued in an unorganized but profitable fashion until the end of the sixteenth century. The summer fair at Tadoussac was now even more important, with the French trading attractive articles like axes, cloth, and utensils. The fur trade is considered to have been at its height from 1560 to 1600.[8] During this time Stadacone, Trois-Rivières, Hochelaga, and Tadoussac were the chief trading posts, with Tadoussac the oldest, richest, and most frequented, due to its site at the mouth of a river which was the outlet of a large fur-producing region, and as the first post to be reached by European ships.

A French explorer and trader, de Pontgravé, having made several voyages to Tadoussac, persuaded a Mr. Chauvin to obtain the exclusive privilege of fur trade for that region in 1600, with de Pontgravé to lead the expeditions. They arrived at Tadoussac

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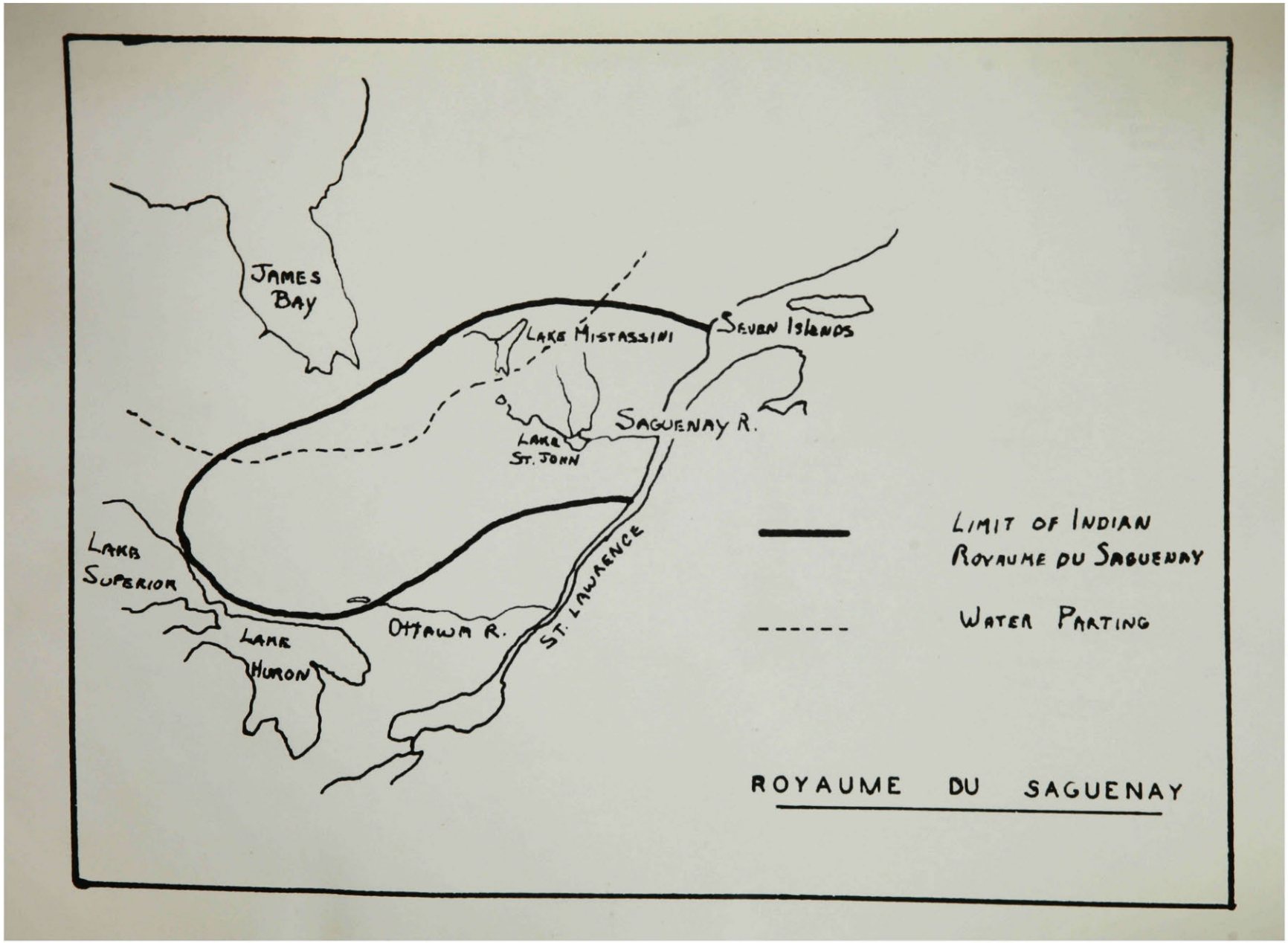
6 Ibid., pp. 125-6

7 L'Histoire du Saguenay, 1938, p. 38.

8 E.Achard. Le Royaume du Saguenay, 1942, p.28.

Figure 10. The "Royaume du Saguenay" as described by the Indians to Cartier.


JAMES BAY
LAKE MISTASSINI
SEVEN ISLANDS
SAGUENAY R.
LAKE ST. JOHN
LAKE SUPERIOR
LAKE HURON
OTTAWA R.
ST. LAWRENCE
LIMIT OF INDIAN ROYAUME DU SAGUENAY
WATER PARTING
ROYAUME DU SAGUENAY

in that year and had a successful season, and built a trading post on the terrace overlooking the harbour.[9] He left sixteen men, of whom eleven died during the winter. In 1601 they spent another successful season, but Mr. Chauvin died in that year, and de Chatte, governor of Dieppe, inherited the monopoly. The next year he sent out an expedition under de Pontgravé and Champlain, to occupy the post, map the region, and find land to settle. This party stopped and traded at Tadoussac on its way to and from the Lachine Rapids.[10]

De Chatte died in 1603, and the monopoly was purchased by the Sieur de Monts, his successor as governor of Dieppe. Deciding that the area around Tadoussac was unfit for colonization, he established a colony at Port Royal, although the fur trade continued at the Tadoussac post.

De Monts sent Champlain to explore the St. Lawrence in 1608, and the explorer investigated the Saguenay fiord as to its possibilities for settlement, but he ascended only a short distance and found no good land. He described the harbour at Tadoussac, the Indians, the swift tides at the mouth of the Saguenay, and its rocky, forest-covered shores.[11] Except for the terrace at Tadoussac, he remarked that all the land that he saw "consisted of nothing but

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9 This post, which was 25 feet long, 18 wide, and 8 high, had a stone foundation and was built of planks, has been accurately reconstructed by the Canada Steamship Lines on the grounds of the Tadoussac Hotel where it now serves as a museum. Figure 11 shows the reconstructed post.

10 Charlevoix, op. cit. pp. 245-246.

11 A.N.Bourne, translator, and E.G.Bourne, editor, The Voyages and Explorations of Samuel de Champlain (1604-1616) Narrated by Himself, 1911, Vol.I, p. 166.

Figure 11. The Chauvin Post, built 1600, reconstructed 1942.

This building, believed to have been the first permanent building constructed by white men in North America, was built at Tadoussac in 1600 . It was reconstructed by Canada Steamship Lines on the property of the Tadoussac Hotel in 1942, where it serves as a museum.

(Canadian Steamship Lines)

mountains and promontories of rock, for the most part covered with firs and birches - a country very disagreeable from whatever point of view; in short, it is a real desert without inhabitants".[12] His sketch map of Tadoussac drawn 1608, the first map of the region, is shown in Figure 12. It pictures the Chauvin post, the Indian camp, and the mountainous country.

At Pointe aux Allouettes, facing Tadoussac, Champlain allied the French to the Algonkins and Hurons against the Iroquois. Although this alliance has been judged as a chief cause of the ultimate loss of New France to the English, it appeared necessary at the time. The Algonkins controlled most of the land in which Champlain was interested, travelled throughout it widely, and supplied the furs he desired for trade. He knew little of the Iroquois, except that they practised agriculture, built permanent villages, and were less rich in furs; but their strength in military and political organization, supported by the English and Dutch, were to be of greater importance to the colony.[13]

Until 1632 Tadoussac was the seaport of Canada and the stopping point for every French ship, even for smaller ones which continued to Quebec and Trois-Rivières to load pelts. Various companies traded and quarrelled in the region, and the average export from Tadoussac each year was 15,000 to 20,000 pelts.[14]

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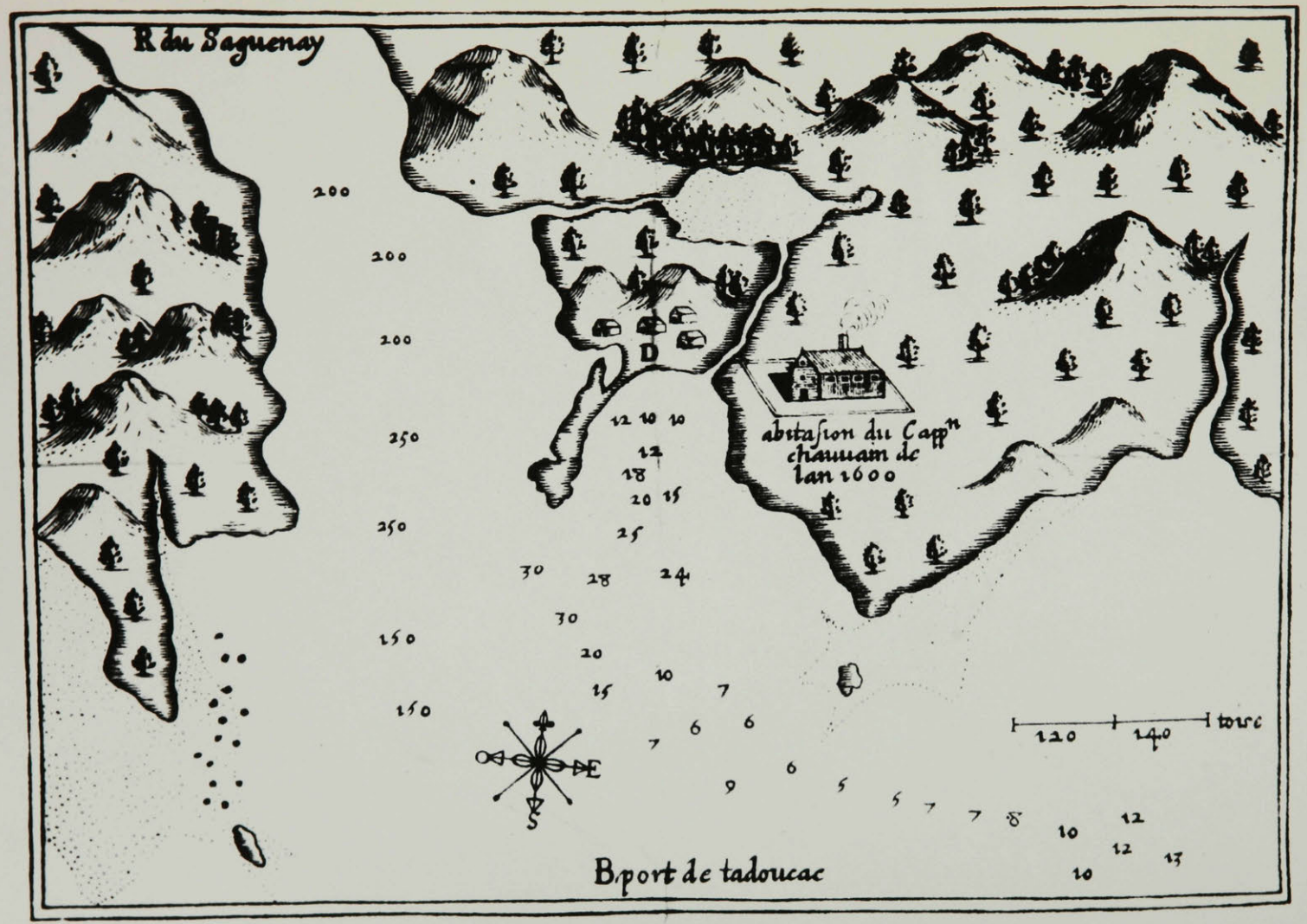
12 Ibid. p. 168.

13 Jenness, op. cit., p.1.

14 L'Histoire du Saguenay, p. 53.

Figure 12. Tadoussac, drawn by Champlain in 1608.

This sketch shows the Chauvin Post, built 1600, the camps of the savages where they came to trade, and the mountainous aspect of the country.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B port de tadoucac

In 1628 the Kertk brothers captured Tadoussac for the English, and in 1629 based from there a successful attack on Quebec.[15] In 1632 France regained the colony, and from this date ships continued to Quebec directly, which soon became the chief port of the colony, and the importance of Tadoussac diminished.

After 1614 the monopoly of the fur trade of the Saguenay, known as the "Traite de Tadoussac", was sold by auction to a series of companies - the Compagnie des Marchands, 1614-20, the Compagnie des Sieurs de Caen, 1621-27, the Compagnie des Cent Associés (or de Nouvelle France), 1626-44, and the Compagnie des Habitants, 1644-63.[16] In 1663 the area became crown property, the "Domaine du Roi", and was auctioned out by the king for twenty-one year periods to trading companies. The "fermiers" closed the territory to all save government officials and missionaries, lest their monopoly be endangered - a practice which continued even after the French regime.

Role of the Missionaries. Missionaries played an important part in the history of the region during the period, and also added to geographical knowledge with descriptions and maps of their wide travels. The first missionary in the area was Dolbeau of the Récollets fathers, who was brought to the colony by Champlain in 1615, and made his headquarters at Tadoussac in that year. In 1626 the wealthier Jesuit fathers replaced the Récollet order in New France, and in 1632 Pere Le Jeune was the

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15 Charlevoix, op. cit., p. 51.

16 Charlevoix, op. cit., Vol.II, p. 39.

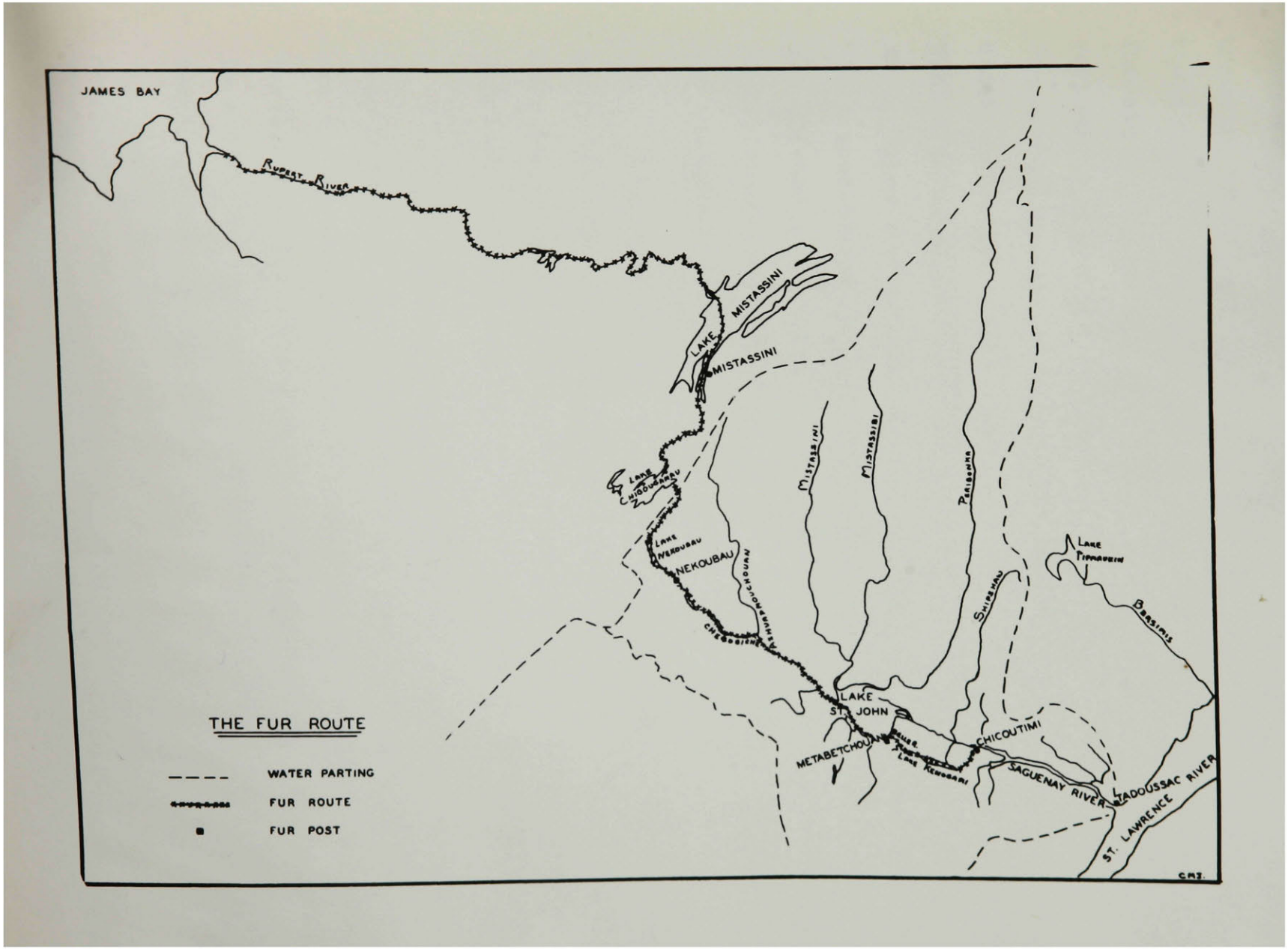
first to arrive at Tadoussac, followed by DeQuen.

This missionary travelled widely, following the Indians into the interior, and ascended to Lake St.John, which he so named, in 1647 and 1652. The route he followed was that followed by the Indians in bringing down furs to Tadoussac, and was the only possible canoe route. He left the Saguenay River at the present site of Chicoutimi, ascended the Chicoutimi River, portaging at the eighty foot fall at its mouth and portaging at seven more falls on the river before reaching Lake Kenogami. He continued west along this lake, then by an easy portage to Lake Kenogamichiche, and from that lake down the Rivière des Aulnaies, portaging to the Belle Rivière at the present site of Hébertville, and so to Lake St.John. Although DeQuen went no further, the fur route continued across the lake and up the Ashouapmouchouane to the first falls, then by the tributary Chegobiche to Lake Ashuapmouchouane and Lake Nekoubau near the watershed. From here Lake Mistassini was easily reached by water, and so down the Rupert River to James Bay. This route, with the fur posts later constructed along it, is shown in Figure 13.

In 1661 an expedition organized by the French governor, which included the Jesuits Dablon and Druillettes, attempted to reach Hudson Bay by this route. They reached Lake Nekoubau, but news that the Iroquois had attacked Tadoussac forced them to return. The Iroquois were revenging their previous defeats at the hands of the Montagnais and Algonquins, who, armed by the French, had ousted them from most of the St. Lawrence Valley. These at-

Figure 13. The fur route from Tadoussac to James Bay.

This map shows the canoe route followed by the Indians and the early explorers and missionaries who penetrated into the interior. The fur posts built during the period are also shown.


JAMES BAY
RUPERT RIVER
LAKE MISTASSINI
MISTASSINI
LAKE CHIBOUAMAU
LAKE NEKOUBAU
NEKOUBAU
CHIBOUAMAU
MISTASSINI
MISTASSIBI
PERIBONKA
SHIPSHAW
LAKE PIPMUACAN
BASSINS
LAKE ST. JOHN
METABETCHOUAN
CHICOUTIMI
LAKE KENOGAMI
SAGUENAY RIVER
TADOUSSAC
ST. LAWRENCE RIVER
THE FUR ROUTE
WATER PARTING
FUR ROUTE
FUR POST
C.M.I.

tacks at Tadoussac and the lower Saguenay disrupted the fur trade of the region, and the Montagnais for some time avoided those parts. On their journey, the missionaries noted the fine forests of the lowland surrounding Lake St.John, which they described as presenting "a beautiful appearance", and continued, "It has the appearance of being crowned with a beautiful forest which shades its shores, and . . . forms a kind of verdant scene". They also noted the important location of the later post of Chicoutimi, "lieu remarquable pour être le terme de la belle navigation et le commencement des portages". And although a fur post was not established at Nekoubau for another thirty years, they remarked that already it was "a place of trade which gathered almost all the northern nations".[17]

Because of the failure of this expedition, the English, led by Radisson and Groseilliers, won the race in claiming Hudson Bay, and the Hudson's Bay Company was founded in 1670. This substantially reduced the fur area tributary to the Saguenay.

In 1672 Pere Albanel succeeded in reaching Hudson Bay from Tadoussac, the first time it had been reached by white men via the Saguenay route and Lake Mistassini. He also noted the fertility of the lowland surrounding Lake St.John, stating, "It is a beautiful region, the land being very level and apparently fertile, with fine prairies".[18]

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17 R.G.Thwaites, editor, The Jesuit Relations and Allied Documents, 1896-1910, Vol. XLVI, p. 260-261.

18 Ibid. Vol. LVI, p. 155

Fur Trade after 1672. Now that the route was known, the French tried to penetrate to the Indians of the area to persuade them to bring out their furs by this route rather than sell them to the English at Hudson Bay. At this time there was only one post in the region, that of Tadoussac, but as the animals were becoming scarce in the southern section, and also to compete against the English, others were built in the interior. In 1676 two posts were built, both with missions, one at Chicoutimi, and the other, with a large farm run by the Jesuits, at the mouth of the Metabetchouan River. Here three hundred acres were cleared, cereals and fruit trees were grown, livestock raised, and a flour mill constructed.

The fur trade, however, was much reduced in spite of great efforts made to sustain it.[19] These included the formation of a new company, the Compagnie du Nord, in 1682, the expeditions of d'Iberville against the English at Hudson Bay (which was recognized as English in 1713), and the establishment of two more posts, at Nekoubau and at Lake Mistassini, in 1690. The "Postes du Roi" now formed "une chaine qui suivait le grande route du commerce des fourrures de Tadoussac à la baie Hudson"[20] and can be located on Figure 13.

Trade at Tadoussac diminished to the extent that it was unprofitable for the monopolists, and a group of citizens of New France presented in 1693 a petition to the Intendent to open

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19 Achard, op.cit., pp. 66-70.

20 L'Histoire du Saguenay, p.89.

the Saguenay for agriculture. The authorities, believing that the lack of trade was due to poor administration, ignored it.[21]

The period 1700-1720 has been called the "période de ralentissement".[22] The fur companies were bankrupt due to the reduced number of Indians and scarcity of furs, and to English competition. The mission posts also were deserted. However, in 1720 Père Laure arrived for an eighteen year stay, during which he reorganized the missions and travelled throughout the region, mapping it as far west as Lake Mistassini. A section of his map[23] which covers a large area north of the St. Lawrence, is shown in Figure 14. Although inaccurate, his achievement is admirable when it is considered that it was accomplished by one man travelling by canoe. The canoe route to Lake Mistassini, the portages along its length, and the fur posts, are shown. The description in his relation of 1730 of the post at Tadoussac - "qui ne consiste qu'une maison de bois et un magasin"[24] shows the depressed nature of the fur trade, as it was more extensive later in the period. (Cf. post p. 44). He also accurately described the appearance and climate of the Lake St.John lowland, and the abandoned Jesuit farm at Metabetchouan - "Il (Lake St.John) est poissoneux, les environs en sont beau, la vue agréable, les terres bonnes, mais le plupart des grains, surtout le blé d'inde, n'y sauront venir a maturité a cause de freqens nord-oiest qui de bonneheure y

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21 Ibid., p. 98.

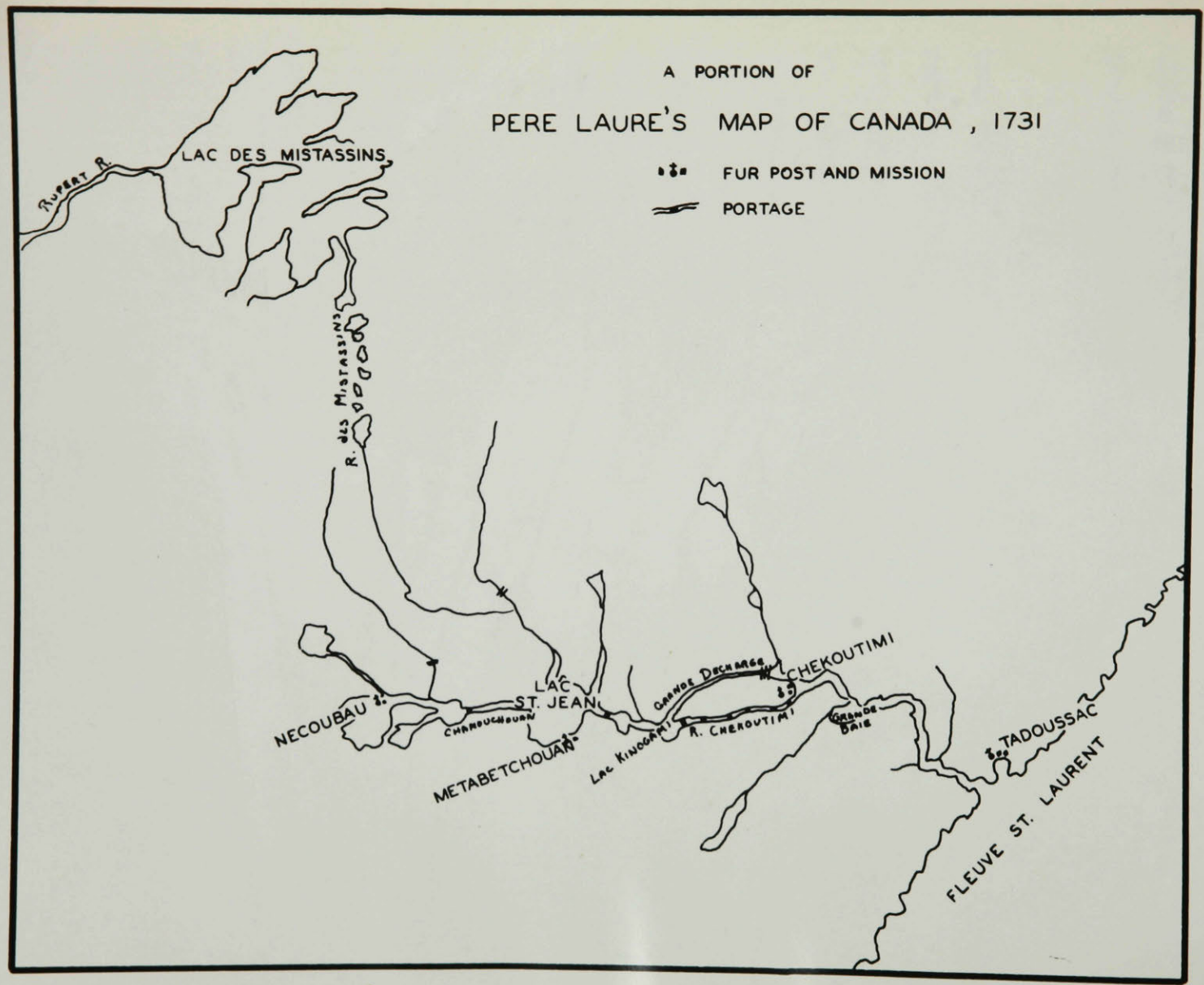
22 Ibid., p. 105.

23 P.Laure J., *Map of the Domain in Canada dedicated to Monseigneur le Dauphin*, Chekoutimi, 1731.

24 R.P.Laure S.J., *Mission du Saguenay*, Relation inédite, 1720-30, p. 28.

Figure 14. The Saguenay region, as mapped by Père Laure, 1731.

This map covers almost the same territory as that of Figure 13, so that the pardonable inaccuracies of the missionary's map can be recognized by a comparison of the two. His map shows the portages and falls along the route, and the fur posts then in existence.


A PORTION OF
PERE LAURE'S MAP OF CANADA , 1731
FUR POST AND MISSION
PORTAGE
RUPERT R.
LAC DES MISTASSINS
R. des Mistassins
NECOUBAU
CHABOUCHOUAN
LAC ST. JEAN
METABETCHOUAN
LAC KINOGAMI
GRANDE DECHARGE
R. CHEKOUTIMI
CHEKOUTIMI
GRANDE BAIE
TADOUSSAC
FLEUVE ST. LAURENT

sont très piquans et donnent de la neige vers la fin d'août quelquefois. Une partie de l'ancien établissement des missionaires y subsiste encore, où l'on voit qu'il y avait un grand jardin et une chapelle."[25]

A new company - the Compagnie d'Occident - gained control of the Traite de Tadoussac in 1718, and restored some prosperity. In 1725 the Gardeur de Tilly, who was at that time exporting pine masts from Baie St.Paul and les Eboulements on the St. Lawrence, and Grosse Roche above Tadoussac on the Saguenay, ascended that river to explore the possibilities of the pine forests. He found extensive areas of suitable forest, and especially recommended the junction of the Rivière du Moulin, below Chicoutimi, with the Saguenay, as a site for exploitation.[26] This recommendation was not acted upon, however, until 1842.

First Official Survey 1732. In 1732 the surveyor J.L.Normandin, at the Intendant's instruction, mapped the Saguenay drainage basin, penetrating as far as two hundred miles west of Lake St. John. He reached that lake by way of the Ouiatchouan, describing the region around the present Commissioners Lake as the "Pays des Plaines", consisting of "Bonnes Terres" and "Beaux Bois". He also marked the southern shore of Lake St. John as "Belles Terres", and areas of "Beaux Bois" along the Ashuapmouchouan and Chegobiche Rivers, by which he reached Lake Nekoubau and the water

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25 Ibid., p. 34.

26 L'Histoire du Saguenay, p. 124.

parting.[27] By this survey the official limits of the Domaine du Roi were fixed, and are shown in Figure 15. It covered 72,000 square miles. The eastern limit was the north shore of the St. Lawrence for three hundred miles from a point opposite Ile aux Coudres to Cap Cormoran below the Moisie River. The southern limit was a line drawn from the north-east end of Ile aux Coudres to the source of the Metabetchouan River, the western one was the watershed between the Lake St. John drainage and that of the St. Maurice and James Bay and to the north the Domaine stretched indefinitely.

Following the delimitation of the Domaine, a census of the area was taken in 1733. The Indian population consisted of 220 families, or 1100 people. Their numbers had been greatly reduced by epidemics. The French population numbered thirty, divided among the six posts of Tadoussac, Chicoutimi, Mistassini, Nekoubau, and Islets de Jérémie and Moisie on the north shore. The trading posts, stores, and goods actually in the area were valued at $12,000 (in present currency), and the fur trade was yielding annually 20,000 pounds weight of beaver pelts, and 25,000 to 30,000 pounds of other fur.[28]

Fur Trade after 1763. In 1763, at the cession of New France to England, the fur trade came under the control of the Hudson's Bay Company, which, like its predecessors, continued to discourage any clearing, settlement, or exploration. From 1788 to 1822 the former Postes du Roi came under the control of

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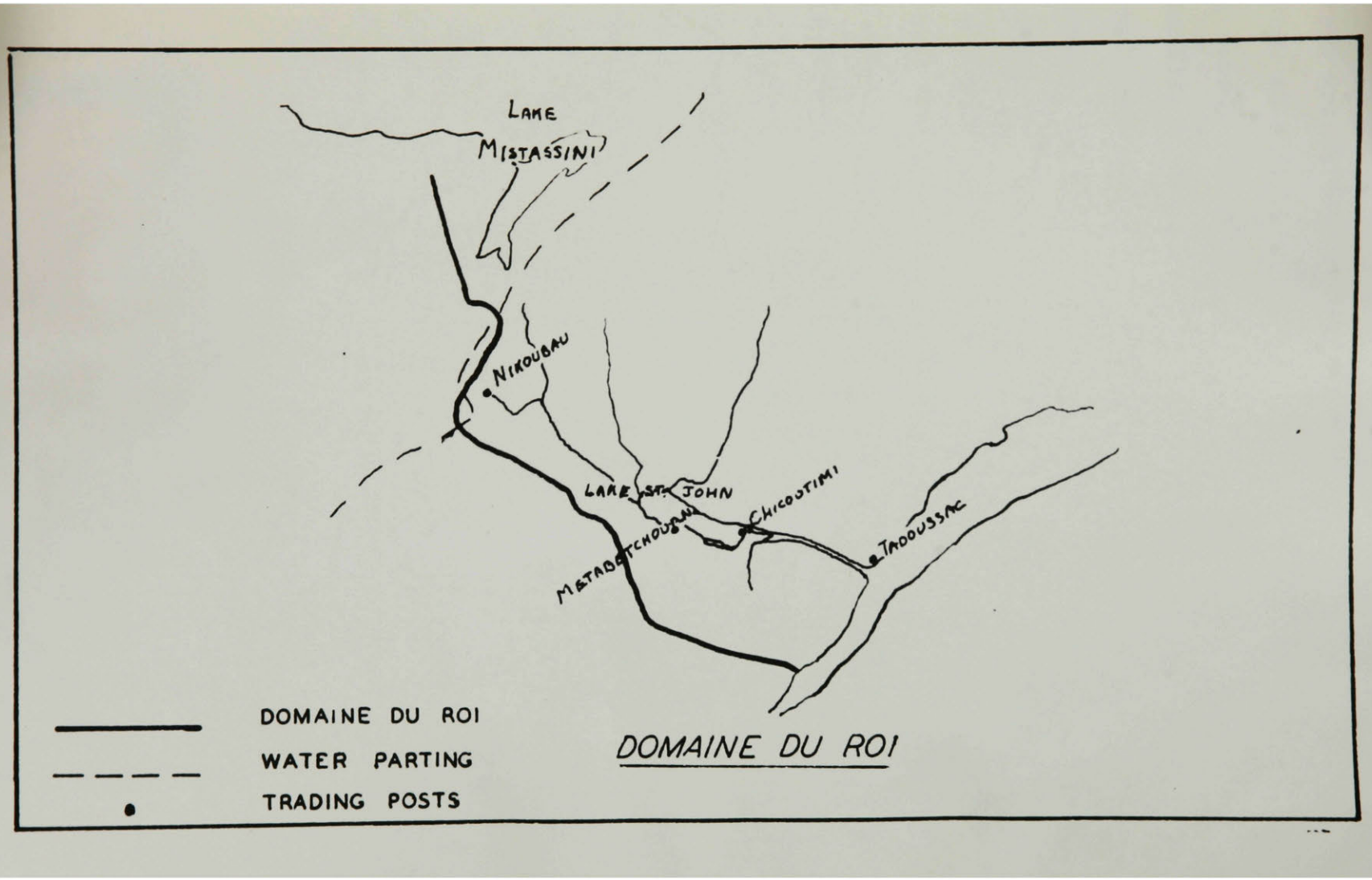
27 J.Lt. Normandin, Arpenteur du Roy, Carte d'une Exploration Faite en 1732.

28 L'Histoire du Saguenay, pp. 126-127

Figure 15. The Limits of the Domaine du Roi, 1732

This Domaine covered 72,000 square miles. The eastern limit was the north shore of the St. Lawrence from Ile aux Coudres to the Moisie River. The southern limit was a line from Ile aux Coudres to the sources of the Metabetchouan River. The western limit was the watershed between Lake St. John drainage and that of the St. Maurice and James Bay. To the north the Domaine stretched indefinitely.


LAKE
MISTASSINI
NIKOUBAU
LAKE ST. JOHN
CHICOUTIMI
METABETCHOUAN
TADOUSSAC
DOMAINE DU ROI
WATER PARTING
TRADING POSTS
DOMAINE DU ROI

their great rival, the North West Company. In 1808, James Mackenzie, an official of this company, travelled through the region by canoe, and described the settlements and potentialities of the King's Domaine, as he called it. Tadoussac he found "from its centrical position is considered the headquarters of the King's Posts . . . the present buildings consisting of a dwelling house, several outhouses, and a chapel". The Saguenay, he continued, "is navigable for vessels of any burthen to Chicoutimi, to which place the tide rises". At Chicoutimi he found a dwelling house, a chapel, and a store, and related that "the goods for the interior posts are brought this length in the summer in a schooner or boats, and afterwards conveyed by the Indians in small canoes up the country by way of the Chicoutimi River, which brings them to Lake St. John". Like others before him, he recognized the agricultural potential of the lowland, stating "the country from Baie des Ha! Ha! till we pass Lake St. John is fit for cultivation, the soil being good, the face of the country pretty even, and the climate the same as at Quebec". At Metabetchouan, the former Jesuit farm, he found that some marks of their industry were still to be seen, with their fruit trees bearing fruit, and the foundations of their church and other buildings still visible.[29]

From 1822 to 1831 the rights of trade were sold to three different men in turn, and in 1831 the Hudson's Bay Company purchased them again and continued to control the area until their term expired in 1842. They abandoned several posts, and reorganized those of Tadoussac, Chicoutimi, and Nekoubau. Their trade

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29 J.Mackenzie, "The King's Domaine" The Beaver, June 1948, pp. 34-37.

was considerable, and although it diminished after 1842, it has not ceased even today.

Meanwhile efforts were being made to open the area for settlement. After 1800 most of the good land of the province had been settled, and much land was closed to settlement as clergy reserves, seigneuries, and private estates. Thus the young men of large families found that opportunities for obtaining land were limited, and many were leaving for the United States. Settlers especially from the neighbouring Charlevoix region were therefore anxious to enter the Saguenay lowland, which was controlled by the fur companies.

The representative to the Quebec legislature for Northumberland, which until 1829 included the Charlevoix and Saguenay areas, Mr. M.Paschal, brought before the Legislative Assembly, in the 1823-24 session, two men who knew the Saguenay area well. One of these was a Mr. P. Taché from Kamouraska, who had worked for the Hudson's Bay Company for twenty-two years. He described the geography and resources of the area, stating that "le sol à partir de Chicoutimi , en suivant le nord-ouest du Saguenay et du Lac Saint Jean, jusqu'à la rivière Mistassini, serait très fertile, s'il était cultivé. Le climat est temperé".[30] He continued that potatoes and cabbage grown at the posts were superior to those grown at Quebec. He believed that agricultural settlement would not hurt the fur trade, which now centred further north, and would succeed of its own right. He presented

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30 Abbe F. Pilote, Le Saguenay en 1851, 1852, p.3

a map (Figure 16) showing "le bon terrein", which coincides almost exactly with the actual alluvial lowland.[31]

Exploration of the Saguenay, 1828. In 1826 the Assembly voted $2400 for an expedition to explore the region, which was sent in the summer of 1828, under the direction of Messrs. David and Andrew Stuart. It consisted of three parties. Mr. J. Bouchette, Deputy-Surveyor General, with Mr. Davis and Lt. Gouldie, ascended the St. Maurice, crossed the watershed, and descended the Ouiatchouan to Lake St. John. He explored the south-west shore of the lake between Belle Rivière and the Ashuapmouchouan. Mr. Hamel, a government surveyor, with Lt. Baddeley and Mr. Bowen ascended the Saguenay to Lake St. John by way of Lake Kenogami, and explored the northern shore of Lake St. John between Belle Riviere and the Ashuapmouchouan River. Mr. Proulx, also a government surveyor, with Mr. Nixon, also ascended the Saguenay, exploring Ha Ha Bay and west of it to Chicoutimi .[32]

The commissioners of the Parliamentary Committee of 1829 concluded that the area could be a rich agricultural region and support a large population, and stated: "Enough has been done to establish that there is a vast extent of cultivable land about Lake St. John and the Saguenay, upon which it would be desirable to effect settlements."[33]

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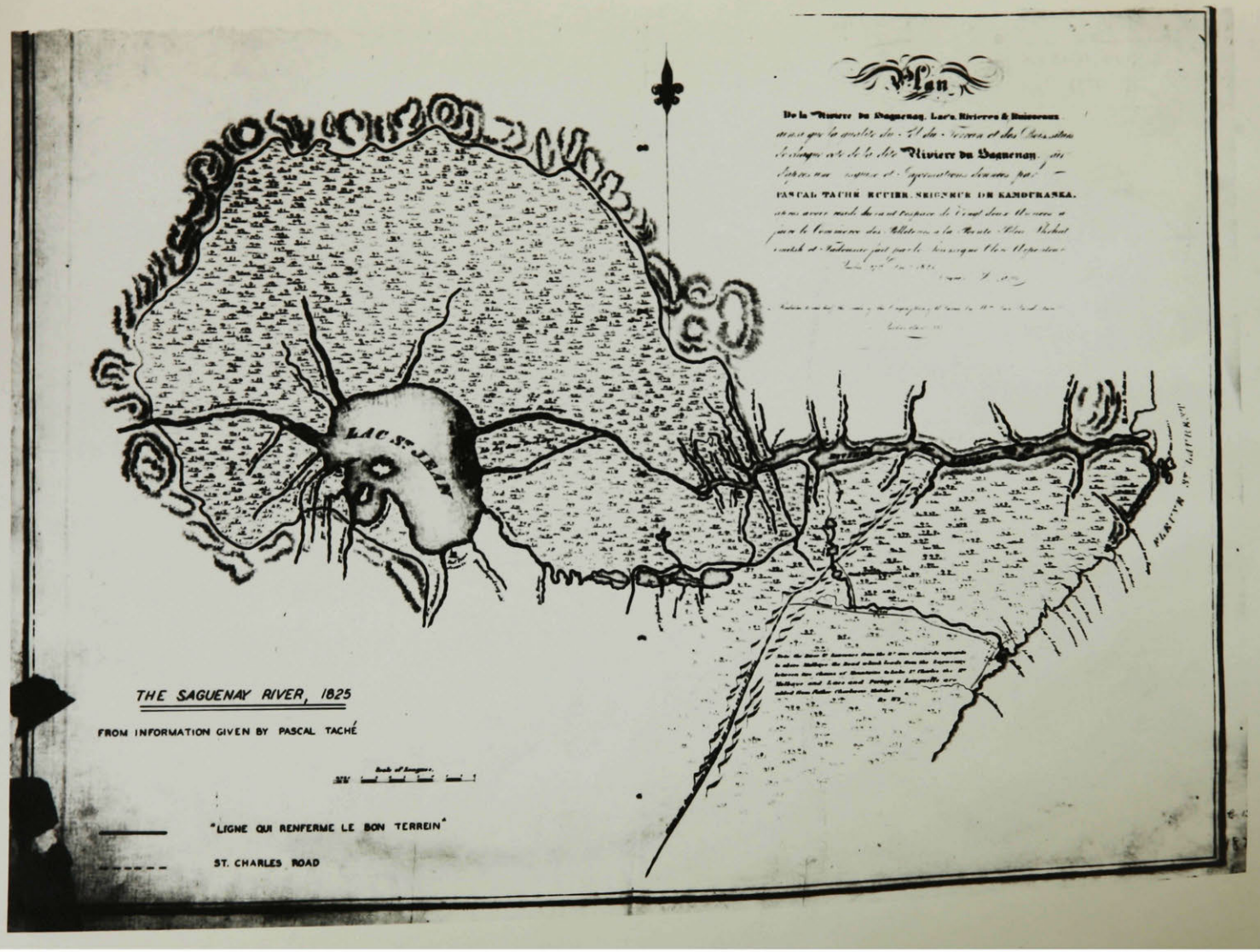
31 A. Larue, The Saguenay River, lakes, rivers, streams, and quality of soil. From sketch and information given by Paschal Taché, 1827.

32 Province of Quebec, Legislative Assembly, Report of the Commissioners for Exploring the Saguenay, 1829, pp. 3-4.

33 Ibid., p. 210

Figure 16. The Saguenay lowland, showing quality of soil, mapped in 1827.

This map, drawn from information and sketches presented by P. Taché, shows the drainage of the region, and the extent of the alluvial lowland. He also shows the road which was believed to have existed across the Laurentides from Quebec to Anse St. Jean.


Plan
LAC ST JEAN
THE SAGUENAY RIVER, 1825
FROM INFORMATION GIVEN BY PASCAL TACHÉ
"LIGNE QUI RENFERME LE BON TERREIN"
ST. CHARLES ROAD

II. RECONSTRUCTION OF THE LANDSCAPE AT THE END OF THE PERIOD

The reconstruction of the region at the end of this pre-colonial period is made possible by the reports of this expedition. The landscape had been little affected by the events of the period, and except for the small trading posts, was unchanged from its primeval state, as described in the previous chapter. The purpose of the survey, however, had been to estimate the possibilities of settlement in the region, and the report was the first to give descriptions or estimates of agricultural potentiality in any detail.

Agricultural potential. The lower Saguenay fiord, with its steep granitic walls, offered only small terraces of alluvial soil in the few bays - Anse St. Jean, Anse au Foins, Anse St. Etienne, and Trinity Bay, and at Tadoussac. Here there were natural meadows, where the wild hay was cut for use at the fur posts.[34] They found the soils around Ha Ha Bay, at Chicoutimi, and between Chicoutimi and Lake St. John along the canoe route, to be rich clays, containing lime, and concluded that this region was "flat and well timbered, of a very fertile quality, and seemed highly favourable for settling".[35] They also found the south shore of Lake St. John was "excellent soil, being generally a rich, dark loam",[36] although they found most of the north shore, which they saw from the edge of the lake, very sandy. Their estimates of

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34 Ibid., p. 24

35 Ibid., p. 66

36 Ibid., p. 154

fertile land were as follows:[37]

1.	West of Lake St. John	300,000 acres
2.	North and east of Lake St.John	4,199,550 "
3.	South-east of Lake St. John	115,000 "
		4,614,550 acres

(The generosity of these estimates can be seen by the fact that the counties of Lake St. John East and Roberval, which consist of the above districts, had, according to the Census of Canada, 1941, 4,331 farms averaging 142 acres. Occupied farm land totalled only 585,936 acres, of which 293,088 acres were improved, and the good land was considered to be completely occupied.)

Population and Settlement. The Indian population of the region, estimated just before the survey, consisted of "3,500 Montagnais, nombre qui diminue continuellement par la petite vérole et la manque de moyens de subsistence".[38]

The only white population in the region was at the three posts of Tadoussac, Chicoutimi, and Metabetchouan.

Tadoussac consisted of a chapel, a clerk's house, a forge, two stores, and six barns or huts, and had a population of six adults. There were five cattle, seven sheep, and one horse, and the fur company had a fishery in the St. Marguerite River, where they took over five hundred salmon in a good season.[39] It was the largest of the posts.[40]

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37 Pilote, op. cit., p. 51

38 Canada Department of Agriculture, Le Saguenay et le Lac St. Jean, 1879, p. 4

39 Province of Quebec, Legislative Assembly, op. cit., pp.63-65.

40 Ibid. p. 177.

Chicoutimi, however, was the chief post, and the depot of the interior. The post consisted of four buildings, including the chapel, and was built west of the Basin of the Chicoutimi River. The clerk cultivated potatoes, cucumbers, and melons most successfully.[41] Extensive meadows below the post were annually mowed. One member of the party prophesied correctly that the advantageous location of this post at the entrance to the interior would lead to the site becoming the regional centre of the lowland.[42]

The post at Metabetchouan consisted of four buildings, and a spacious garden, at which dwelt four adults and three cattle.[43] It occupied the site of the ancient Jesuit farm, where three hundred acres of land had been cleared, of which only ten to fifteen were then under cultivation. The rest were overgrown, and the apple and plum trees had grown wild.[44] Whitefish and ouananiche (a type of land-locked salmon) were caught for use at the post. "Wheat, barley, oats, kitchen stuff, cucumbers and melons grow here to perfection", one surveyor noted, and continued, "judging from our feelings and the agricultural facts mentioned above, there appears to be no difference between the climate of Lake St.John and at Quebec".[45]

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41 Ibid., p. 65.

42 Ibid., p. 100

43 Ibid., p. 140

44 Ibid., p. 67.

45 Ibid., p. 42.

Another correct prophesy was made by the leader of the party, Bouchette, who stated, "Ha Ha Bay appears to have been formed by nature as the principal seat of commerce and trade of this portion of the country, due to the extensive tract of level land which lies about it, and to the harbour it affords the largest vessels which can sail directly into the Bay".[46] All members emphasized the lack of communications with settled areas, which would be needed if settlement were to be encouraged. There were at the time traditions that the Jesuits had had a road from Quebec to Metabetchouan over which they drove their animals,[47] and also that one had existed between Quebec and Anse St. Jean across the Laurentides.[48] It is possible that the Jesuits used Indian hunting paths, but no real road is believed to have existed before the arrival of the colonists.

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46 Ibid., p. 172

47 L'Histoire du Saguenay, p. 97.

48 A. Larue, map previously cited, see Figure 16.

CHAPTER IV

THE SETTLEMENT AND LUMBERING PERIOD, 1838-1896

During the fifty-eight year period from 1838 to 1896, settlement spread throughout the region, and the lumbering industry flourished and withered. The construction of the first pulp mill of the region in 1897 marked the close of the era, which was replaced by one of big industry.

Lumbering, the chief industry of the era, aided in the development of the region by attracting colonists, providing employment and community facilities, and partly clearing the forests of the alluvial lowland. It was, however, detrimental to agricultural activity as it resulted in farming being carried on as a part-time occupation, with the men occupied by the lumber industry until late spring.

Although these effects on agriculture and settlement outlasted it, the industry had begun to decline before the end of the period, and only small concerns continued to operate in the next. As with the fur industry of the preceding era, the raw materials, in quantity necessary for continuance on a large scale, were exhausted. Lumbering was thus replaced by the pulp industry as completely as it had itself replaced the fur trade sixty years before.

The lasting effects of the era, then, were those which created the foundation for later development by overcoming the

difficulties involved in opening a new area - namely the clearing of the land, the establishment of communications, and the organization of communities.

During the period the original landscape was greatly modified. The alluvial plains, from Ha Ha Bay west to encircle Lake St. John, had been cleared of their mixed forest cover and were devoted to agricultural use. The region was connected to outside areas by rail in all seasons, and by steamer in summer and roads in winter. Communications throughout the region itself had also been established. The population increased from the first twenty-seven settlers of 1838 to about 30,000 inhabitants by the close of the period, of which about 15% lived in four small urban centres.

HISTORY OF DEVELOPMENT, 1838-51

Settlement and Lumbering, 1838-51. In 1837, twenty-one citizens of Malbaie, in Charlevoix County, formed an association to cut wood in the Saguenay Valley. They bought, for $2,600., a government license from the Hudson's Bay Company which permitted them to do so, although settlement was at that time forbidden. The ultimate aim of this "Société des Vingt et Uns" was colonization, but their stated purpose was lumbering, which would effect the clearing of the land. They had a pre-arranged buyer for their wood, a Mr. William Price.

Mr. Price had been sent from London in 1810 by Christopher Idle and Company, to report on the possibilities of exporting

Canadian wood to England. (At that time the countries of north-west Europe which were the usual source of England's supply had been cut off from export by the Berlin Decrees, and New England was unfriendly, and soon an enemy.) After the Napoleonic Wars he remained in Canada, and in 1817 went into the lumbering export trade for himself. In collaboration with James McGill he established mills on the Ottawa, the St. Maurice, and the south shore of the St. Lawrence rivers, but his desires to set up lumbering operations in the Saguenay were opposed by the Hudson's Bay Company. However, by 1838 he had established mills at Anse à l'Eau near Tadoussac, and at the mouth of the Ste. Marguerite River, and now he was able to obtain lumber from the Ha Ha Bay area through the colonization scheme which he supported.[1] The society raised $8,400. in all, to pay for their license and construct sawmills. Historians claim that this was collected by enlisting three hundred ex-officio members, each of whom put up part of the capital.[2] The records of his firm, however, show that most of this sum was supplied by William Price.[3]

Twenty-seven men left Malbaie in the spring of 1838 under the direction of this society. They first constructed three small sawmills along the Saguenay fiord, at Petites Iles, at Anse au Cheval, and at Anse St. Jean. In June they made their major

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1 Price Brothers, The Saguenay Saga of Lumber and Newsprint, 1930, pp. 5-10

2 Arthur Buies, Le Saguenay et le bassin du lac Saint-Jean. 1896, p. 88.

3 Interview with Mr. R.S.Armitage, Vice President in Charge of Woodlands, Price Bros. and Co. Ltd., Price House, Quebec, June 1949.

settlement, at Grande Baie at the foot of Ha Ha Bay. This site had the advantage of easy access by water, although the pine forests were inferior to those of other locations. By 1839, three more sawmills had been established, at Descente des Femmes, Anse à Pelletier, and Bagotville. The population in that year, sited at the sawmills, totalled 336, including the post at Tadoussac.[4] The location of the mills and settlements is shown in Figure 17.

In 1840 the first attempts at agricultural activity were made, and small parcels of land were sown in oats at Grande Baie and at Anse au Foin, (now St.Fulgence), a new settlement on the north shore. The settlements grew quickly, the most important being those of Grande Baie and Bagotville, which by 1841 had a population of 600, in spite of two years of hardships. In both 1840 and 1841 the booms holding the winter's cut of logs had broken, so that most of the logs were lost, and in 1841 there was a disastrous fire. In 1842 the Hudson's Bay Company lease expired, and the provincial government gained control of the land, to survey and colonize, and lease. Colonization and agriculture were now permitted, but the losses suffered by the society had left them with so many obligations that they were forced in that year to sell their interests to William Price, who was now able to obtain large timber limits in the Saguenay drainage area. The

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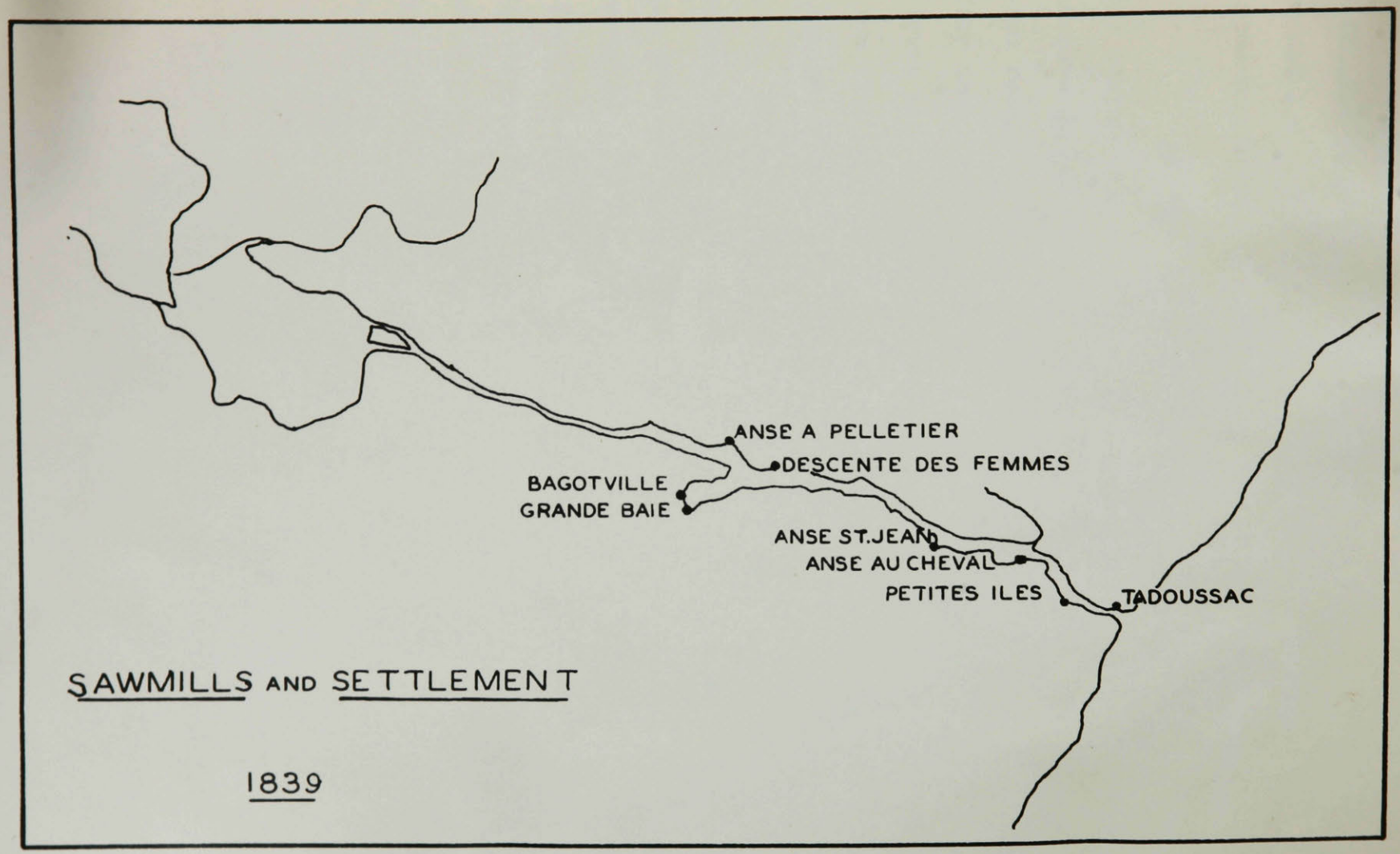
4. Tadoussac 80 Anse St. Jean 67
Petites Iles 8 Descente des Femmes 8
Anse au Cheval 12 Anse à Pelletier 51
Grande Baie and Bagotville 110 TOTAL ...336

Rapport sur les Missions du Diocèse de Québec. Vol.II, 1840, p.70.

Figure 17. Sawmills and Settlements, 1839.


ANSE A PELLETIER
DESCENTE DES FEMMES
BAGOTVILLE
GRANDE BAIE
ANSE ST.JEAN
ANSE AU CHEVAL
PETITES ILES
TADOUSSAC
SAWMILLS AND SETTLEMENT
1839

colonists became his employees, working at the sawmills in the summer and cutting wood in the winter, so that agricultural progress was slow.

In that same year, 1842, Peter McLeod, a former Hudson's Bay Company agent, set up a lumber mill at the mouth of the Rivière du Moulin, 2 miles below Chicoutimi, the site which had been recommended by the Gardeur de Tilly in 1725. (Cf. ante p. 38). Near this spot the Chicoutimi, Shipshaw, Valin, and du Moulin rivers all emptied into the Saguenay, and logs could be floated down from their large drainage basins, and down the Saguenay from Lake St. John, to a mill which was also at the head of sea navigation. Price and McLeod became partners in 1842, and in 1844 McLeod built a larger mill on the Basin below the first fall of the Chicoutimi River, beside the fur post, which had the same advantages as the first mill. Chicoutimi had previously been settled by nine families from Charlevoix County in 1840, but McLeod was the founder and ruler of the lumber town which developed after 1844.[5] Although access to Chicoutimi by water, by the shallow winding channel of the estuary, was not so easy as to the settlements on Ha Ha Bay, its advantages with respect to the timber supply nevertheless made Chicoutimi the centre of the lumber industry, and so the chief town of the region, whereas the Ha Ha Bay mills soon suffered from a shortage of wood.

The expansion of the lumbering industry in the region was encouraged by the lumber boom which was under way in Canada

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5 Buies, op. cit. p. 110.

during the early 1840's. The United States was now becoming an important market, and the tendency was to cut transportation costs by siting the sawmill at the source of the material, so that whereas Canada had exported square timber to Britain, she was now exporting sawn lumber to the United States. This was the practice in the Saguenay region, although here Britain remained the major market, due to ease of export by water. The reduction of British preferences on Canadian lumber, however, in 1842, 1845, and 1846, left the Canadian firms at a disadvantage against Baltic timber in the British market, and in 1846 a new American tariff on lumber affected that market unfavorably. These tariff changes, followed by the general depression of 1847-49, meant that lumber production was far ahead of demand. After 1850, however, prosperity began to return, hastened later by the Reciprocity Treaty with the United States in 1854, which provided for free entry of boards into that country.[6]

The rapid exploitation of the forests during the 1840's had exhausted the white pine and cedar - the most valuable trees - along the lower Saguenay. The mills at Anse au Cheval, Petites Iles, and Anse à l'Eau were closed by 1848, and in 1850 that of Bagotville was closed. The prosperity led to the construction of new mills in the Chicoutimi region, which had seventeen mills in 1851 as compared with 8 in 1844. In 1851 Price loaded thirty ships at Chicoutimi and Grande Baie, with pine logs worth £35,000 - £40,000 for export to Britain, and £15,000 worth of sawn lumber

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6 A.R.M. Lower, The North American Assault on the Canadian Forests, 1838, pp. 104-122.

for the United States and Quebec. In the same year goods worth £45,000 were imported into the region, of which two-thirds came through the port of Chicoutimi, and the remainder through Grande Baie. The chief imports were flour, lard, horses, hay and oats, and other goods needed by the lumber camps, the local production of which at that time was negligible.[7]

The lumbermen of that time endured a rough life, long hard hours of work, and low pay. Most were farmers during the summer, but were unable to support themselves without working in the woods during the winter, which delayed spring sowing. Their difficulties were intensified by Price's system of payment, not in money, but in tokens ("pitons") exchangeable for goods at his stores or for currency at a 20% discount. This led to debt among the colonists, who, lacking outside markets and unable to develop agriculture to any extent, were completely dependent upon him. A contemporary wrote "le commerce du bois a contribué à ouvrir le Saguenay à la colonization, mais l'intérêt de ces établissements doit se trouver souvent en opposition avec l'intérêt des colons".[8] A little later a visitor describes the resulting lack of agricultural progress - "the farms range from 40-100 acres, and raise the usual kinds of grain, also tobacco," he relates, "the cattle are small animals yielding poor milk and butter, and worse beef . . . and in the spring are little better than walking skeletons". This author also put much of the blame on the lumbering industry

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7 Abbé. F. Pilote, Le Saguenay en 1851, 1852, pp. 70-80

8 Ibid., p. 81.

and the monopolistic position of Price, and also on the isolation of the region, as he continued, "much must be forgiven on account of the newness of the country, and the difficulty of living where there is only one market for produce, and where almost every article purchased costs twice as much as it is worth".[9]

However, the supporters of the lumber industry claim with justice that it was the only stabilizing force in the region for many years, and provided stores, flourmills, and currency for the benefit of the settler's, and was also their chief support in the early days of colonization.[10]

During the 1840's land shortage was becoming apparent in the province, as poor farming techniques were leading to land exhaustion in the St. Lawrence lowlands, where little arable land remained for settlement. Emigration to Upper Canada, and especially to the United States was heavy, and from 1845 to 1849 twenty thousand French-Canadians left Quebec.[11] In 1851 a churchman pleaded that steps be taken to "détourner un si grand nombre de nos jeunes compatriotes d'aller demander à nos voisins ce qu'ils devraient si bien trouver ici, . . . des grands debouchés se sont ouvert à la colonization - les townships de l'Est et la Saguenay," he continued sadly "les Canadiens font tant d'efforts pour dépeupler le Bas Canada au profit des Illinois". [12]

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9 S.J.Kelso, Notes on the Saguenay for tourists and others. 1862, pp. 22-23.

10 Price Brothers, op. cit., p. 6.

11 J.C.Chapais, "Three Centuries of Agriculture", Canada and Its Provinces, 1917, Vol.XVI, p. 518.

12 Pilote, op. cit., pp. 3-4.

Colonizing Societies. Meanwhile, however, settlement had advanced in the Saguenay, as colonists flowed in from other parts of the province, many of them organized by ecclesiastical societies, who desired to prevent further emigration.

In 1846 a fire destroyed the forests of Bagot and Laterrière townships, and the villages and mills of Grande Baie and Bagotville. In spite of great loss, these were rebuilt, and by clearing the land the fire aided further development of agriculture. In the same year the Peres Oblats organized a settlement in the "grand brulé" on the Rivière du Moulin, where the parish of Laterrière grew up.[13] In 1851 the population of this settlement was 351.

In 1848 a settlement was made on the Rivière au Sables in Jonquière Township, at Jonquière, by a group sponsored by Abbé Tremblay of Malbaie. They worked at their lots in the summer, returning to Malbaie in the winter. In 1851 there were 82 colonists holding land in this manner. Settlers from Charlevoix County had also settled the north shore of the Saguenay at Ste.Anne de Chicoutimi in 1843.[14]

Now that the best land of the upper Saguenay lowland was taken up. settlers began to move on to the Lake St. John lowlands, jumping the barrier of the Kenogami horst with its rocky and swampy land. Clearing commenced in this region in 1848. There

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13 Buies, op. cit., p. 115

14 Ibid., p. 171

was, as Blanchard noted, [15] a basic difference in the development of the two areas. The population of the upper Saguenay had always been primarily concerned with lumbering - the region had been born "sous le signe du bois". Most of the land belonged to Price, and most of the men were employed by him, working in the woods until June, sowing so late that crops were often lost. Agriculture was only a part-time occupation. The emphasis in the Lake St. John lowland, however, was on agriculture primarily, with wood a secondary source of income. Another difference was that most of the colonists were not from Charlevoix County, as were those of the Saguenay, but were from the St. Lawrence lowlands as far as Montreal.

Three settlements were made in the lowland by societies within a year. One was made by a society from Baie St. Paul, which surveyed and settled Signay township, east of Lake St. John, in 1848. Another small settlement in that year was made in Caron Township under L'Abbé Boucher from Ste. Ambroise near Quebec.[16] The most important of the three was sponsored by a society formed at Ste.Anne de la Pocatière in 1849, the "Association des comtés de l 'Islet et de Kamouraska", directed by the curés of each community, under L'Abbé Hébert.[17] As with the other movements sponsored by the church, the object was to settle their poor farmers on fertile land, and so prevent emigration to the United

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15 R.Blanchard, L'Est du Canada Francais, 1935, Vol.II, p.76.

16 Buies, op. cit., p. 190.

17 Pilote, op. cit., pp. 84-96.

States. They chose the Saguenay because of reports of its fertility, and also because the land was selling at 20¢ an acre, while the price of land on the south shore of the St.Lawrence was 40¢ an acre. Aided by a provincial grant, they settled in Labarre and Mesy townships in 1849, along the Rivière des Aulnaies and Lake Kenogamichiche. The only means of access was by canoe up the Chicoutimi River and along Lake Kenogami, and the first year the colonists commenced the famous "Kenogami Road". This they built from Laterrière to Portage des Roches at the eastern end of Lake Kenogami, along which they travelled by barge or canoe, and from the western end of that lake to the fall on the Rivière des Aulnaies, a former portage, where Hébertville grew up. By 1850 they had cleared 400 arpents, and extended the road from Laterrière to Bagotville. By 1851 500 more arpents were cleared, a flourmill and sawmill built, and the population numbered 100. In that year the colonists sold the first wood of the Lake St. John lowlands, which they floated down to McLeod's mill at Chicoutimi. The society was dissolved in 1853, having spent about £38,000 . on the project, and established 350 colonists by that date.[18]

Population Distribution and Settlement Pattern, 1851.

By 1851[19] the population of the region which is now Chicoutimi and Lake St. John counties, i.e. not including Tadoussac at the

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18 Canada, Department of Agriculture, Le Saguenay et le lac Saint Jean, 1879, p. 23.

19 These and all subsequent figures for 1851 from Census of the Canadas, 1851-52, Quebec, 1853, two Volumes.

mouth of the Saguenay, totalled 5364. The population distribution in that year is shown in Figure 18. This shows the sprinkling of population, in the newly opened Lake St.John lowland (150 people), and along the lower Saguenay fiord, where 406 people occupied the alluvial bays. The main body of settlement was around Chicoutimi and Ha Ha Bay on the alluvial terraces. The parish of Chicoutimi, which included Chicoutimi, Jonquière, Kenogami, Simard, Tremblay, and Harvey townships, had a population of 2046. On Ha Ha Bay the population centred at the parishes of Grand Baie and Bagotville, which included the townships of Bagot and Laterriere, and had a population of 2805.

When the region was officially opened to colonization in 1842 the land along the Saguenay and around Lake St. John was surveyed by the provincial government and laid out in townships, in the same manner as in the St. Lawrence lowlands. The township boundaries which had been laid out by this time are shown in Figure 19.[20] Those areas which had been opened to settlement had been further subdivided into ranges and lots. The townships were not regular in shape, but the majority formed rough squares, about nine miles on a side. They were divided into one mile wide strips called ranges, which were in turn divided transversely into lots. The lots, which were the farmers' holdings, were thus one mile in length (i.e. the width of the range) and three arpents wide.

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20 Jos Bouchette, D.S.G., Plan of the Saguenay Territory, 1856, Tracing of an M.S. map of the Province of Canada by A.L.Russell.

Figure 18. Distribution of Population, 1851

In this year the population totalled 5,364, after only thirteen years of settlement. The main body of settlement was on the alluvial terraces between Chicoutimi and Ha Ha Bay, with a sprinkling of population along the Saguenay fiord and in the newly opened Lake St.John lowlands.

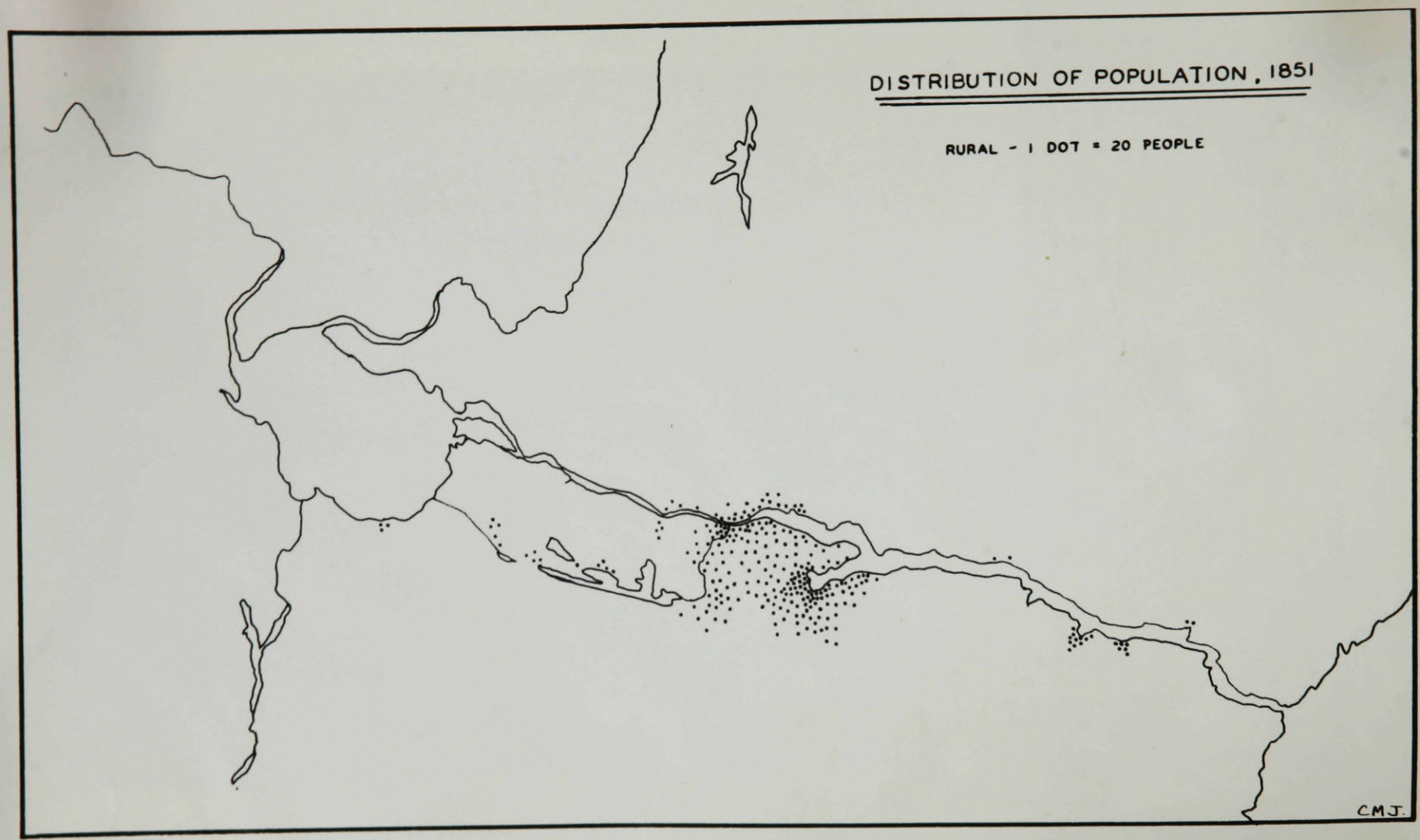
DISTRIBUTION OF POPULATION, 1851
RURAL - 1 DOT = 20 PEOPLE
CMJ.

Figure 19. Plan of the Saguenay Territory, 1856

Drawn by J. Bouchette, Deputy-Surveyor-General in 1856, this map shows the survey lines which had been established. The effect of the waterways in laying out the range and lot lines is apparent, the long narrow lots being so arranged that as many as possible edge the water. The routes of the Kenogami and Sydenham Roads, and of the two winter roads to the Charlevoix County, are also shown.


Plan
OF THE
SAGUENAY TERRITORY
Scale of 6 Miles to 1 Inch
Department of Crown Lands.
Asst. Commissioner

In the early days movement was entirely along the water courses, and the ranges were laid out parallel to the rivers and lakes, so that as many of the long narrow lots as possible edged the water. As the interior ranges and lots were laid out in the orthodox position with respect to the township boundaries, a rather twisted survey pattern resulted, with lots and ranges meeting at odd angles. This is apparent in Figure 19, especially in Bagot township, where the lots edge Ha Ha Bay and the Ha Ha and Mars Rivers, in Laterrière Township, where lots edge the Rivière du Moulin, in Jonquière Township, where lots edge the Saguenay, the Rivière au Sables, and Lake Kenogami, and in Signay Township, where lots edge Lake St. John and Belle Rivière. As a road system developed, the roads were constructed along the range lines, so that each farmer similarly had equal access to the means of communication, as can be seen along the first road - the Sydenham Road - in Figure 19, running from Ha Ha Bay to Chicoutimi.

From 1829 to 1853 the region was included as part of the county of Saguenay, which stretched as far as Labrador. In 1853 this county was divided into three, the present Charlevoix and Saguenay counties, and Chicoutimi county, which (until 1890 when it was divided into two) included the whole of the Saguenay-Lake St. John lowlands. Chicoutimi, the largest population centre, was chosen as county seat in 1855.

Settlement and Lumbering, 1851-71. By 1851 lumbering operations had moved further into the interior from the upper

Saguenay lowland - up the tributaries of the Saguenay, up to the Décharges, and up the tributaries of Lake St. John. To prevent the logs from being crushed or lost in the strong current of the Décharges, the Grande Décharge was closed by booms, and the Petite Décharge was channelled by a slide called "la Dalle" for a distance of 5480 feet. This slide, which was constructed by the provincial government at a cost of $41,000.,,was commenced in 1856 and completed 1860.[21] In 1859 a small tug was put into use on Lake St. John, to haul rafts of logs to the head of the Petite Décharge. By 1860, 325 men were cutting lumber on the tributaries of Lake St. John.[22] The mills of Price in that year on the Saguenay and lower St. Lawrence, together with the number of ships loaded at Saguenay ports, are shown in Figure 20.[23] (After McLeod's death in 1852 Price had again become the sole lumber proprietor in the region.)

Meanwhile colonization continued to move west and south of Lake St. John along the old fur route, whereas movement northward was blocked by the Décharges. The Kenogami Road was extended to the mouth of the Metabetchouan, and from here colonists continued by lake. The extension of the road by 1856 is shown in Figure 19. The first colonists settled at Metabetchouan, the site of the fur post, in 1855, and in Roberval Township the same year. Settlements were made at St. Jerome in 1861, at St.Gédéon 1862,

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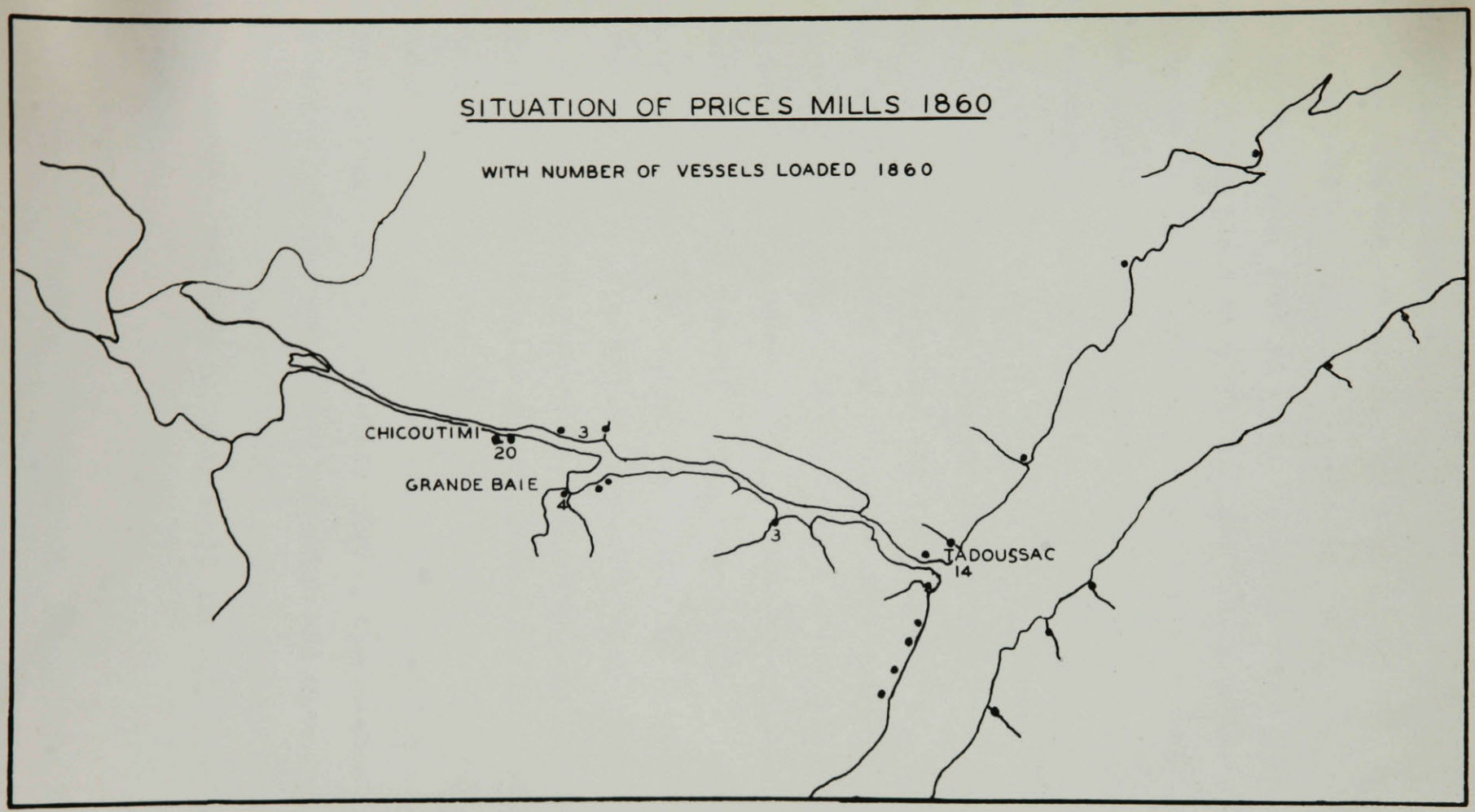
21 Buies, op. cit., p. 149.

22 Societe Historique du Saguenay, L'Histoire du Saguenay, 1938, p. 249.

23 Part of the St. Lawrence and Saguenay Rivers, showing the situation of William Price's mills, Chicoutimi, 1860.

Figure 20. Part of the St. Lawrence and Saguenay Rivers, with the Situation of Wm. Price's mills. 1860.

This map has been copied from the original, drawn at Chicoutimi in 1860. The number of ships loaded for export during the summer of 1860 is given in figures beneath the loading site.


SITUATION OF PRICES MILLS 1860
WITH NUMBER OF VESSELS LOADED 1860
CHICOUTIMI
20
3
GRANDE BAIE
4
3
TADOUSSAC
14

and at Chambord in 1865, all from their mother parish of Hébertville. The road was extended to St. Prime, where a settlement was made in 1862 by a society directed by the curé of Beauport, and to St. Felicien, settled 1864. The Hudson's Bay Company built a post at Pointe Bleue in 1865, and that at Metabetchouan was closed in 1884. In 1869 settlement reached the Décharges, where St. Joseph d'Alma was founded. By 1870, only the north-west, north and east of Lake St. John had not been opened to agriculture.

A great disaster occurred in 1870, when the worst fire ever to strike the area checked the rapid advance of the colonists. On May 19, a brush fire at St. Felicien was carried by a high wind into the forest, where it spread so rapidly due to a dry spring that it is claimed to have travelled one hundred miles to Grande Baie in two hours.[24] Regardless of the speed, the whole region between these two centres was completely burned over, except for the town of Chicoutimi, an area of 1500 square miles. Almost 5000 people lost everything, but rebuilding and resowing were undertaken with outside and local aid (the Price firm being especially generous), and prosperity returned. Expansion of settlement was aided by the clearing of the land, but the fire destroyed a large part of the white pine of the lowland on which the lumbering industry was based, and which was already in short supply, as the second growth timber - aspen, poplar, birch, jack pine and spruce - was less valuable until the following era of pulp production.

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24 "Le Grand Feu du Saguenay", Annuaire, Chicoutimi, Lac St-Jean, Roberval, 1944-45, 1944, p. 33.

Population Distribution, 1871. In 1871 the population totalled 17,493,[25] and its distribution in that year is shown in Figure 21. The influx of colonists to the lowland east, south and west of Lake St. John, had increased the population of this area from 150 in 1851, to 5681 in 1871. The extension of settlement is apparent in a comparison of Figures 18 and 21. The population of the upper Saguenay region east of Hébertville had increased from 5214 in 1851 to 11,812 in 1871. An increased density can be seen in this region in Figure 21, especially in the Chicoutimi area, the town having reached a population of 1393, and along the Rivière au Sables. North of the Saguenay also density of population showed some increase.

Settlement and the Depression in Lumbering, 1871-96. From the economic crash of 1873 to 1879 the area suffered, with the rest of the western world, from a deep depression. The lumber industry was severely affected due to its dependence on foreign markets, and Canadian exports of lumber fell from $29 million in 1873 to $13 million in 1878.[26] In the 1880's some prosperity was regained, to be followed by a second depression from 1891-96. Even before this time, however, the lumber industry of the Saguenay was in a depressed condition, as white pine was in short supply. In 1862 a member of the Price firm wrote "pine exists, but not in any quantity, the greater part has been consumed by fire".[27]

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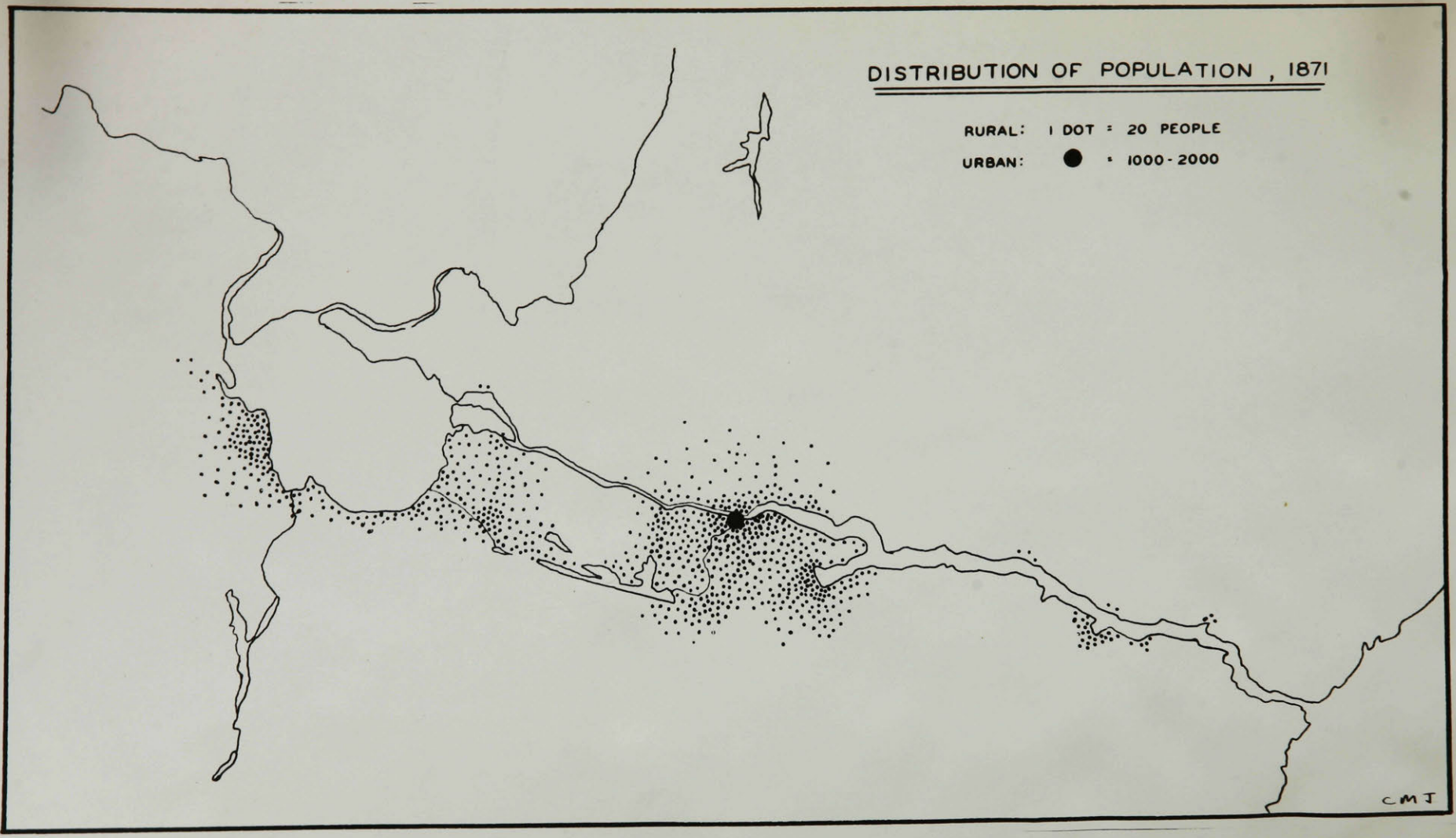
25 This and all subsequent figures for 1871 from: Census of Canada, 1870-71, Ottawa, 1873, five Volumes.

26 Lower, op. cit., p. 152

27 Kelso, op. cit., p. 5.

Figure 21. Distribution of Population, 1871.

A comparison with figure 18 shows the increase in density of the population of the upper Saguenay region over the period 1851-71, and the extension of settlement into the Lake St. John basin. The population of the whole region had increased from 5,364 in 1851 to 17,493 in 1871. The town of Chicoutimi with a population of 1393 was the only urban centre.


DISTRIBUTION OF POPULATION , 1871
RURAL: 1 DOT = 20 PEOPLE
URBAN: = 1000 - 2000
CMJ

This scarcity was intensified by the fire of 1870, and in 1880 Buies laments the end of the pine - "le plus beau bois de construction du monde. Sur cent pins, il y en avait en moyenne soixante-dix exempts de noeuds. Aujourd'hui les pinières ont à peu près disparu; le feu les a détruite et le pin a été remplacé par l'épinette".[28] This is further shown by a comparison of the exports of William Price in 1862 and 1878.[29]

	White Pine Logs	Spruce Logs
1862	43,289	7,000
1878	12,897	188,155

In 1880 Price employed 500 men at the Chicoutimi mill, and 100 in that at Grande Baie. Those on the lower Saguenay were closed due to the depression and exhaustion of wood.

Agriculture, with its dairy exports, provided the chief source of revenue during this period, which has been called the "cheese factory era".[30] The number of factories increased from 27 in 1881 to 81 in 1891,[31] when the value of production totalled $324,000. At this date exports were shipped from Chicoutimi and Grande Baie chiefly to England, and after the construction of the railway to Chicoutimi in 1893 exports were also sent by rail.

The population of the upper Saguenay lowland showed little increase during this period of depression. Many farmers

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28 A.Buies, Le Saguenay et la vallée du lac St. Jean, 1880,p.100.

29 Canada, Department of Agriculture, op. cit., p. 18.

30 Blanchard, op. cit., p.122

31 These and all subsequent figures for 1881 and 1891 from Census of Canada, 1880-81, Ottawa, 1882, three Volumes, Census of Canada, 1890-91, Ottawa, 1893, four Volumes.

and unemployed lumberers left the region for the United States or for industrial areas, or moved west to take up land in the Lake St. John basin. There was almost no population increase in this region over the period in spite of the high level of natural increase (over 30%), and the population of many parishes showed a decrease. That of Bagotville village and parish fell from 1598 to 1476, and that of Laterrière parish fell from 1319 to 1006, from 1871 to 1891. Others showed a decrease only after 1881; and between 1881-91 the population of Jonquière fell from 1511 to 1479, and of Grand Baie from 1749 to 1689. This trend continued throughout the decade of the 1890's.

In the Lake St. John lowland, however, new parishes were opened, and the population increase, although less than in previous decades, was heavy. St. Methode was settled in 1877, a society from near Quebec settled Normandin in 1879, and settlement was made still further north-west of the lake at Albanel in 1885. Settlers meanwhile began to move north-east of the lake. In 1878 settlers from Ste.Anne and Chicoutimi reached Delisle Township north of the Décharges, followed by others from Hébertville, St. Jerome, and St. Joseph d'Alma. Taillon Township was settled in 1883 from St. Gédéon, and the shores of the Peribonka were reached in 1892. A settlement on the Mistassini River was first made by the Trappist Order, which built a monastery and farm in 1892. St. Michel de Mistassini was settled 1893, Rivière au Rats (now St. Stanislas and St. Eugène) in 1895, and Ste. Jeanne d'Arc on the Petite Peribonka in 1898. Other colonists settled

south of the lowland, on the morainic but cultivatable soil surrounding Lake Bouchette. A settlement was made at Lac Bouchette in 1891. and at St.André in 1898. In 1888 the Quebec and Lake St. John Railway had been constructed to Chambord, and by 1893 had been extended to Chicoutimi and Roberval.

The Development of Means of Communication over the period 1838-96. Before attempting a reconstruction of the region at the close of the period, the development of the transportation facilities during the period is considered, which was climaxed by the construction of the railway near its close.

The only means of penetration to the region during the first years of settlement was by water during the summer months. Because of violent winds and currents the Saguenay was considered dangerous for sailing ships, but for many years colonists and supplies were brought in by schooner, and larger sailing ships carried lumber from Price's mills to Quebec and Europe.

In 1849 the first steamer service was inaugurated from Quebec to Grande Baie, and in 1869 the steamer service was supplied to Chicoutimi. The report of the Public Works of Canada, 1867-82, listed the navigation activities in the Saguenay from 1840 to 1870.[32] During the 1840's, an average of 3-4 ships a year called at Saguenay ports; from 1849 to 1852, 9 ships came in a year, and from 1853 to 1860, 15 came in. This number increased to 19 each year from 1861-63, and to 21 each year in 1864 and 1865. The number continued to increase until in 1870 84 ships called at

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32 Société Historique du Saguenay, op. cit., p. 300

Grande Baie and Chicoutimi. In 1874 more regular steamer service was established by the St. Lawrence Company. In 1875 a government wharf was constructed at Chicoutimi, and in 1879 the channel of the Saguenay up to Chicoutimi was deepened to permit steamers to come up at low tide.[33] However, seagoing ships were still forced to load from barges at les Battures, seven miles below the town.

In 1848 two roads were commenced from Grande Baie to Charlevoix County. These roads, which were open for winter use by 1850,[34] were the Chemin de Ste.Agnes, or the Chemin de Marais, which ran south of Anse St. Jean to Malbaie, which was completed in 1861, and the Chemin de St. Urbain, which met the St. Lawrence at Baie St. Paul, completed after 1870. The route of these roads south of Grande Baie can be seen in Bouchette's map of 1856 (Figure 19, and also in Figure 27). In 1877 a 140 mile road was opened from St. Jerome to Quebec across the Laurentides Park, which facilitated access to the Lake St. John area. This road also was passable only in winter.[35]

The first road constructed in the region was the Sydenham Road which led from Grande Baie to Chicoutimi by 1845, when it is shown by Ballantyne as the main street of the latter village.[36]

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33 Buies, op. cit., 1896, p. 149.

34 Pilote, op. cit., p. 102.

35 Buies, op. cit., p. 287.

36 D.S.Ballantyne, Plan of the village of Chicoutimi, surveyed 1845, Archives of the Surveys Branch, Department of Lands and Forests, Province of Quebec.

For movement into the interior, the old canoe route via Lake Kenogami was the only means of penetration until the commencement of the Kenogami Road, in 1849, which led from Bagotville, through Laterrière to Portage des Roches, and from the west end of Lake Kenogami to Hébertville. These sections were completed by 1850. By 1856 the section north of Lake Kenogami, and an extension to Metabetchouan had been completed, and together with the Sydenham Road, can be seen in Bouchette's map of that year, (Figure 19), and by 1866 had reached St. Felicien. In winter travel by sleigh was relatively easy, but in summer the road was in very bad repair, and travellers were often forced to reach Lake St. John by canoe or on foot.[37] By 1879 the province had spent $40,000. in improving this road from Grande Baie to St. Felicien, and its branches. An extension of the Sydenham Road now connected Chicoutimi to Portage des Roches on the Kenogami Road, through Jonquière. In 1894 the Décharges were bridged near St. Joseph d'Alma, so that access was now possible to the region north east of the lake, where colonization had begun.[38] The Kenogami Road was extended in that year from Alma to the Peribonka, and from St. Felicien to Albanel (see Figure 27), and by the end of the century it completely encircled the lake.

In 1854 the "Compagnie du Nord de Québec", later called the "Chemin de Fer de Québec et Gosford", proposed a railway to the Saguenay valley, and received a charter in 1869. They built,

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37 Abbé V. Tremblay, "Une Montée au Lac en 1861", Annuaire, Chicoutimi, Lac St.-Jean, Roberval, 1947-48, 1948, p. 19.

38 Buies, op. cit., 1896, p. 414.

however, only as far as Gosford, to which a wooden-track railway was completed in 1871, and abandoned in 1874.[39] A new company, the "Chemin de Fer de Québec et Lac St.Jean" was incorporated in 1878, and after some difficulty in choosing survey lines and raising capital, the railway was completed to Chambord on the shore of Lake St. John in 1888.[40] The route chosen (see Figure 27) followed the Batiscan, Lac Edouard, and Ouiatchouan Valleys, and presented a difficult construction job through the Shield with its rocky and swampy surface. The line was 176 miles long, and although circuitous, avoided the higher land of the Laurentides which lay between Quebec and Chicoutimi. Extensions were made to Chicoutimi and Roberval by 1893, so that Chicoutimi was now 8½ hours from Quebec. The completion of the railway provided a market for wood and agricultural exports of the region, and also easy means of access to the region by settlers, who were given free transportation.

RECONSTRUCTION OF THE LANDSCAPE AT THE CLOSE OF THE PERIOD, 1896.

Population and Settlement. By the end of the period, colonization completely surrounded Lake St. John, although population was sparse north of the lake which had not yet been reached by road. The population of the whole region totalled 28,726 in 1891, as compared with 17,493 in 1871, and the extension and increased density of population can be seen by comparing Figures 21

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39 Canada, Department of Agriculture, op. cit., p. 37

40 Buies, op. cit., p. 317.

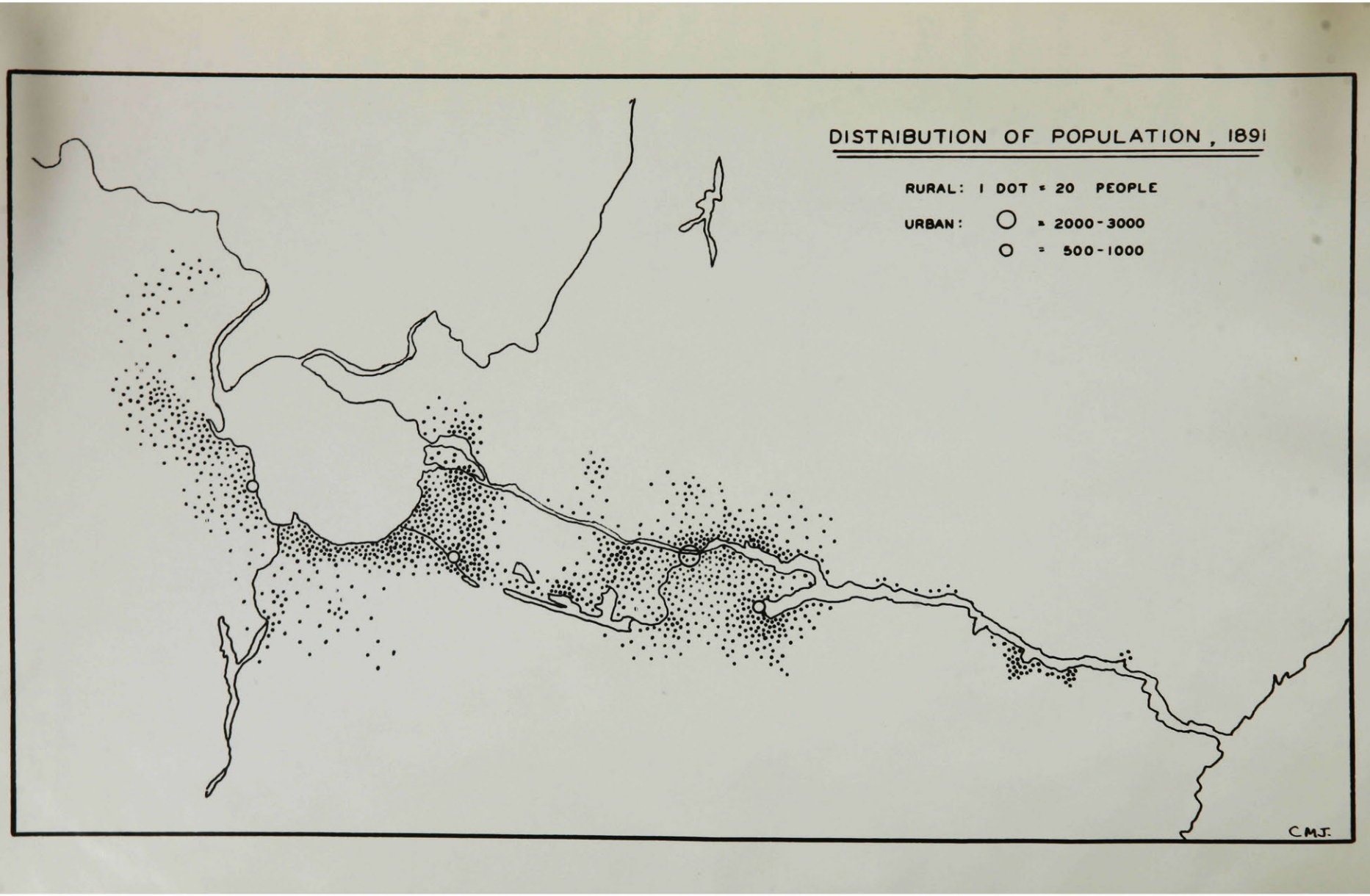
and 22, which show the distribution of population in 1871 and 1891. In 1890 Chicoutimi County had been divided into two, Chicoutimi County east of Hébertville, i.e. the upper Saguenay lowland, and Lac St.Jean County west of it, i.e. the Lake St. John basin. Chicoutimi County had a population of 14,244 in 1891, as compared with 11,812 in 1871, while that of Lac St.Jean had a population of 14,148 as compared with 5681 in 1871. Thus about 80% of the total population increase of 11,233 during these twenty years had occurred in the Lake St. John area, where vacant, fertile land was plentiful. Chicoutimi County had received a population increase of only 2432, as little new land had been available for settlement, and the larger centres had been unfavourably affected by the depression after 1873.

The population along the Saguenay fiord had increased very little over the period, from 406 in 1851 to 950 in 1891, due to the small extent of the alluvial land, and exhaustion of lumber supplies. Tadoussac at its mouth had lost its important role in the region at the end of the fur era, and with little basis for agricultural development it could support only a small population. Price built a lumber mill at Anse à l'Eau nearby, which provided some employment, but it was closed in 1848. The construction of a large hotel in 1864, followed by that of fashionable summer homes, marked the start of its new role as a tourist centre, and the population had reached 2440 in 1891 as compared with 141 in 1851.

Continuing up the fiord, the largest villages were Anse

Figure 22. Distribution of Population 1891

The small increase in density in the upper Saguenay region over the 1871-91 period is apparent by a comparison of Figures 21 and 22. The increase of density and extension of settlement in the Lake St. John basin, however, is marked. Three small urban centres had been incorporated over the period besides Chicoutimi, the population of which had increased from 1393 to 2277 over the period. The total population had increased from 17,493 in 1871 to 28,726 in 1891.


DISTRIBUTION OF POPULATION, 1891
RURAL: 1 DOT = 20 PEOPLE
URBAN: = 2000-3000
= 500-1000
C.M.J.

St. Jean, with a population of about 800, Ste.Marguerite, and Anse St.Etienne. These villages had reached the height of their development as agricultural villages due to lack of resources.

West of Ha Ha Bay, settlement north of the Saguenay had spread as far as Delisle Township at the eastern end of Lake St. John. South of the Saguenay the good land was almost completely occupied.[41] There were six major population centres, of which two, Chicoutimi and Bagotville, were considered urban centres.[42]

Chicoutimi, with a population of 2277, was the chief town. As the chief fur post and mission of the interior in the preceding era, its importance had been due to its site at the transshipment point at the head of sea navigation, and the start of the canoe route to the interior. These same reasons were the causes of its continued importance during the period of settlement and lumbering. Its favourable site with respect to the timber supply (cf. ante p. 51) and at the head of tide water led to its becoming the centre of the lumber industry, after the construction of the first mill in 1844. Prosperity increased as the population of the region grew. It was the centre of the westward expansion of settlement, and handled both the colonists and their supplies. In 1855 it was chosen as the county seat, in 1875 a cathedral was constructed, and in 1888 it became the seat of the bishopric, and so began its roles of administrative and ecclesiastical centre of this region. In 1869

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41 Buies, op. cit., pp. 29-34

42 For census purposes, an urban centre is a municipality which has obtained a charter of incorporation as a village, town or city, regardless of population. Thus an urban centre may be smaller in size than a rural parish which has not been incorporated.

it was first connected by regular steamer service to Quebec, and in 1893 was connected to Quebec in all seasons by rail, and was the chief exporting centre of the region for lumber and agricultural produce, by both land and water. In 1895 the first hydro-electric power plant of the region was built on the Chicoutimi River, foreshadowing the industrial era to follow. The town was, declared a contemporary, "le grand centre du commerce, de l'industrie, de toutes les affaires en général".[43]

The growth of the town over the period can be seen by a comparison of Figures 23 and 24 , which are views of the town in the years 1858 and 1896 respectively. Figure 23, taken from the east, shows the recently cleared site, the first houses and church, and the Sydenham Road at the left. The "Bassin" of the Chicoutimi River, where it widens upon meeting the Saguenay, can be seen in the background, with the large sawmill on the west bank (left background), and several schooners can be seen in the harbour. Figure 24, taken from west of the Bassin, looking east, shows the rough terraces on which the town is built. Price's sawmill, shown at the right of the photograph, and his wharf, stacked with lumber, are in the foreground near the new church of Chicoutimi West, and the cathedral on the site of the first church, the seminary, and the government wharf can be seen in the background. In the right middle-distance, the trestle carrying the recently completed railway through the town to the wharf can be seen.

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43 Buies, op. cit., p. 141.

Figure 23. View of the Village of Chicoutimi, 1858

This photograph, looking west, shows the first houses and church of the settlement. Price's sawmill can be seen in the left background.

Figure 24. View of the Town of Chicoutimi, 1896.

This photograph, looking east, shows the rough terraces on which the town rises to the south. Price's sawmill and wharf are in the foreground, near the new church of Chicoutimi West, constructed 1893. The cathedral, on the site of the first church, the seminary, and the government wharf can be seen in the background. A comparison with Figure 23 shows the growth of the town in 38 years. The population was now 2277.

Both photographs courtesy La Société Historique du Saguenay

Grande Baie and Bagotville, settled in 1838 and 1839 respectively, were the two oldest centres of the region. Grande Baie, at the mouth of the Ha Ha River, was the site of the first sawmill of the lowland, but the pine forests of the small drainage basin were not extensive, and the mill remained small compared with that of Chicoutimi. Agriculture had also developed on the alluvial terraces. The population of the parish dropped at the end of the era due to the depression, from 1749 in 1881 to 1689 in 1891 , and it was described in 1896 as being very poor.[44]

Bagotville, on the Rivière à Mars, also was the site of a sawmill, which was closed in 1850. However, the village was better sited as an agricultural centre than Grande Baie, being centrally located in a fertile region, whereas the rough wooded country of the Laurentian plateau lies south of Grande Baie. By 1881 Bagotville was incorporated as a town with a population of 508, with 1071 in its rural parish. This was a decrease over the population of 1598 in 1871, due to emigration. In 1891 the population of the town had remained almost stationary at 520, but it was described in 1896 as having a very prosperous parish, which had the greatest production of grain and livestock per capita, and the greatest trade in blueberries (exporting $25,000. worth in a good year) of any parish in the region.[45]

Jonquière, first settled in 1847, and permanently settled in 1855, became a rural municipality in 1866, with a population of

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44 Ibid., p. 135.

45 Loc. cit.

about 1300. From 1881 to 1891 the population decreased slightly from 1511 to 1477. Laterrière, on the upper Rivière du Moulin, was, like Jonquière, a completely agricultural parish. Settled in 1846, it had a population of 1519 in 1871 which dropped to 1106 by 1891. Ste.Anne de Chicoutimi, facing Chicoutimi on the north shore of the Saguenay, was founded in 1843 and became a lumbering and agricultural centre, with a population of 1689 in 1891.

The increase in density of the Lake St. John basin is very marked in comparison of Figures 21 and 22, especially south and east of the lake. The new settlement north of the lake, aided by the extension of the road to Albanel and Peribonka in 1894, is not shown in Figure 23, which is drawn from information given in the 1891 census. In this region the largest parishes were the oldest ones, south and east of the lake, of which two, Hébertville and Roberval, had been incorporated as urban municipalities. Hébertville, the first major settlement of the lowland in 1849, had a population of 3,000 in 1879, and occupied 18 ranges in Labarre, Mesy, Caron, and Signai townships.[46] Like Chicoutimi it was an important centre in the movement of colonists westward. In 1882 it was incorporated as a village, and in 1891 had a population of 509, with 1887 in its rural parish. In 1893 the railway to Chicoutimi passed three miles north of the village, and here, at Hébertville Station, the nucleus of another village began to appear. Roberval, first settled in 1855, was the largest centre of the region by 1891, with a population of 783 in the village, and

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46 Canada, Department of Agriculture, op. cit., p. 23.

1040 in the rural parish. It was the agricultural market and supply centre for the region south and west of the lake.

St. Jerome, the terminus of the road to Quebec completed 1877, was also a centre in the colonization movement and an agricultural centre. Detached from the parish of Hébertville in 1873, it had a population of 1835 in 1891. St. Joseph d'Alma, on the Petite Décharge, was first settled in 1869, and became a separate municipality in 1879. It was the commercial centre of a rich agricultural region, and in 1891 had a population of 1031. Other settlements on the shore of the lake were St.Prime, with a population of 1050, and St.Louis de Chambord, the railway junction, with a population of 1155. South of the lowland on the plateau, the townships of DeQuen, Dablon, and St.Hilaire had a population of 1124. North west of the lake the new parishes of Normandin, Albanel, and Parent had a population totalling 587.

The population growth in the region during the period is shown in Table II, which also shows the percentage increase over each decade, and the percentage of the population classed as urban and rural. Although the County of Chicoutimi was not subdivided into the counties of Chicoutimi and Lac St. Jean until 1890, the information for the two areas which they came to occupy is given separately throughout the table, so that a comparison of the upper Saguenay lowland (Chicoutimi County) and the Lake St. John basin (Lac St. Jean County) is facilitated.

TABLE II POPULATION GROWTH IN REGION, PERCENTAGE INCREASE OVER DECADE, PERCENTAGE OF POPULATION - URBAN AND RURAL

(Where . . Pop. = Population,
(Inc. over Dec. = Increase over Decade,
(Urb. = Urban
(and Rur. = Rural

	REGION		CHICOUTIMI COUNTY				LAC ST.JEAN COUNTY			
Year	Pop.	Inc. over Dec.	Pop.	Inc. over Dec.	Urb.	Rur.	Pop.	Inc. over Dec.	Urb.	Rur.
1844[a]	1590	----	1590	----	---	100%	----	----	---	----
1851	5364	237%	5214	228%	---	100%	150	----	---	100%
1861	10478	95%	8955	72%	---	100%	1523	913%	---	100%
1871	17493	67%	11812	33%	12%	88%	5681	273%	---	100%
1881	23530	26%	13801	17%	17%	83%	9729	71%	---	100%
1891	28726	22%	14244	3%	20%	80%	14048	44%	10%	90%

a Pilote, op. cit., p. 76

The birth rate during the period averaged over 40 per 1000, but the death rate was also high at 12-15 per 1000.[47] The natural increase thus averaged about 30% of the population each decade. The percentages of population increase up to 1871, however, are seen to be well above this figure, showing a high level of immigration. After 1871 the actual increase was lower than the natural decrease, showing considerable emigration from the region during the depression. This emigration was entirely from Chicoutimi County, which it is seen had negligible population increases, whereas the Lake St. John area continued to show increases higher than the natural rate of increase. By 1891 there were four urban centres - Chicoutimi and Bagotville in Chicoutimi County constituted 20% of the total

47 Census of Canada, 1880-81.

population of that county, whereas Roberval and Hébertville in Lake St. John County constituted only 10% of the total population. This had been a period of rural activities - lumbering and agriculture; the next era was to bring industry and the growth of towns.

These population facts are also presented graphically, for easy comparison. Figure 25 shows the population of the region and of each county with its rural and urban proportions for each decade. The percentage increases in population for the whole region and for each county over each decade are shown in Figure 26.

By the end of the period the settlement pattern of the region had been well established. When a new parish was opened, the greater part of the population was on the land, and the village was small, with perhaps a church, school, and general store. As the parish grew, so did the settlement around the church. As the land was taken up, the extra sons of the large families turned to occupations other than farming, if they remained in the parish, and outsiders came in to provide services for the growing population. The functions of the village became more diversified, and houses, a townhall, stores, restaurants, and small industries, often processing agricultural produce, grew up. The villages, then, contained the labourers - in lumbering, small industry, or agriculture - and the professional and commercial men; whereas the farmers lived on the ranges.[48] For example, although the parish of Hébertville was founded in 1849, and a small village grew up, it was not incorporated until 1882, and in 1891 had a population

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48 Cf.R.Blanchard, op. cit., p. 143.

Figure 25. The Population of the Saguenay Region, 1844-91, Showing Proportions Urban and Rural.

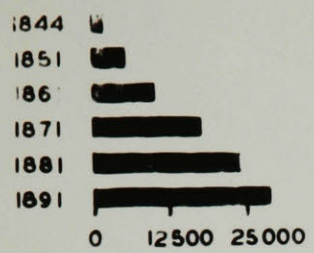
a. The region as a whole.

b. Chicoutimi County (the upper Saguenay lowland).

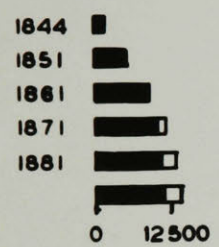
c. Lac St.Jean County (the Lake St.John basin).

Figure 26. Percentage Increases in Population each Decade 1844-91.

For the whole region and for each county.

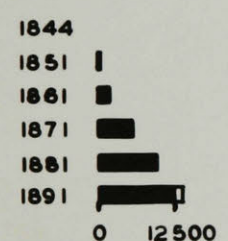


A. POPULATION OF THE SAGUENAY REGION 1844-1891



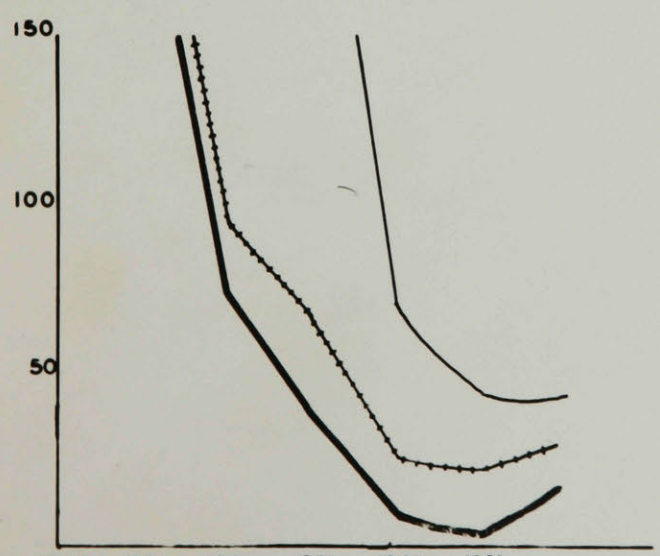
B. POPULATION OF CHICOUTIMI COUNTY 1844-1891

RURAL
URBAN



C. POPULATION OF LAC ST. JEAN COUNTY 1844-1891

RURAL
URBAN



PERCENTAGE INCREASE OF POPULATION 1844-1891

SAGUENAY REGION
CHICOUTIMI COUNTY
LAC ST JEAN COUNTY

of 509 as against 1887 in its rural parish. These small villages were a transitional stage between dispersed rural settlement and the development of a town or city. All the old centres of the region, which were originally agricultural centres, developed in this manner: Chicoutimi, Jonquière, Alma, Bagotville, St. Jerome, Hébertville and Roberval.

As has been mentioned, long, narrow lots were laid out so that as many as possible edged the water, the only means of communication for many years. Consequently it was along the water that the first concentrations of settlement were situated, and that almost without exception the old villages and towns of the region grew up and developed.[49] On the Saguenay fiord were the villages of Petite Saguenay, Anse St.Jean, St.Fulgence, Descente des Femmes (now Ste.Rose), and Ste.Anne de Chicoutimi. On Ha Ha Bay were Grande Baie and Bagotville. On the shores of Lake St. John were St.Gédéon, St. Jerome, Chambord, Roberval and St.Prime, and on its large tributaries were St. Felicien, Mistassini, and Peribonka. Others grew up on the canoe route from the Saguenay to Lake St. John - Chicoutimi at the mouth of the Chicoutimi River, St.Cyriac on the north shore of Lake Kenogami, and Hébertville on Belle Rivière. Those which grew up in the interior were also on lakes or rivers by which they were reached before the roads were extended - Lac Bouchette, Normandin, and Jonquière. Two exceptions in the interior which were reached by land were Laterrière and Albanel.

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49 Cf.B.Brouillette, "L'Habitat et la Population du Saguenay", L'Actualité Economique, Vol. XXII, p. 649, January 1947

Agricultural Conditions. The development of agriculture during the period can be seen by a comparison of agricultural conditions in 1851 with those of 1891, as shown in Table III.

TABLE III DEVELOPMENT OF AGRICULTURE DURING THE PERIOD

	1851	1891
Area occupied (acres)	63,244	506,594
Area improved (acres)	13,115	203,264
Percentage improved	20%	40%
Number of farms	672	3,793
Average size of farms (acres)	95	135
Wheat acreage	2,297	10,375
Barley "	1,504	2,326
Oats "	1,152	24,807
Potato "	558	2,436
Number of milch cows	1,014	14,044
Number of other cattle	1,197	9,040
Cattle per farm	3	7
Number of horses	658	5,204
" " sheep	1,991	29,357
" " swine	1,144	9,700

The occupied area had been increased about 8 times, whereas the number of farms had been increased less than 6 times, showing an increase in the size of the average farm. Oats acreage showed the greatest increase of any field crop, due to its use as feed for livestock on the farms and for the horses used by the lumber industry. The wheat acreage was the second largest of the field crops, and the region was often referred to as "le grenier de la province",[50] as wheat production on the prairies of Western Canada had not reached its present importance. The trend shown was towards the development of a mixed agricultural economy, with

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50 See for example:
Alex Girard, La Province de Quebec, 1905, p. 119.
A. Buies, Sur le Parcours du Chemin de Fer du Lac St.Jean. 1886, p. 10.

emphasis on dairying. Extra income was obtained by the export of blueberries and spruce gum.[51]

A contemporary wrote[52] that great progress was being made in agricultural methods by efforts of the Quebec Department of Agriculture and Colonization, by agricultural conferences, and by the increased circulation of the Journal d'Agriculture Illustré, and that efforts were being made to produce apples in the Lake St. John lowland. Little sign of such progress was apparent in the crop yields, however, which were very poor. In 1891 the wheat yield was only 7.5 bushels to the acre, and the oats yield was 12 bushels to the acre. However, the percentage of improved land to total occupied land had doubled, as had the number of cattle per farm, which show more intensive farming methods.

Economic Conditions. At the end of the period economic prosperity had revived in the country as a whole, aided in the Saguenay region by the completion of the railway to Chicoutimi in 1893.

In 1891 there were 39 establishments producing log products valued at $761,674 in the region, and 57 sawmills in the region and on the North Shore of the St. Lawrence. The largest sawmills were those at Chicoutimi, Grande Baie, and Roberval.

The tourist industry had become an important source of revenue. The excellent hunting and fishing, and the attractive scenery, of the region had begun early to attract travellers.

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51 Buies, Le Saguenay et le bassin du lac Saint-Jean, 1896, p. 154.

52 Ibid., p. 419

After 1849 the regular steamer service carried many tourists, some of whom stopped at Tadoussac, which had become a fashionable centre with the construction of a large hotel in 1864, others continuing up the Saguenay.[53] A provincial publication of 1900 describes the fine hunting and fishing available for tourists, with Bagotville, Grande Baie and Chicoutimi being the centres for fishing and hunting expeditions.[54]

A contemporary historian described in 1896 the returning prosperity of that year as compared with the miserable conditions of the 1870's.[55] Both the dairy and lumbering industry were more prosperous, with the latter employing 3,000 men. He gave the entire credit for the increased activity to the completion of the railway, ignoring the return of prosperity throughout the western world. However, the railway did aid in the development of the region, especially after its extension to Chicoutimi in 1893. In 1894 the freight carried over the Quebec and Lake St.John Railway increased to 145,770 tons, from 104,000 tons in 1889 and 133,150 tons in 1893, almost all of which was wood or wood products, valued at $600,000, with about 28,000 tons of other merchandise. The amount of cheese exported by rail increased from 522,000 pounds in 1893 to 1,114,000 pounds in 1894, valued at $200,000. About one half of this cheese came from the Hébertville-St. Jerome area, about one quarter from Chicoutimi and Jonquière, and the remainder from south and west of Lake St. John. The number of passengers increased

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53 W.H.Coverdale, Tadoussac Then and Now, 1942, p. 21.

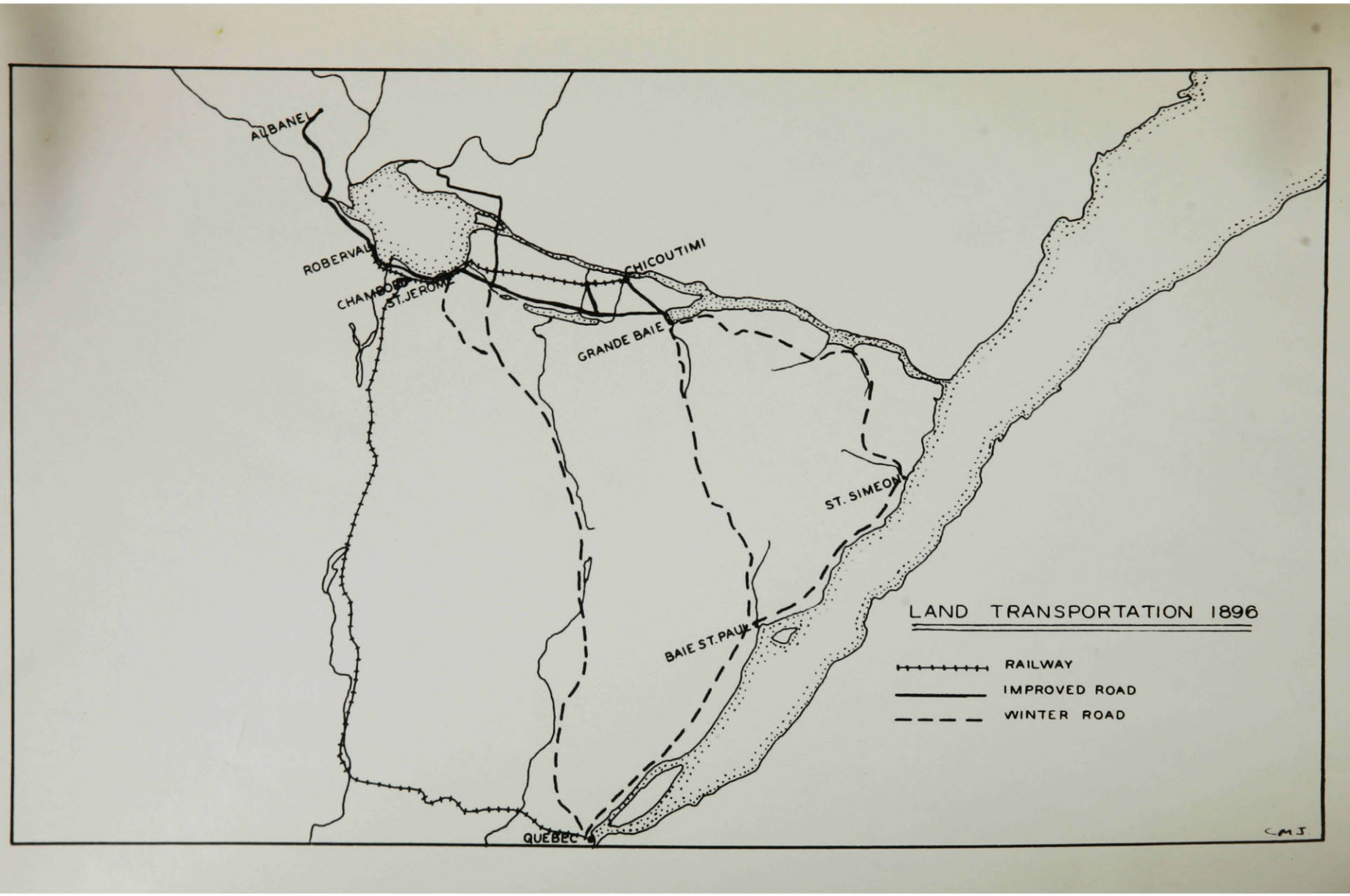
54 Quebec, Department of Agriculture, La Province de Quebec, 1900, p. 248.

55 Buies, op. cit., pp. 416-418.

by 1,400 from 1893 to 1894, with 409 families of new colonists being given free transportation. In all, 700 new colonists took up land in the area in 1894, many of them having returned from the United States now that conditions had improved.

Means of Transportation. By the close of the period the region was connected to the outside world in all seasons. Steamers called at Chicoutimi and Bagotville in summer, three roads to Quebec were passable in winter and in dry seasons of the summer, and the railway provided year-round service. The transportation network at the end of the period is shown in Figure 27. On this map can be seen the three roads to Quebec, following river valleys throughout most of their length, the railway, which reached Lake St. John from Quebe by a circuitous route to avoid the rough terrain north of Quebec, and extended to Chicoutimi and Roberval, and the Kenogami road, which now almost encircled the lake.

Figure 27. Land Transportation, 1896


ALBANEL
ROBERVAL
CHAMBORD
ST. JEROME
CHICOUTIMI
GRANDE BAIE
ST. SIMEON
BAIE ST. PAUL
QUEBEC
LAND TRANSPORTATION 1896
RAILWAY
IMPROVED ROAD
WINTER ROAD
CMJ

CHAPTER V

THE PULP, PAPER, AND POWER ERA 1897-1927

HISTORY OF DEVELOPMENT 1897-1927

The construction of the first pulp mill of the region at Chicoutimi in 1897, supplied with power by the first hydro-electric power plant built two years before, marked the commencement of a new era of industrial development. The two chief resources of the region, forests and hydro-electric power potential, were the bases of the pulp and paper industry which developed; and continued expansion of production in this industry, and of installed power, occurred during the period. As a result of the high level of activity, the population increased by two and one-half times during the period, with the urban centres receiving over 60% of the total increase. The enlarged local market gave encouragement to agriculture and to diversified small industry, and transportation facilities were improved.

The closing date of the era, 1927, does not mark the end of the importance of the pulp and paper industry in the region, nor the end of its period of expansion, both of which have continued to the present day. However, by 1927 the industry had attained its present, and probably permanent, role in the region; its sources of raw materials and power, and its export facilities, had been established, and no new mills have been constructed since that date. As the construction of the first hydro-electric plant at Chicoutimi in 1895 had foreshadowed the commencement of this new era of pulp and paper, so the completion of the first large-scale

power development, at Isle Maligne in 1925, foreshadowed an era of large-scale industry, the beginning of which was marked by the construction of an aluminum refinery at Arvida in 1926.

The region had both plentiful resources and locational advantages for the pulp and paper industry. The hydro-electric power potential of the region, on the basis of the ordinary six months flow, has been estimated at over 1.5 million horse power.[1] Abundant forest resources were accessible by the many rivers and lakes. Timber supplies, which had been showing signs of exhaustion for the lumber industry, were now, in effect, renewed, due to the differing needs of the pulp and paper industry. For the purposes of this industry, smaller trees, chiefly spruce, balsam, and jack-pine, were satisfactory, and these were the dominant species on the plateau surrounding the region, and the second growth timber of the lowlands. The ports of the region were on tide water for export, an important consideration for such a heavy, bulky product as pulp, which is uneconomical to export by rail, and also as Britain was a major market. In the latter half of the period, as railway facilities were extended, and the production of paper became greater than that of pulp, export by rail became more important.

The great expansion of the industry during the period was encouraged by several factors. One was the increasing scarcity

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1 Dominion Water Power and Reclamation Service, Quebec Streams Commission and Hydraulic Service, List of Water Powers in the Province of Quebec, (1928) p. 5. The conservatism of these estimates is shown by the fact that present installations total over 2 million horse-power.

of suitable forest reserves in the United States, coupled with the Canadian provincial embargoes of 1900-1911, which prohibited the export of unmanufactured pulpwood cut on Crown lands (which constitute 90% of the forests of the province of Quebec). These factors resulted in the American tariff reductions of 1909-1911, and since 1913, newsprint has entered the United States free of duty. The advantages of the Saguenay region for this industry - cheap water transportation, plentiful and cheap power, and abundant supplies of pulpwood, as mentioned above - thus attracted capital and enterprise as the American market continued to enlarge.

The Early Pulp Era, 1897-1920. The site of the first pulp mill, constructed by Mr. J.E.A.Dubuc at Chicoutimi in 1897, was near the power plant on the second fall on the Chicoutimi River, which was taken over by his Chicoutimi Pulp Company, and 5,000 H.P. were harnessed. Pulpwood supplies were received via the Chicoutimi River from the 1545 square mile drainage basin of Lake Kenogami, and the site was at the head of ocean navigation for export, chiefly to Britain. Mechanical pulp was produced at the rate of 40 tons a day,[2] and employment totalled 150. In 1903 a second mill was constructed upstream on the third fall of the river.[3]

Other mills had been quickly established. In 1899 a

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2 Mechanical or groundwood pulp is manufactured by grinding the barked pulp with revolving grindstones, powered by hydraulic power. It is then mixed with water to form a porridge-like mixture, dried on moving driers which strain out the water, and lastly, pressed and rolled. This type of pulp is used where economy, not strength or quality, is desirable, as in the production of newsprint, which contains 80% of groundwood pulp.

3 E. Minville, ed. La Foret, 1944, p. 196.

group of settlers constructed a small mill at Jonquière. Logs were carried down to the mill from Lake Kenogami by the Rivière au Sables, which also provided power. This was taken over by William Price in 1902. (Cf. post p.87) Others were constructed on Lake St. John, where wood and water power were also abundant. One of these was built at Val Jalbert in 1900, near the 236 foot fall of the Ouiatchouan River, where 7,300 H.P. were installed. Another was built at Ste.Amedée on the Petite Peribonka, with a power plant producing 1500 H.P. Another was planned at St.André de l'Epouvante on the plateau south of the lake, but the forests limits were burned, and one was therefore constructed instead at Desbiens at the mouth of that river, on which 1400 H.P. were installed.[4]

In 1905 the annual production of these five mills was given as follows:[5]

Chicoutimi	70,000	tons	(approx.	200	tons	per	day)
Jonquière	12,000	"	"	35	"	"	"
Val Jalbert . . .	15,000	"	"	40	"	"	"
Desbiens	15,000	"	"	40	"	"	"
Ste.Amedée	7,000	"	"	20	"	"	"

(Employment in the five mills in 1911 was 1150 men)[6]

Meanwhile the large sawmills, exporting pine lumber, were being closed down. Those at Grande Baie, Roberval, and Chicoutimi were closed in 1904, 1910, and 1912 respectively, although smaller mills continued operations using smaller trees, the most important

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4 R. Blanchard, l'Est du Canada Francais, 1935, Vol.II, p. 93.

5 A. Girard, La Province de Québec, 1905, pp. 124-125

6 Blanchard, loc. cit.

being at Rivière du Moulin, Bagotville, and Lac Bouchette.

In response to increased British demand resulting from the prohibitive effects of the first world war on Scandinavian pulp exports, Dubuc, the owner of the Chicoutimi mills, constructed a new mill on Ha Ha Bay. Known as Ha Ha Bay Sulphite Company, the mill, and a new town called Port Alfred, were laid out between Bagotville and Grande Baie, and export facilities were constructed on the magnificent natural harbour. Forest limits were acquired along the Ha Ha River, the Rivière à Mars, and the Peribonka, and power was harnessed at two small sites on the Ha Ha River. In 1918 the mill began the production of chemical pulp at the rate of 125 tons a day.[7] The older mills had meanwhile increased their productive capacity. By 1920 both of the Chicoutimi mills had been enlarged, as had the power installations, so that capacity was now 300 tons of pulp a day. In 1920 Dubuc purchased the mill at Val Jalbert, and production was increased to 100 tons a day.[8]

The Early Paper Era 1912-1920. Meanwhile paper production had been introduced into the region. The pulp industry had always suffered from serious competition, especially from Scandinavian producers. Sea transportation from the Saguenay was closed for five months, and the cost of exporting pulp by rail was high.

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7 The type of chemical pulp produced in the region is sulphite pulp. It is manufactured by "cooking" chipped pulpwood in a solution of bi-sulphite lime, then screening, drying, and rolling the mixture. This process removes non-fibrous matter, leaving pure cellulose, and paper made from this type of pulp is more durable and of better quality than that produced from groundwood pulp. Newsprint contains 20% of sulphite pulp, and it is also used for more expensive papers.

8 Minville, op.cit., p. 196-197.

Its rivals were better equipped, paid lower wages, and had cheaper transportation costs in shipping to Britain. On the other hand, paper production, which profited from the same advantages of site as did the pulp industry, did not suffer from the same disadvantages in marketing. Wood pulp is the only important raw material in paper production - the other materials - lime, sulphur, and other chemicals - are required in small quantities and are easily imported to a region producing pulp cheaply. Power, needed in large supplies, was also plentiful and cheaply produced in the region. Also the product is more valuable and more compact, and can thus be profitably shipped by rail in all seasons, and, secondly, found its chief market in the United States, where it could resist foreign competition.

The leader in paper production in the Saguenay region was Sir William Price, a grandson of the original William Price. Coming into control of the then reduced Price lumber firm in 1899, he had at his disposal large forest limits, a trained labour force, sufficient capital, and unusual ability. In 1902 he purchased the small pulp mill at Jonquière, which was in danger of bankruptcy, with the intention of introducing paper production, which he foresaw would make pulp production more profitable. In 1904 he began the production of cardboard at this mill, and in 1909 installed the first paper machine of the region. Its success led to the construction of a new mill at Kenogami, downstream from Jonquière, which was completed in 1912.[9] A town of that name was laid out

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9 Price Brothers, The Saguenay Saga of Lumber and Newsprint, 1930, p. 16.

by the company to house its employees, the first "company town" of the region. A power plant with a capacity of 26,200 H.P. was built on the Rivière au Sables beside the mill, and other power plants were also constructed on the Chicoutimi and Shipshaw Rivers to supply the needs of the mill. The pulpwood was obtained from the drainage basins of Lake Kenogami, by way of the Rivière au Sables and from that of the Shipshaw and Valin Rivers north of the Saguenay. These last two rivers empty into the Saguenay below the mill, and to avoid the necessity of rafting the wood upstream, two flumes were constructed. One, 11 miles long, carried the wood overland from the Valin to the Shipshaw; the other, 13 miles long, carried it from the Shipshaw overland and across the Saguenay to the mill.[10]

Thus well supplied with pulpwood and power, equipped with 3 paper machines, the mill began production of paper in 1912 at the rate of 150 tons a day, producing both mechanical and chemical pulp. The number of paper machines was increased to 4 in 1917, and 5 in 1920, so that production in that year at both the Jonquière and Kenogami mills totalled 445 tons of pulp and 325 tons of paper.[11]

Decline of the Pulp Mills. During the post war depression, and even during the prosperous 1920's, the pulp mills, as distinct from those producing both pulp and paper, were suffering from the afore-mentioned difficulties in marketing and from the Scandinavian competition. The history of the three companies

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10 Ibid., p. 23

11 Minville, op. cit., p. 209

controlled by Dubuc (Chicoutimi, Port Alfred, and Val Jalbert) during this period is a series of misfortunes, capital re-organizations, and changing control.[12] Partial control of the Chicoutimi mills was obtained by Price Bros., and one mill was closed in 1927, to be followed by the other in 1930. Price Bros., wishing to eliminate competitors, also bought out and closed the pulp mill at Ste. Amedée in 1917, and at Val Jalbert in 1927. In 1922 the mill at Port Alfred was temporarily closed, due to financial difficulties.

Expansion of Paper Production. In contrast, the high level of business prosperity during the 1920's led to further expansion of paper production. This was made possible by new hydro-electric power installations, the largest being at Isle Maligne on the Grande Décharge. (Cf. post pp. 93-94) The number of paper machines at the Kenogami mill was increased to 7 in 1926, so that production in that year was 500 tons of newsprint a day. The mill at Jonquière was also enlarged to produce 30 tons of newsprint and 20 of cardboard a day.[13]

In 1925 Price Bros. constructed a paper mill and townsite at Riverbend on the Petite Décharge, two miles south of the new Isle Maligne power house, from which it obtained its power. The pulpwood supplies were obtained from the Peribonka holdings of the company through the Petite Décharge. This mill began production with one paper machine in 1925, and there were two installed by 1926 and four by 1929, the capacity then being 500 tons of news-

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12 Ibid., pp. 196-197.

13 Price Brothers. op. cit., p. 17.

print a day.[14]

In 1926 the Lake St. John Pulp and Paper Corporation began construction of a paper mill and townsite at Dolbeau, at the confluence of the Mistassini and Mistassibi Rivers, which produced 230 tons of newsprint a day. The organizer, Wallburg, intended to develop local power supplies, but his death and the depression resulted in the importation of power from Isle Maligne. Pulpwood supplies were obtained from large forest limits on the Mistassibi and Rat Rivers.[15]

Also in 1926 the pulp mill at Port Alfred was bought and reopened by the Port Alfred Pulp and Paper Company (which came under the control of Consolidated Paper Corporation in 1931) with the addition of 4 paper machines. Additional power was imported from Isle Maligne, and the capacity of the mill was 500 tons of newsprint a day.

Hydro-electric Power Installations. Since the beginning of the period, developments in the pulp and paper industry had been simultaneous with installations of hydro-electric power.

The Chicoutimi Pulp Company harnessed 5,000 H.P. on the second fall of the Chicoutimi River in 1897, and 2200 on the fourth fall in 1913, and by 1912 the plant on the second fall had been enlarged to produce about 11,000 H.P. Price Bros. had meanwhile harnessed three falls on the Rivière au Sables for the mills at

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14 Loc. cit.

15 Blanchard, op. cit., p. 103.

Jonquière and Kenogami, with 2 plants at Jonquière built in 1906 and 1916, producing 2500 H.P. and 4500 H.P. respectively, and one at Kenogami, built 1912, producing 26,200 H.P.[16] Price also harnessed the first fall on the Chicoutimi River in 1912, on the site of their old sawmill, now closed.

However, due to the irregular river flow, constant hydro-electric output could not be maintained. For the pulp and paper industry, a constant productive capacity is required for a steady market, and also continuous use of the heavy machinery is necessary for maximum efficiency, so that power interruptions were uneconomical. An attempt had been made to regulate the flow of the Chicoutimi and au Sable Rivers in 1901, the first regularization project of the region. A barrier was raised, by the pulp mills affected, at the two outlets of Lake Kenogami - at Pibrac, at the outlet of the Rivière au Sable, and at Portage des Roches, at the outlet of the Chicoutimi River. These raised the lake level 9 feet, and gave a flow of 1200 cu. ft. per second to the Chicoutimi, and 600 cu. ft. per sec. to the au Sable, for seven to nine months, but the winter flow was still reduced to as low as 140 - 320 cu. ft. per second, and the necessity of closing the mills continued.[17]

Other water powers had also been developed by the pulp and paper industry. Col. Scott had harnessed 1500 H.P. on the

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16 Canada, Department of the Interior, Dominion Water Power and Reclamation Service, Water Resources Paper no. 55. "Central Electric Stations in Canada", Part II, Directory, May, 1928, p. 428.

17 Blanchard, op. cit., p. 99

Peribonka for his mill at Ste.Amedée; 7300 H.P. had been harnessed on the 236 foot fall of the Ouiatchouan for the mill at Val Jalbert; two small sites on the Ha Ha River had been developed for the Port Alfred pulp mill in 1916 and 1919, producing 1300 H.P. and 800 H.P. respectively; and 1400 H.P. had been harnessed at the Metabetchouan for the mill at Desbiens. Price Bros. built two large plants on the Shipshaw River - one at Chute Murdock in 1913 producing 10,800 H.P. and one at Chute des Galets in 1921 producing 17,600. This river was regularized by storage dams at Lakes Onatchiway and Pamouscachiou built 1918 and 1923, giving an assured flow of 1200 cu. ft. per sec.[18]

Further regularization was next effected on the Chicoutimi and au Sables Rivers, to permit plant expansion during the period of prosperity. During the years 1923-25 the Quebec Streams Commission constructed six dams to increase the carrying capacity of Lake Kenogami. The two largest at Portage des Roches and Pibrac, provided ladders for the pulpwood to pass down the Chicoutimi and au Sable to the mills; the other four prevented the lake from overflowing into tributary valleys. (The position of the dams can be seen in Figure 41). The level was now raised 32 feet above low water level, and a flow of 1200 and 600 cu. ft. per second were assured the Chicoutimi and au Sable respectively, throughout the year.[19]

This project permitted further power installations on the

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18 Dominion Water Power and Reclamation Service, Quebec Streams Commission and Hydraulic Service, op. cit.

19 Ibid.

Chicoutimi River. Price installed 10,500 H.P. on the third fall of the river, and installations at Pont Arnaud on the fourth fall were increased to 7,200 H.P. from 2,200 H.P. Also full capacity could be obtained from the existing installations on both rivers.[20] Another consequence was the enlarged area of Lake Kenogami, which resulted in the larger portion of the population of the parish of St. Cyriac on the north shore being forced to leave their land. About 150 remained, out of a population of 785 in 1921. The highway, the old Kenogami Road, which also edged the north shore, was rebuilt near the railway further north.[21]

The high level of investment prevailing next led to a still greater hydro-electric development, to permit further expansion of pulp and paper capacity, and to permit the establishment of new industries in the area - the harnessing of the great potential of the Saguenay was undertaken.

Interest in developing the 330 foot head of the mighty Saguenay had been aroused at the close of the preceding century. Provincial surveyors in 1898-99 estimated the potential of the Grande Décharge at 15,000 H.P., and of Chute à Caron near the mouth of the Shipshaw at 82,000 H.P.[22] In 1900 three men obtained the rights of power development, but were unable to finance such a project. In 1913, one of these men, T.L.Willson, persuaded J.B.Duke,

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20 Canada, Department of the Interior, op. cit., p. 404.

21 Blanchard, loc. cit.

22 McN. DuBose, "The Engineering History of Shipshaw", reprint from The Engineering Journal, April, 1944, p. 2.

the American tobacco magnate, then in search of a power site for the production of nitrogen, to visit the area. As a result, Duke purchased the power rights on the river, and his engineer, W.S. Lee, drew a preliminary design of the complete Saguenay development, much as it is today.[23]

This plan included a dam and power house at Isle Maligne, with a head of 110 feet, about one-third of the total head of the river. This development, besides producing power, would serve as a regulator for the storage basin of Lake St. John, where the level would be maintained at spring flood elevation throughout the summer, and the water released during the winter to supplement the reduced flow. A second development at Chute à Caron would concentrate the remaining 220 feet of head, to supply an even larger power house.[24]

Meanwhile the Quebec Streams Commission surveyed the site during 1913-15, with respect to the storage capacity of the lake and the area which would be flooded by such a scheme. Their report[25] shows the irregular flow then existing; and concluded that if a regulated flow of 28,000 cu. ft. per second were obtained, which was approximately the desired figure, the level of the lake would be raised 20.5 feet above low water level, that 10 square miles of arable land would be flooded during the summer, and that the

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23 W.M.Goodwin, "Low-Cost Power on the Saguenay", reprint from Compressed Air Magazine, December, 1946, p.1

24 DuBose, op. cit., p. 3.

25 Quebec Streams Commission, Fourth Report, 1915, pp. 70-84.

firm annual power at the two projected plants would total about 780,000 H.P.[26, 27]

The outbreak of war in 1914, the hesitation of the Quebec Government to grant power rights which would result in the flooding of farm lands, and the failure to perfect a nitrogen fixation process as a market for the power all resulted in a long delay. Not until the next decade was Duke able to develop Saguenay power, with aluminum production and an enlarged pulp and paper capacity as potential markets. With Sir William Price he formed the Canadian Power and Manufacturing Company (known as the Duke-Price Company) and construction at Isle Maligne was commenced in 1922.

Eight dams were constructed in the Grande Décharge to block all possible overflow channels. These controlled the lake level at a maximum of 17.5 feet above low water level,[28] and provided for a regulated discharge of 30,000 cu. ft. per second, and a maximum discharge of 469,000 cu. ft. per second. The power house, which can be seen in Figure 28, was constructed at the eastern tip of the Isle Maligne, and lay across the Grande Décharge separating that island from the north shore. It was designed to consist of 12 units, each capable of developing 45,000 H.P., of which 10 were installed, with a capacity of 450,000 H.P., although during the period only 8, producing 360000 H.P., were actually put into use

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26 DuBose, loc. cit.

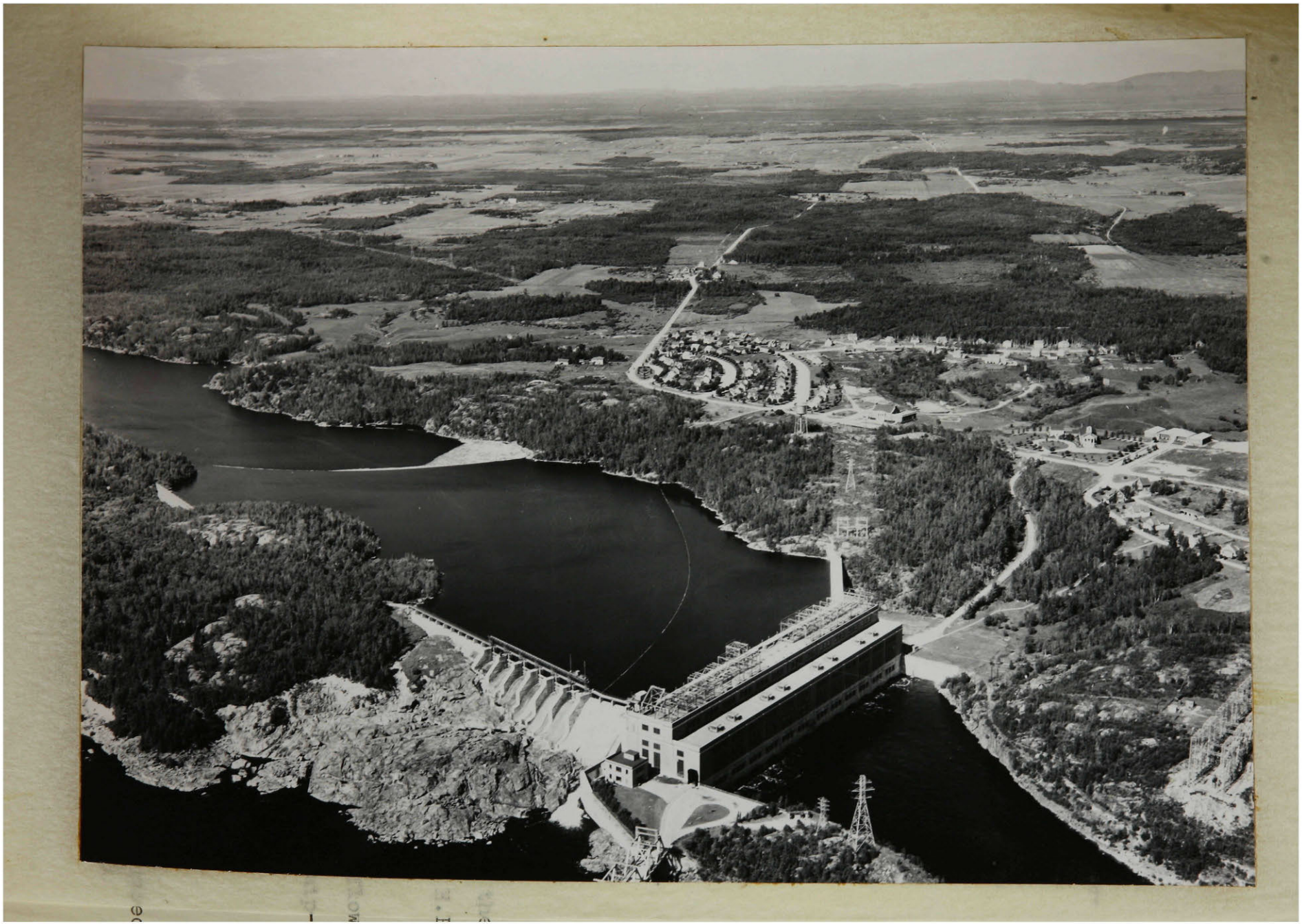
27 It might be noted here that when the project was completed thirty years later, the lake level was raised 17.5 feet, a total of 15 square miles of land were flooded, and the firm installed capacity of the two sites was over 1,500,000 H.P.

28 Quebec Streams Commission. Plan et Profil de la Rivière du Saguenay, 1929.

Figure 28. Aerial View of Isle Maligne Powerhouse and Townsite.

The powerhouse lies between the eastern tip of Isle Maligne and the north shore of the Grande Décharge. North of the town stretches the typical upper Saguenay landscape, rough forested patches alternating with fertile agricultural land. Lines of ribbon settlement along the roads can also be seen. In the distance is the edge of the surrounding plateau.

(Canadian Pacific Airlines, 1945)



The construction, which employed 3,000 workers, was completed in 1925. It included the construction in 1923 of an 11 mile railway branch - the Alma and Jonquière Railway - to the site from a junction near Hébertville Station, known as the Saguenay Power Junction. A small townsite called Isle Maligne was also laid out on the north shore of the Decharge to house the administrative and technical staff of the plant. The cost of actual construction of the project was $55 million, plus about $8 million over the construction cost for indemnities, as 15 square miles were flooded and many more affected by the rise in the lake level.[29] The parishes on the lowlying lands north and northwest of the lake were the most affected, for example the population of St. Methode west of the lower Mistassini dropped from 1174 in 1921 to 591 in 1931, and there was also farm abandonment east and south of the Peribonka.[30] Some unpleasantness resulted, and suits against the company were in process for many years.

The great importance of the achievement of harnessing the Saguenay flow was not only a potential firm capacity of 540,000 H.P. at this power house, but the fact that control of the river had been established by creating storage facilities and regulating flow. This made possible future installations near the mouth of the Shipshaw, which were expected to produce 800,000 H.P.[31]

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29 Blanchard, op. cit., p. 102.

30 R.M.Glendinning, "The Lake St. Jean Lowland, Province of Quebec" Papers of the Michigan Academy of Science, Arts and Letters, XX: 332, 1934.

31 DuBose, op. cit., p. 5.

In 1925 Mr. Duke died, and the control of the company was purchased by the Aluminum Company of America, who were planning an aluminum refinery in the region, and the Shawinigan Water and Power Company, and the Saguenay Power Company was created. The interests in this company were Aluminum Company of America, 53%, Shawinigan Water and Power, 20%, and the Duke-Price Company, 27%. In 1926 the plant had five customers. Price Bros. at Kenogami imported 50,000 H.P., permitting the afore mentioned expansion, and the new Price mill at Riverbend, completed 1925, was entirely supplied with power from Isle Maligne; the Port Alfred Pulp and Paper Company began production in 1926, importing 36,000 H.P.; the new paper mill at Dolbeau, under construction, had arranged to purchase 82,000 H.P.; a 125 mile transmission line was constructed to Quebec City in 1925 carrying 100,000 H.P., to connect with the system of the Shawinigan Water and Power Company; and the aluminum plant at Arvida began production in 1926, also importing 100,000 H.P.[32]

Development of Transportation Facilities during this Period. The transportation system during the period had been improved and extended, chiefly to serve the new industrial developments.

By 1900 the highway around the lake was extended from Albanel to Peribonka to completely encircle the lake, and by the end of the period secondary branch highways connected the parishes to the main highway throughout the region. For many years, however,

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32 Canada, Department of the Interior, op. cit., p. 425.

bridges on the rivers north of the lake were few, and they were crossed by ice roads in winter, which also crossed Lake St.John,[33] and by ferry in summer.

No new roads to the exterior had been added to the system existing at the end of the preceding period, but improvements had been undertaken. Surfacing, to allow motor transport, had been commenced in 1925 on the Quebec-Grande Baie route through St.Simeon, and also on the Laurentides Park Route from Quebec to St. Jerome, which was completed in 1929. The St. Urbain route from Grande Baie to Baie St. Paul was impassable.[34]

There were several extensions of the railway network to service the increased population and the new industrial sites. In 1908 the Ha Ha Bay Railway was constructed from a junction on the main line (the Quebec and Lake St. John) east of Jonquière, to Bagotville. This was taken over by the Roberval and Saguenay Railway in 1914, which was then controlled by the Chicoutimi Pulpe Company.[35] In 1901 the Quebec and James Bay Railway was incorporated to construct a line from Roberval to James Bay. This uneconomical project was never carried out, but the company continued the main line from Roberval to St. Felicien in 1910.[36]

The freight tonnage carried over the Quebec and Lake St.

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33 L. Hemon, Maria Chapdelaine, (1921) translated by W.H.Blake, 1937, p. 13.

34 Blanchard, op. cit., p. 87.

35 Canada, Department of Transport, A Statutory History of the Steam and Electric Railways of Canada 1836-1937, 1938, p. 525.

36 Ibid., p. 497.

John Railway in 1914 totalled 543,025 tons, of which 327,978 tons, or 60%, were exports of lumber and other forest products. This is almost four times the tonnage of 1897, which was 150,346 tons, of which 120,387 tons, or 80% were exports of lumber and firewood.[37] In 1914 this line became a subsidiary of the Canadian Northern Railway, and after that date no separate figures for the line are available. In 1917 it was acquired by the Dominion Government through its acquisition of the Canadian Northern.[38]

In 1923 the Alma and Jonquière Railway was constructed from Saguenay Power Junction near Hébertville Station to the site of the Isle Maligne power house, and in 1926 a branch was built from the main line near Jonquière to the site of the projected power development near Chute à Caron. In 1927 the main line was extended to the site of the new paper mill at Dolbeau, thus providing service to the region north west of the lake.

During the period sea going vessels were still unable to enter the harbour of Chicoutimi, and pulp was loaded onto barges in the Chicoutimi Basin, and reloaded onto larger vessels seven miles downstream. Continued appeals to the Federal Government, commencing in 1898, by the pulp companies, the city of Chicoutimi, and the railway, for port improvement, were ignored. In 1898 the manager of the Quebec Lake St. John Railway asked for either dredging of the channel into the harbour, or an extension of the railway to the deep water.[39] In 1902 Dubuc, owner of the

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37 General Manager's Office, Grand Trunk Railway System, Railway Statistics of Canada, 1891-98.

38 Canada, Department of Transport, op. cit., p.498.

39 Aubin and Grenon, editors, Le Saguenay Industriel, 1929, p.59.

Chicoutimi mills, appealed for dredging from les Battures to the Basin. Production at his mills in that year was 75,000 tons, and exports from other pulp and lumber mills brought the total exports to 135,000 tons. The extra cost of transhipping the exports came to 40¢ a ton, or $54,000. a year, whereas the cost of dredging the channel was expected to be $40,000.[40]

Pulp production continued to increase, and the construction of the Ha Ha Bay Railway to Bagotville in 1908 provided transportation for exports direct to ocean going vessels. In 1914 this railway was purchased by the Roberval and Saguenay Railway, and the figures for that year (the first available) show 55,032 tons of freight handled, of which about 19,000 tons were lumber, pulp and firewood, and other forest products, and 33,000 tons were manufactured pulp and paper.[41]

In 1918 the construction of a mill and wharf at Port Alfred, also served by the Roberval and Saguenay line, marked the beginning of exports from that port, which by the end of the period was beginning to rival Chicoutimi. In 1919 tonnage handled by that railway had increased 5 times since 1914 to 256,201 tons, of which 112,000. tons were lumber, pulp and firewood, and 97,000 tons were manufactured pulp and paper.[42] By 1926, due to continued expansion of the pulp and paper industry, tonnage had almost doubled to 476,111 tons, of which 225,291 tons were pulp, 26,533 tons

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40 Ibid., p. 57.

41 Operating and Maintenance Depts., Canadian National Railways, Railway Statistics, 1914.

42 Operating and Maintenance Depts., Canadian National Railways, Railway Statistics, 1919.

were paper, and 65,000 tons were unmanufactured forest products. The line also handled heavy import tonnages of coal and coke, 33,000 tons; cement and brick 22,000 tons; machinery 11,000 tons; stone 60,000 tons, chiefly for industrial use.[43]

RECONSTRUCTION OF THE LANDSCAPE AT THE END OF THE PERIOD

A reconstruction of the region in 1927 during the high level of construction and industrial activity shows a greatly metamorphosed landscape as compared with that of thirty years before. The population had almost trebled, the urban centres having been the chief recipients of the increase. Several new urban centres had been constructed, and the mills of the pulp and paper industry, and the hydro-electric power plants were also new additions to the landscape. Transportation facilities had been extended, and the area of occupied farm land had increased by one and one-half times over the period.

Population and Settlement. The total population of the region was 73,117,[44] as compared with 28,726 in 1891, of which 37,578 was in Chicoutimi County, and 35,539 in Lake St. John County. The distribution of the population and the growth of the towns as compared with 1891 can be seen by comparing Figures 29 and 22.

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43 Bureau of Statistics, Canadian National Railway, Railway Statistics, 1926

(It must be kept in mind that these figures of pulp and paper are only those carried by the Roberval and Saguenay Railway, which connected the Kenogami, Jonquière, and Chicoutimi mills to Port Alfred and Bagotville. These mills were also connected to the Quebec and Lake St. John Railway, for which no tonnages are available, but which carried a large portion of the paper exports to Quebec.)

44 These and all subsequent figures for 1921 from The Sixth Census of Canada, 1921, 5 volumes.

Such a comparison shows the increased number of urban centres the largest of which were in the upper Saguenay region, and the increased density of population, especially west and north of the lake. Almost all of the fertile land of the region had been occupied, and less favorable areas of sandy and swampy soil in the latter area were also occupied. As Figure 29 was drawn from 1921 census figures, the new urban centres established after that date - Isle Maligne, Riverbend, and Dolbeau - are not pictured.
The population growth of the region over the period is shown in Table IV, which gives the percentage increases of population over each 10 year period, and the percentages of urban and rural population in each county.

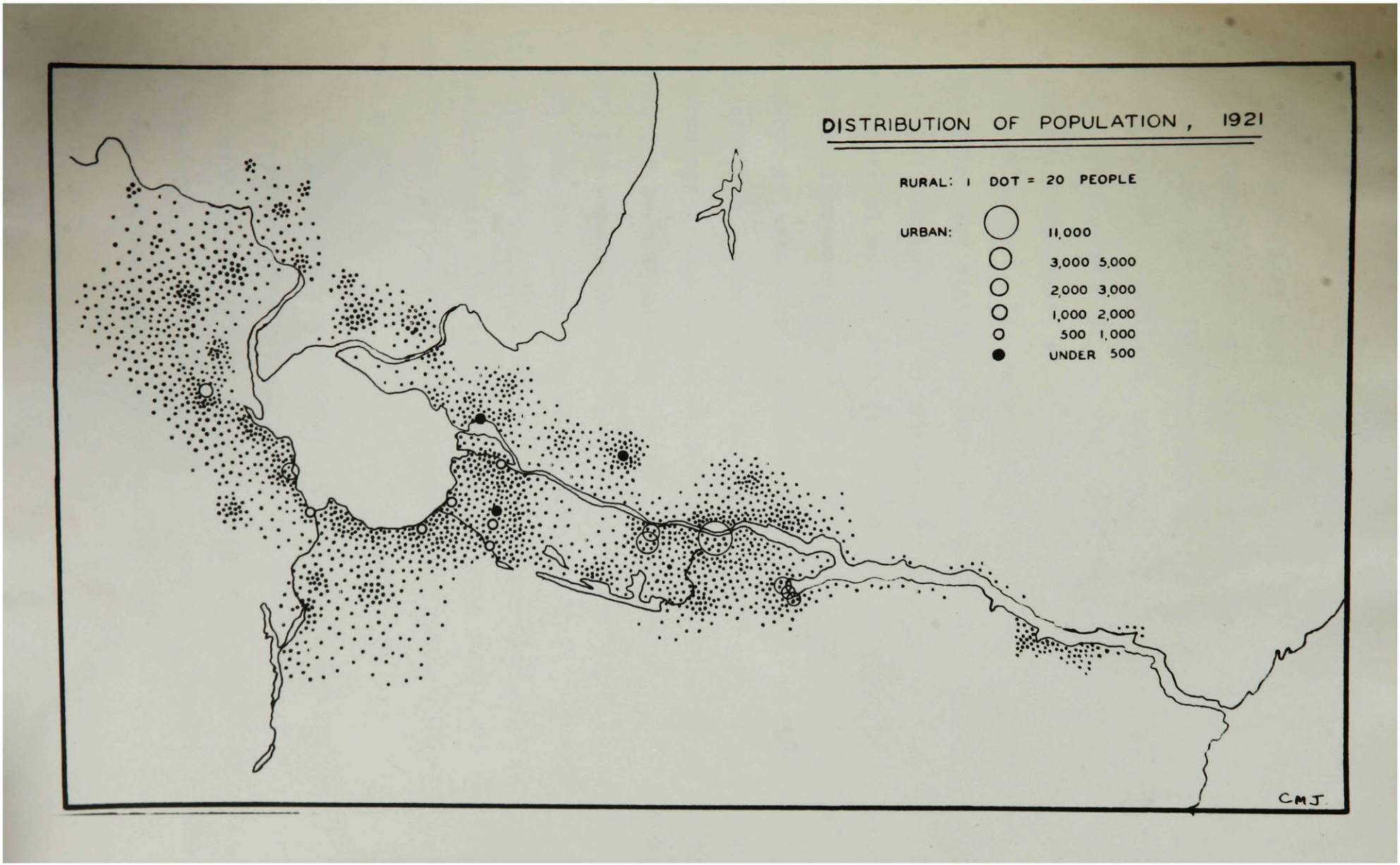
TABLE IV. POPULATION AND PERCENTAGE INCREASES OF POPULATION FOR THE SAGUENAY REGION, CHICOUTIMI CO., AND LAKE ST. JOHN CO. SHOWING PERCENTAGES URBAN AND RURAL 1891-1921.

(Where . . Pop. = Population,
(Incr. over Dec. = Increases over Decade
(Urb = Urban
(and Rur = Rural

	REGION		CHICOUTIMI COUNTY				LAC ST.JEAN COUNTY			
Year	Pop.	Inc. over Dec.	Pop.	Inc. Over Dec.	Urb.	Rur.	Pop. over Dec.	Inc.	Urb.	Rur.
1891	28726	22%	14244	3%	20%	80%	14048	44%	10%	90%
1901	37028	30%	16872	18%	38%	62%	20156	43%	11%	89%
1911	50486	36%	23375	40%	48%	52%	27111	35%	18%	82%
1921	73117	44%	37578	60%	62%	38%	35539	31%	25%	75%

Figure 29. Distribution of Population, 1921

A comparison with Figure 22 shows clearly the extension and increased density of population 1891-1921, and the increased number and size of urban centres, especially in the upper Saguenay region.


DISTRIBUTION OF POPULATION, 1921
RURAL: 1 DOT = 20 PEOPLE
URBAN:
11,000
3,000 5,000
2,000 3,000
1,000 2,000
500 1,000
UNDER 500
CMJ

The natural increase over the period had remained about 30% of the population each decade.[45] Over the region as a whole growth had been above this figure after 1901, and there had been heavier immigration 1911-21, when the population increased by 44%. The population growth of the whole region and for each county, showing the proportions of urban and rural population, are also shown graphically in Figure 30, while the percentage increases in population are similarly shown in Figure 31. From these it can be seen that immigration to the Lake St. John basin had decreased over the period as the fertile land became occupied, and the urban population increased slowly, from 10% in 1891 to 25% in 1921. The number of urban centres had increased from 2 in 1891 to 10 in 1921, of which 2 were towns, and during the decade of the 1920's the urban population increased more rapidly, and three more urban centres had been created by the end of the period. In Chicoutimi County, the population increase had been more rapid, especially 1911-21, and the urban population had increased from 20% of the total in 1891 to 62% in 1921. There were 9 urban centres in 1921 as compared with 2 in 1891, of which 4 were towns, and one a city. During the 1920's the population of urban centres increased again by 50%.

The rural pattern which had been established during the preceding period remained, although now oriented by the road system rather than the waterways. The roads followed the lines of survey, i.e. the range and lot lines, and the long lots fronted on the range road and extended at right angles to it, so that one end lay

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45 Blanchard, op. cit., p. 150.

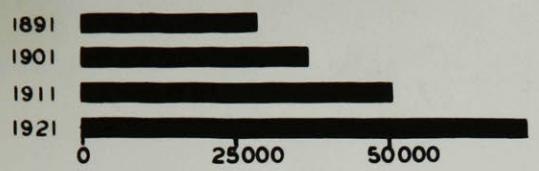
Figure 30. Graphical Representation of the Population Growth 1891-1921

a. Total population of the region 1891-1921

b. Population of Chicoutim County, 1891-1921, showing proportions urban and rural.

c. Population of Lake St. John County, 1891-1921 showing proportions urban and rural

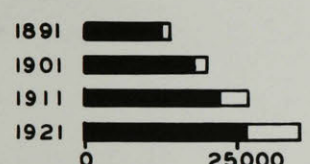
Figure 31. Graph of Percentage Increases of the Population for the Region and for Each County, 1891-1921.



A. POPULATION OF THE SAGUENAY REGION 1891-1921

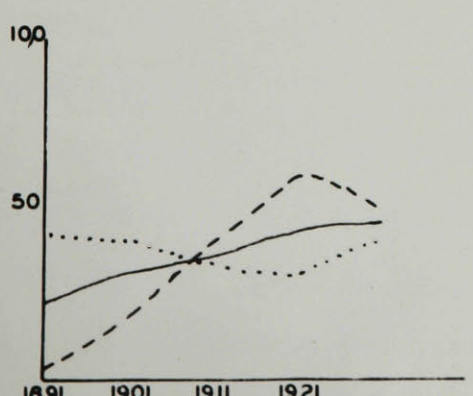
B. POPULATION OF CHICOUTIMI COUNTY 1891-1921

RURAL
URBAN



C. POPULATION OF LAC ST. JEAN COUNTY 1891-1921

RURAL
URBAN



PERCENTAGE INCREASE OF POPULATION 1891-1921

SAGUENAY REGION
CHICOUTIMI COUNTY
LAC ST JEAN COUNTY

on the road while the other was one mile away. The lots were divided lengthwise into strip fields, giving a characteristic striped effect to the landscape. The pasture and unimproved land occupied the part of the farm furthest from the road; the cultivated fields, together with the farm buildings and house, were near the road. The type of house varied from large frame houses with many outbuildings in older parishes, to rough unpainted cabins in areas of new settlement, but was usually of one type - square, two-storied, and with a mansard roof. The solid brick and stone farmhouse of the St. Lawrence lowland was not found in the region. In general, there were a large number of outbuildings, due to the necessity of housing livestock and feed on the dairy farms. The rural pattern thus presented lines of almost continuous settlement along the range roads, whereas the roads along the lot lines were bare of settlement.[46]

The village pattern also conformed to the lines of the roads. The village could be recognized by an increase in density in settlement along the road, and usually had a church which dominated the scene, a store, and other services depending on its size. In 1921 the villages in the upper Saguenay region were Rivière du Moulin, Grande Baie, St. Ambroise, and Ste.Anne de Chicoutimi, and in the Lake St. John lowland were Hébertville and Hébertville Station, St. Bruno, St. Coeur de Marie, St. Felicien, St. Gédéon, St. Jerome, and Val Jalbert. All of these were under 1000 population except Grande Baie, 1735, and St. Felicien, 1306. Among other centres

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46 Cf. Blanchard, op. cit., pp. 141-42.
Glendinning, op. cit., pp. 330-31

which had not been incorporated, but had the same size and function as the above were Anse St. Jean and Laterrière in Chicoutimi County, and Ste.Croix, St.Prime, Normandin, and Ste.Methode in Lake St. John County. All of these were older centres, and had shown slow steady population growth during the period; the greatest population increase had been in the newer parishes north and west of the lake - Ste. Jeanne d'Arc, Ste.Hedwige, St.André, St.Augustin, Peribonka, Girardville, Mistassini, and Ascension.

In the village the buildings were close together, fronting on the street, and many of the houses had farms extending back of them, so that the boundaries of the village are difficult to locate.[47] The village and surrounding area of St. Prime is shown in Figure 32 a photographed from the air, and Figure 32 b photographed from the Côte St. Prime to the south east. In both views the long narrow farms and their relationship to the road, and the typical village pattern, can be seen.

A map of the exact settlement pattern of the Lake St. John basin in 1929 has been presented by Glendinning,[48] which is shown in Figure 33. This clearly shows the relationship of settlement to the range roads, whereas roads following the lot lines are bare of farmsteads. This system of mapping the density, although very exact, would be difficult to use for the region as a whole on a small scale map. due to the heavy density of population east of the lowland. In this latter region, the upper Saguenay, the settle-

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47 Glendinning, op. cit., p. 333.

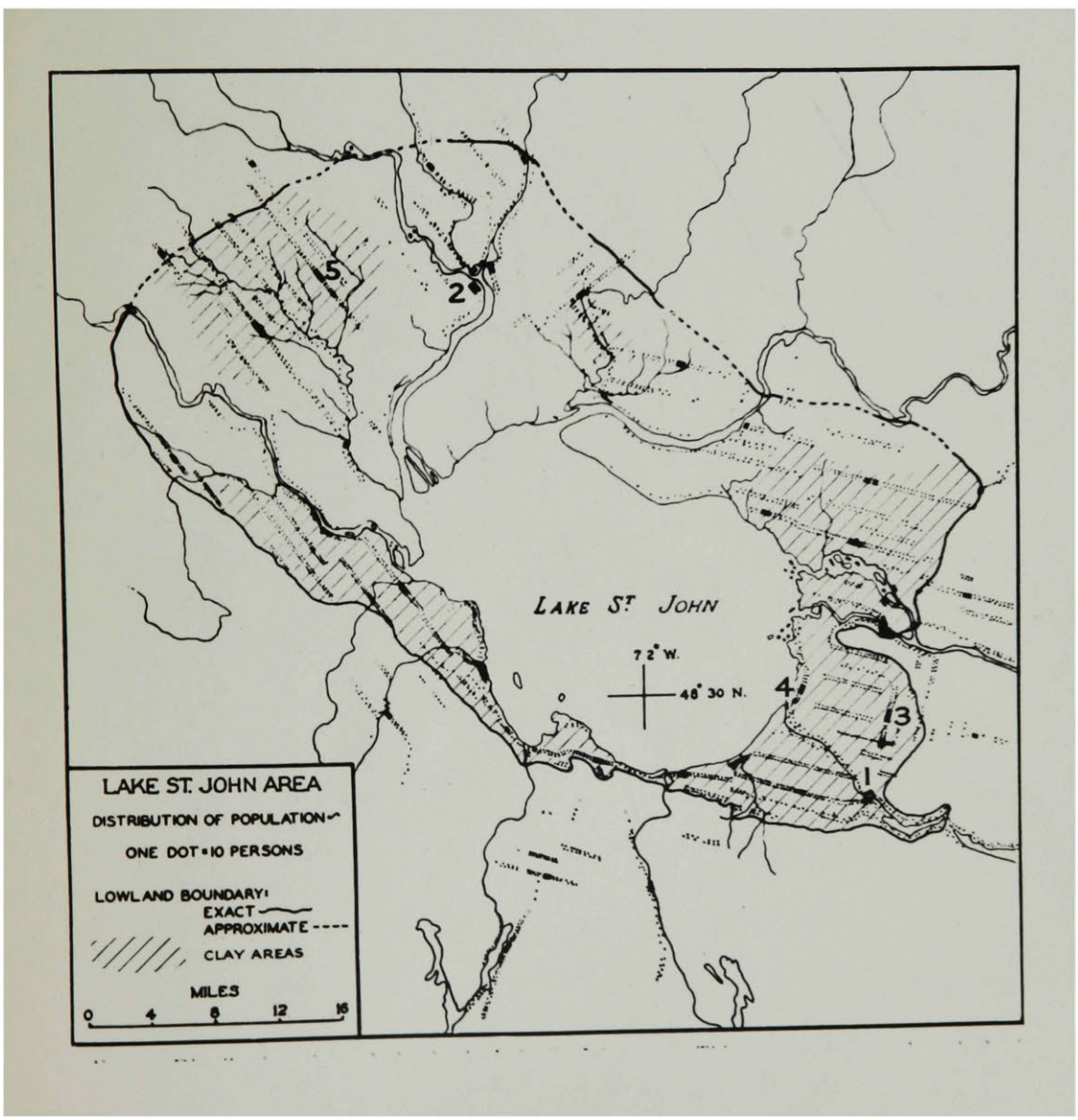
48 Ibid., p. 337.

b.

a.

Figure 33. Distribution of settlement in the Lake St. John lowland, 1929, and its relationship to the road network.

(Drawn by R.M.Glendinning.)


LAKE ST. JOHN
72° W.
48° 30 N.
5
2
4
3
1
LAKE ST. JOHN AREA
DISTRIBUTION OF POPULATION
ONE DOT = 10 PERSONS
LOWLAND BOUNDARY:
EXACT
APPROXIMATE
CLAY AREAS
MILES
0 4 8 12 16

ment pattern on the level land was similar to that of the lowland, but in rough and forested areas the field pattern was irregular or disrupted, the range roads, lined with settlement. were not so straight and ran in every direction, and the villages tended to be more concentrated rather than ribbons of settlement. These facts can be seen by a comparison of the region surrounding Chicoutimi in Figure 39 with the lowland surrounding St. Prime in Figure 32. The village of Rivière du Moulin can be seen in the foreground of Figure 39. with Ste.Anne de Chicoutimi on the north shore of the Saguenay opposite the basin. A view of Grande Baie, curving around Ha Ha Bay, is shown in Figure 34, with hilly terraces rising behind it. The floating pulpwood covering the surface of the Bay is a typical scene on many of the lakes, bays and rivers of the region. Figure 35 shows Anse St.Jean sited on a small patch of alluvial land on the Saguenay fiord. The limited opportunities for agriculture, and the poverty of the village, are apparent.

The older towns of the region were merely larger expressions of the villages, with more diversified functions, a more complex pattern, and a larger tributary region. Such towns were Bagotville and Jonquière in Chicoutimi County, and Roberval and St. Joseph d'Alma in Lac St. Jean County.

Roberval, an agricultural and commercial centre and the county seat of Lac St.Jean County, had a population of 2168 in 1921 as compared with 783 in 1891. The other three towns, although retaining their roles of agricultural and commercial centres, had

Figure 34. Grande Baie Village on Ha Ha Bay.

Pulpwood for the Port Alfred mill can be seen in the foreground.

(Province of Quebec, Provincial Publicity Bureau, Ciné-Photography Service.)

Figure 35. Anse St. Jean on the Saguenay Fiord.

(Province of Quebec, Provincial Publicity Bureau, Ciné-Photography Service.)

also been affected by industrial activity. The construction of the pulp mill at Jonquière, and of the Kenogami paper mill nearby, had resulted in rapid population growth of the town of Jonquière over the period. Incorporated as a village in 1904, and a town in 1912,[49] the population had increased from 1477 in 1891 (which figure includes the rural parish - the village was probably around 600) to 4851 in 1921, and doubled during the 1920's. The construction of the pulp mill at nearby Port Alfred had similarly affected Bagotville, which by 1921 had a population of 2204 as compared with 520 in 1891. An aerial view of Bagotville can be seen on the right of Figure 36, adjoining Port Alfred. St. Joseph d'Alma, incorporated in 1891, had a population of 850 in 1921. Its steady growth as an agricultural centre was accelerated by the construction of the Isle Maligne power plant two miles to the north in 1923-25, the railway in 1923, and the paper mill at Riverbend in 1925 on the outskirts of the town, and during the 1920's the population quintupled. A view of the town taken in 1924, divided in two by the Petite Décharge, lying south east of the Riverbend paper mill, can be seen in Figure 37.

The most striking additions to the landscape at the end of the period were five completely new towns, each planned and constructed during the period by one of the industrial concerns to house its employees. Four of these were "paper towns" - Kenogami, Port Alfred, Riverbend, and Dolbeau, and the fifth was Isle Maligne, built to house staff of the hydro-electric plant.

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49 Aubin and Grenon, op. cit., p. 105.

Figure 36. Aerial View of Port Alfred and Bagotville on Ha Ha Bay. 1924.

Port Alfred and its pulp mill can be seen in the centre of the photograph, with Bagotville to the right. Between the two centres are the wharves, owned by the Chicoutimi Pulpe Company. In the foreground are the huge booms of pulpwood destined for the mill

(Surveys Branch, Department of Lands and Forests, Quebec, 1924.)

Figure 37. The Town of St. Joseph d'Alma, and the Mill and Townsite of Riverbend, on the Petite Décharge.

St. Joseph d'Alma straddles the Décharge, with the small diamond shaped town of Riverbend forming a northward extension. North of the town is the paper mill, with its huge pulpwood pile. The Décharge upstream from the mill is covered with floating pulpwood.

(Surveys Branch, Department of Lands and Forests, Quebec, 1924.)

The function and advantages of these company towns differed from those of the other urban centres. Having been planned and constructed by one industry their working population was almost entirely employed either in the industry, or in commercial establishments serving these industrial workers. Due to a high initial outlay in constructing the plant and townsite, careful planning was undertaken, so that the growth of the town was not spontaneous as with the older centres. The first concern of the company in each case was the siting of the industry, with reference to adequate plant area, transportation facilities for raw materials and product, and power supplies. The town was then sited with consideration to its proposed size and possible expansion, the topography, and accessibility to the industry and to other communities. The towns were not merely groups of houses, but complete communities with utilities, commercial services, and recreational facilities.

Kenogami was founded in 1912 at the time of the construction of the Price Bros. paper mill on the Rivière au Sable. Figure 38, an aerial view taken in 1924, shows the site of the mill on the east bank of that river, with the town laid out to the east and south, and the Saguenay to the north. The factors leading to the siting of the mill at this location might well be reiterated. Pulpwood supplies were obtained from the Lake Kenogami area by way of the Rivière au Sable, and from the Shipshaw and Valin drainage areas north of the Saguenay by means of flumes, which carried the wood over land and across the Saguenay (where it

can be seen in Figure 38) to the mill. Power was obtained from developments on Au Sable, Shipshaw, and Chicoutimi Rivers, and later from Isle Maligne. A branch of the Roberval and Saguenay Railway was constructed to the mill, by which exports could be sent to Port Alfred or Chicoutimi for export by water, or to Quebec via the Quebec and Lake St. John Railway. The townsite was laid out on level land east and south of the mill, adjoining the town of Jonquière to the south. The company built 135 houses, but permitted private construction, and provided several community projects, such as a hospital, community centre, and a large park north of the town.[50] The centre was incorporated as a city in 1920, and in 1921 had a population of 2557.

The town of Port Alfred was incorporated in 1918.[51] The considerations in its siting were the requirements of the pulp mill of the Ha Ha Bay Sulphite Co., which began production in that year. (The town and mill can be seen in Figure 36.) The site, at the foot of Ha Ha Bay, between Bagotville and Grande Baie, provided sea transportation for manufactured exports, level land for the plant, and a local wood supply which was driven down the Ha Ha and à Mars Rivers, which were also harnessed for power. An extension of the Roberval and Saguenay Railway was constructed to the mill site. The town was laid out in the form of a rectangle, with wide streets and large lots, and 150 company houses were constructed for the employees, and lots were sold for individual construction. By 1921 the population was 1200.

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50 Ibid., p. 111

51 Ibid., p. 117

Figure 38. Aerial View of Jonquière and Kenogami, 1924.

In the foreground, straddling the Rivière au Sables, is the northern section of Jonquière. To the north lies Kenogami, with the Kenogami Paper mill on the eastern shore of the river. In the background is the Saguenay River, flowing east. The flume carrying pulpwood across the Saguenay to the mill can be seen slightly west of north of the mill.

(Surveys Branch, Department of Lands and Forests, Quebec. 1924)

Riverbend on Isle d'Alma was a more exclusive, purely residential, and very small company town, constructed in 1925 to house about fifty office and technical staff of the Price Bros. paper mill and their families. The mill and the small townsite can be seen north-west of the town of St. Joseph d'Alma in Figure 37, on a bend, as its name suggests, of the Pétite Decharge. The mill was sited with respect to the large power supplies available at the Isle Maligne power development two miles to the north, and to its pulpwood supply, which came from the Peribonka holdings of the company, across Lake St. John, and down the Pétite Decharge. It was served by the Alma and Jonquière Railway, constructed in 1923, by which it exported its pulp and paper production. The town was laid out in the form of a diamond, south-east of the mill, with wide streets, and attractive company-owned homes in "garden-city" surroundings. Generous community and recreational facilities were provided by the company, and no commercial establishments were permitted.

The town and mill of Dolbeau were commenced by the Lake St. John Power and Paper Company in 1926, at the confluence of the Mistassini and Mistassibi Rivers. The mill was supplied with pulpwood from large limits on the Mistassibi and Rat Rivers, power was supplied from Isle Maligne, and the railway was extended to the site of the mill in 1927, by which the output was exported. The town was laid out on terraces west of the mill, and enlightened zoning restrictions were established. Plans allowed for an

ultimate population of 10,000, and in 1927 the population had already reached 2,000.[52]

Isle Maligne was incorporated as a town in 1924, and constructed north of the powerhouse completed in 1925, north of the Grande Décharge. Like Riverbend, it was to house only office and technical employees, and was constructed on similar lines, with large lots, attractive company-owned houses, and large areas of park and garden. A small community and commercial centre was also constructed. A view of the town can be seen in Figure 28. taken 1945. By the end of this period only those streets to the right of the photograph had been laid out.

The only city of the region was Chicoutimi, which, with the region as a whole, had entered its fourth and present stage of development. It had been an Indian gathering place before the arrival of the white man, a fur post during the fur era, a lumber town and agricultural centre during the settlement and lumbering period, and was now an industrial town and the centre of an industrial region. With the construction of the pulp mills in 1897 and 1903, the population of the town almost tripled 1891-1911, from 2277 to 5880. In 1912 there had been a disastrous fire which destroyed the central district. However, rapid growth had led to flimsy and planless building, and with much of this destroyed, it was rebuilt more attractively.[53] The town was firmly estab-

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52 "Planning and Building a Modern Industrial Town in Northern Quebec," Town Planning, the Journal of the Townplanning Institute of Canada. VII: 12, Feb. 1928

53 H.B.Willson, Quebec, the Laurentian Province, 1913. p.234.

lished as the chef-lieu of the region, and in 1920 was incorporated as a city, with a population of 8937 in 1921. The view taken in 1924 (Figure 39) shows the tremendous expansion of the city over the period, its inadequate port facilities, and its attractive site, rising on terraces south of the Saguenay.

INDUSTRY

The Pulp and Paper Industry. Pulp and paper production was the chief industry of the region, which had replaced the lumbering industry of the previous era, although based on the same resources and locational advantages - forest resources, water power, water transportation for logs, and tide water for export. In 1927 the mills of the region were capable of producing about 2500 tons of pulp a day, of which 1830 tons could be manufactured into paper. Total possible employment in the industry was 5,000 men. Most of the expansion, which has been traced, had occurred between 1920-27, years of general prosperity and a high level of investment, when paper production in the region was increased four times, and pulp production, three times.[54]

Total possible production at the end of the period is given in Table V, and is also shown pictorially in Figure 40.

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54 Blanchard, op. cit.,p. 108-109.

Figure 39. Aerial View of Chicoutimi and Environs.

In the foreground is the village of Rivière du Moulin, and facing the city of Chitoutimi on the north shore of the Saguenay is the village of Ste.Anne de Chicoutimi. The typical surface of the upper Saguenay region, agricultural land alternating with rougher wooded areas, and its effect on the field pattern, is shown.

(Surveys Branch, Department of Lands and Forests, Quebec, 1924.)


R SERIES I
ROLL 4
48

Figure 40. Installed Capacity of Pulp and Paper Mills, 1927.

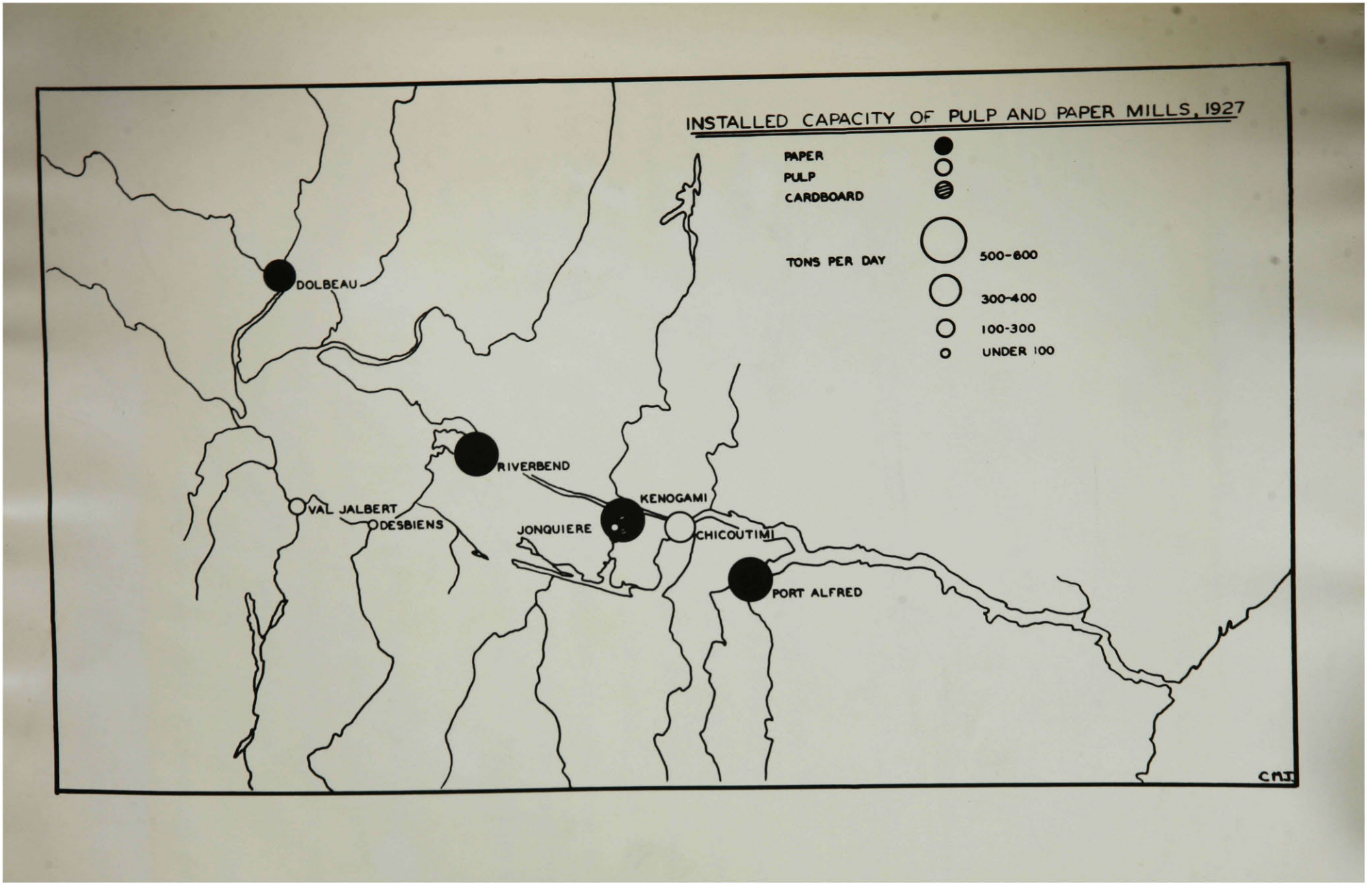

INSTALLED CAPACITY OF PULP AND PAPER MILLS, 1927
PAPER
PULP
CARDBOARD
TONS PER DAY
500-600
300-400
100-300
UNDER 100
DOLBEAU
RIVERBEND
VAL JALBERT
DESBIENS
JONQUIERE
KENOGAMI
CHICOUTIMI
PORT ALFRED
C.M.I.

TABLE V. PULP AND PAPER CAPACITY, 1927

(Production in tons per day)

Mill	Newsprint	Cardboard	Pulp
Chicoutimi			300 (mechanical)
Desbiens			40 (Chemical)
Dolbeau	300		
Jonquière	30	20	60 (Chemical
Kenogami	500	25	
Port Alfred	500		
Riverbend	500[a]		
Val Jalbert			110 (mechanical)

a - Installation of four paper machines with a total capacity of 500 tons of paper a day was completed in 1929.

However, this productive capacity was larger than the existing demand warranted, and tension in the industry was apparent throughout the 1920's. In 1927, the mills at Dolbeau and Port Alfred began production, adding a capacity of 800 tons of newsprint a day, and the existing tension was intensified. The new mills of Riverbend and Port Alfred did not produce more than half capacity until the recent war. The pulp mills were the most vulnerable, and by 1930 three had been closed, that at Val Jalbert, and the two at Chicoutimi.

Hydro-electric Power. Together with the mills of the pulp and paper industry, the greatest change in the industrial landscape of the region had been the addition of numerous hydro-electric power installations. In 1927 turbine installations totalled 568,986 H.P., of which all but the smallest installations totalling about 1600 H.P. were provided with a constant regulated flow. The site and turbine capacity of the hydro-electric installations, together with information as to the storage facilities

if any, are given in Table VI.

TABLE VI. HYDRO-ELECTRIC POWER INSTALLATIONS, 1927[a]

River	Site	Turbine Installation in H.P.	Storage Reservoir	Regularized flow in cu. ft./sec.
(Regularized):				
Saguenay	Isle Maligne	450,000	Lake St. John	27,800
Chicoutimi	Chicoutimi	9,350	Lake Kenogami	1,200
	Chicoutimi	10,870		
	Chicoutimi	10,500		
	Pont Arnaud	7,200		
	Chute Garneau	3,500		
	Laterrière	25		
au Sable	Jonquière	2,500	Lake Kenogami	600
	Jonquière	4,500		
	Kenogami	26,200		
Shipshaw	Chute Murdock	10,800	Lake Onatchiway)	
	Chute des Galets	17,600	Lake Pamouscachiou)	1,200
		553,045		
(Non-regularized):				
Aulnaies	Ste.Ambroise	30		
Belle	Hébertville	350		
Aulnaies	Hébertville	20		
Caribou	Ste.Anne	340		
Chamouchouane	St.Felicien	475		
Ha Ha	No.1	1,300		
	No.2	800		
Iroquois	St.Prime	125		
à Mars	Bagotville	1,350		
Metabetchouane	La Marlene Fall	1,400		
Mistassini	Mistassibi	76		
du Moulin	Rivière du Moulin	105		
Ouiatchouaniche	Roberval	282		
Ouiatchouane	Val Jalbert	7,300		
	Lake Bouchette	270		
	Pelletier	25		
Peribonka	Ste.Amedée	1,500		
	Chute Peribonka	26		
	Simard	20		
Ticouapé	Girardville	25		
	Normandin	100		
Unnamed	Taillon	22		
		15,941		
		568,986		

a. Dominion Water and Reclamation Service, the Quebec Streams Commission and Hydraulic Service, List of Water Powers in the Province of Quebec (1928) 139 pp.

In spite of these large installations, two-thirds of the total hydro-electric power potential of the Saguenay drainage area remained unharnessed. The projected development at Chute à Caron on the Saguenay near the mouth of the Shipshaw was expected to produce a further 800,000 H.P., but many other sites remained undeveloped. Table VII gives the estimated potential hydro-electric power available in the region as compared with the installed capacity. A pictorial representation is also given in Figure 41.

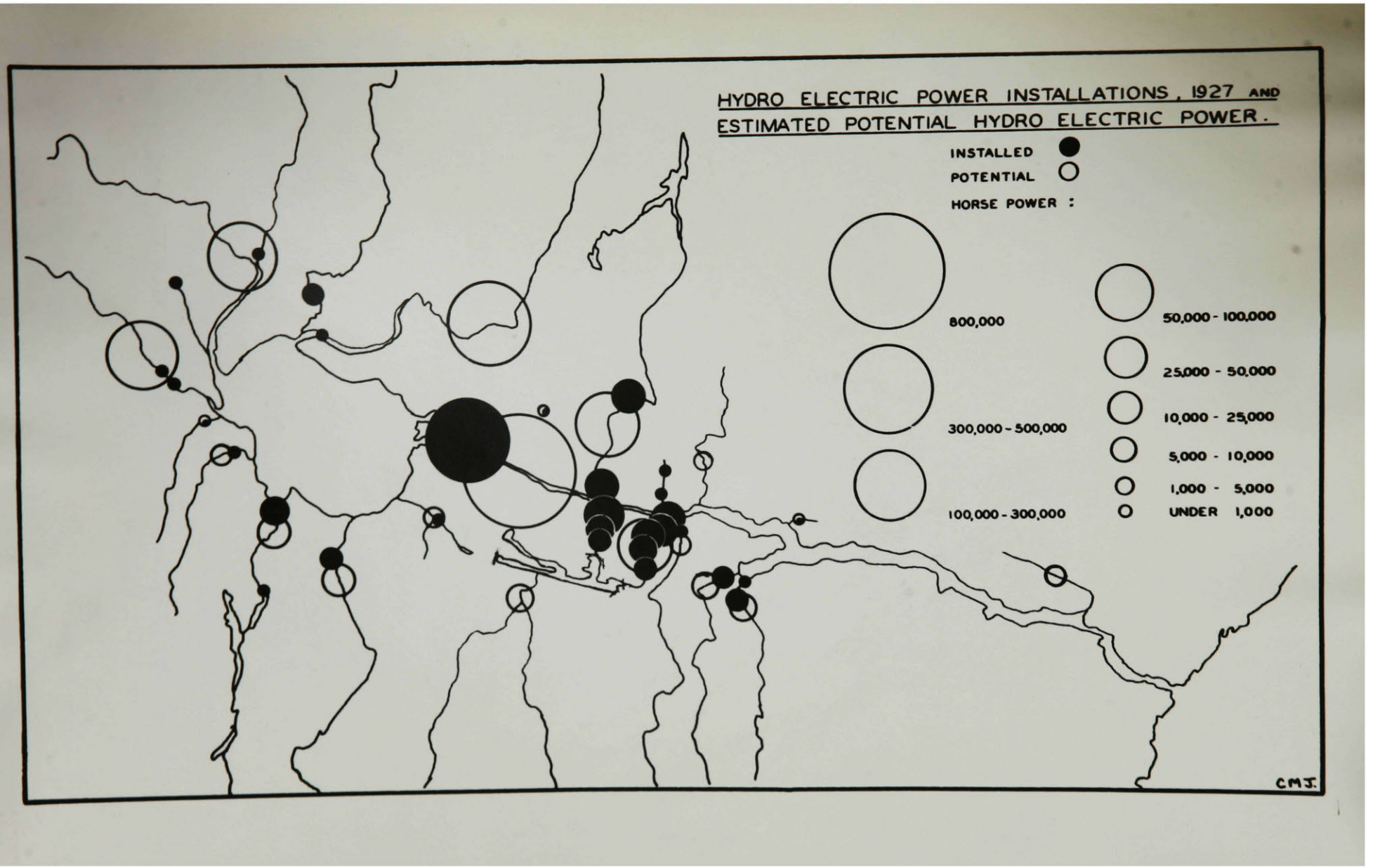
TABLE VII. POTENTIAL AND DEVELOPED HYDRO-ELECTRIC POWER, 1927[a]

River	Estimated capacity in H.P. at 80% Efficiency		Installed
	Ordinary 6 mos. flow	Ordinary minimum flow	
Aulnaies	148	79	30
Belle and Aulnaies	1,358	737	370
Caribou	171	92	340
Chamouchouane	142,850	76,927	475
Chicoutimi (lower)	51,187	51,183 (b)	41,445
Chicoutimi (upper)	5,209	2,810	---
Ha Ha	4,011	2,161	2,100
Iroquois	245	130	125
à Mars	5,473	2,952	1,350
Metabetchouane	17,410	9,375	1,400
Mistassini	114,302	61,635	76
du Moulin	1,335	715	105
Ouiatchouaniche	912	506	282
Ouiatchouane	11,238	6,042	7,570
Pelletier	12	7	25
Peribonka	272,435	146,631	1,526
au Sable	22,747	22,747 (b)	33,200
Saguenay	783,400	783,400 (b)	450,000
Ste. Marguerite	4,206	2,106	---
Shipshaw	92,557	90,470 (b)	28,400
Simard	21	11	20
Ticouapé	143	76	125
Unnamed (Taillon)	9	5	22
Valin	2,629	1,397	--
	1,534,008	1,262,194	568,986

a. Dominion Water Power and Reclamation Service, the Quebec Streams Commission and Hydraulic Service, List of Water Powers in the Province of Quebec (1928) 139 pp.

b. These rivers have water storage facilities which regulate the ordinary minimum flow to equal or almost equal the ordinary 6 months flow.

Figure 41. Hydro-Electric Power Installations, 1927, and Estimated Potential Hydro-Electric Power.


HYDRO ELECTRIC POWER INSTALLATIONS, 1927 AND
ESTIMATED POTENTIAL HYDRO ELECTRIC POWER.
INSTALLED
POTENTIAL
HORSE POWER :
800,000
300,000 - 500,000
100,000 - 300,000
50,000 - 100,000
25,000 - 50,000
10,000 - 25,000
5,000 - 10,000
1,000 - 5,000
UNDER 1,000
C.M.J.

SMALL INDUSTRY

Total employment in small industries at the end of the period was about 1,500.[55] Such industries included, at Chicoutimi, a brick factory, woollen mill, shoe factory, furniture factory, and door and sash factory. At Jonquière and Chambord were railway repair shops of the C.N.R. At Bagotville was a lumber exporting firm. At Kenogami were two sawmills and an overall factory, and near Chambord and Roberval were several limestone and granite quarries. Contemporary authors deplored the small number of wood-using industries, such as furniture, crates, excelsior, charcoal, and chemical b-products.[56]

AGRICULTURE AND LAND USE

By the end of the period the fertile soil had been almost completely cleared and settled, and agricultural settlement had spread to less favorable areas of sandy and swampy land north and west of the lake. During the period agriculture benefitted not only from improved communications which facilitated the export of produce, both road and rail, but also from the tremendous growth of industry, which had created a large local market, especially in the urban centres, and the lumber camps, which absorbed oats, potatoes, beans, lard, and dairy products. Cheese was the chief export, being shipped mainly to England.

The area was not self-sufficient in agricultural produce, so that local produce had an assured local market, supplemented

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55 Ibid., p. 108

56 Aubin and Grenon, op. cit., pp. 9-11.

by imports from other areas. A market was thus assured in prosperous times, but such dependence on an industrial market meant that agriculture was vulnerable to economic fluctuations along with industry. Also, due to the assured market, agricultural methods were backward, a fact deplored by contemporary authors.[57,58]

The development of agriculture over the period can be seen by a comparison of the 1921 figures as compared with those of 1891, as presented in Table VIII.

TABLE VIII. COMPARISON OF AGRICULTURAL FIGURES, 1891-1921

		1891	1921
Area occupied (acres)		506,594	801,018
Area improved "		203,264	392,863
Percentage improved		40%	50%
Number of farms		3,793	4,655
Average size of farms (acres)		135	172
Field Crops:	Wheat acreage	10,375	8,650
	Oats "	24,807	78,825
	Mixed grain "	None given	10,950
	Barley "	2,326	3,568
	Potatoes "	2,436	5,191
	Cultivated hay acreage	73,386	114,764
Yields:	Wheat per acre (bus.)	7.5	15
	Oats " " "	12	23.5
	Mixed grain per acre (bus)	-	20
	Potatoes " " "	105	137
	Cultivated hay " " (tons)	.8	1
Livestock:	Milch cows	14,044	39,139
	" " per farm	4	9
	Pounds of milk per cow milked	-	4,391
	Other cattle	9,040	40,716
	" " per farm	3	9
	Horses	5,204	13,478
	Sheep	29,357	58,747
	" per farm	8	13
	Swine	9,700	51,984
	" per farm	2.5	11

57 Ibid., p. 3

58 Blanchard, op. cit., p. 124.

The area of occupied farm land had increased by about one-half during the period, but the improved acreage had doubled, so that it now occupied 50% of the total, showing more intensive use of the land. The size of the average farm had increased from 135 to 172 acres, chiefly due to the low price of land in the region, and, as single-family farming was the rule, extensive farming with the aid of machinery was generally practised. The value of implements and machinery in 1921, almost eight million dollars, was higher than that of either total livestock or total field crops. An observer[59] during the subsequent agricultural depression noted that due to the heavy expenditures on the purchase and maintenance of machinery, the soil and animals were neglected, and outmoded methods contrasted with the modern equipment. No experimental farms or agricultural economists existed in the region at that time. Rotation of crops was not scientifically carried on, the use of chemical fertilizers was almost unknown, and the livestock were badly fed especially during the long winter. The cattle were often fed straw, instead of roots and green forage crops, resulting in low milk yields, which averaged only 4391 pounds of milk per cow milked per year, with many cows drying up completely for 3-7 months during the winter.

The oats acreage had trebled during the period and remained the leading grain crop (occupying 80% of the field acreage other than hay), being consumed locally as feed for the farm livestock and for the horses used in the lumber camps. The wheat

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59 Ibid., pp. 125-131.

acreage had dropped over the period due to more economical production in other areas of Canada, whereas the hay and potato acreages had doubled. Mixed grain had become an important crop, and occupied a larger acreage than wheat. Yields had improved considerably over the period, but remained lower than in other parts of the province in spite of the newly cultivated, fertile soil. Of the total improved land, 70% was in grass (40% pasture, 30% hay) and 30% in field crops other than hay.

The number of cattle in the area, and per farm, had almost trebled during the period, and each farm now had an average of 9 milch cows. Two-thirds of the cattle, together with two-thirds of the farms, were in the agricultural lowlands of Lake St. John. The number of sheep in the region had almost doubled; these were kept chiefly on the peripheries of the lowland. The number of swine, which are complementary to the dairy industry, had increased five times.

An important non-agricultural crop from which the farmers benefitted was that of the blueberries, growing wild on the sandy and burnt-over areas, chiefly north of Lake St. John and north of Chicoutimi. The crop varied from year to year - in 1929 the district exported blueberries valued at $400,000.[60] Wood was also sold off the farms for pulp, lumber, and firewood, valued at $400,000. in 1921, with an additional amount worth $800,000. being consumed on the farm. At the end of the period a new live-

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60 Ibid., p. 132.

stock industry had begun, with the establishment of 3 silver fox ranches, at Port Alfred, Ste. Anne de Chicoutimi, and on the Jonquière-Chicoutimi highway.[61]

Transportation network. The major network of land transport in the region at the end of the period is mapped in Figure 42, and the additions over the period can be noted by a comparison with Figure 27.

The railway had been extended from Roberval to Dolbeau, from the main line west of Chicoutimi to Bagotville and Laterrière, and from the Saguenay Power Junction east of Hébertville Station to Isle Maligne.

Two of the highways to Quebec, from Hébertville, and from Grande Baie through St. Simeon, were undergoing surfacing. The third, from Grand Baie to Baie St.Paul was impassable.

The main highway of the region, the former Kenogami Road, now encircled Lake St. John, and secondary branch highways to the parishes had been constructed throughout the region. Both the highway and secondary roads were constructed along the lines of survey - the range and lot lines - hence were straight, with right angled intersections, especially in level areas. They were less regular in the rougher area of the upper Saguenay, and in the lowland bends occurred to avoid rock outcrops, to follow the lake shore, and to find crossings on the broad rivers north

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61 Aubin and Grenon, op. cit., pp. 93-97

of the lake. The north shore of the Saguenay had no main highway, with only a few secondary roads connecting the major parishes. The only bridge crossing the Saguenay was at Isle Maligne. Gaps in the secondary road system also occurred north and west of the lake in sandy and swampy areas.[62]

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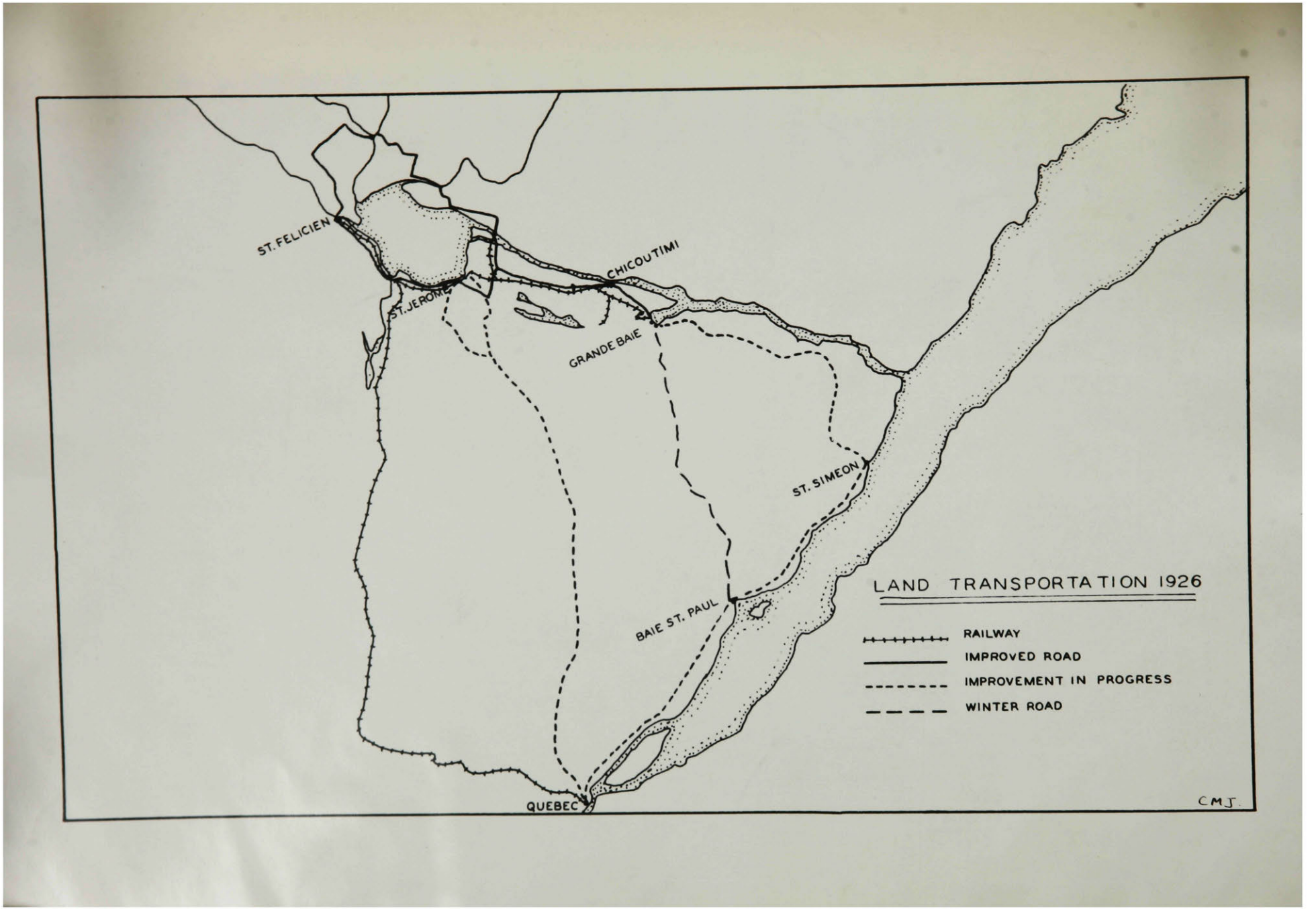
62 Glendinning, op. cit., p. 327.

Figure 43. Land Transportation, 1926

A comparison with Figure 27 shows the improvements and extensions of the transportation network over the period.


ST. FELICIEN
CHICOUTIMI
ST. JEROME
GRANDE BAIE
ST. SIMEON
BAIE ST. PAUL
QUEBEC
LAND TRANSPORTATION 1926
RAILWAY
IMPROVED ROAD
IMPROVEMENT IN PROGRESS
WINTER ROAD
C M J.

CHAPTER VI

THE ERA OF PULP AND PAPER, ALUMINUM, AND LARGE SCALE POWER SINCE 1926

HISTORY OF DEVELOPMENT SINCE 1926

The construction of an aluminum plant at Arvida in 1926 marked the commencement of a new era of aluminum production and consequent hydro-electric developments. The first of these was the harnessing of 240,000 H.P. at Shipshaw No. 1 (Chute à Caron) in 1928. Industrial activity in the region was reduced in the economic depression of the 1930's, however, and further developments were delayed until the need for increased aluminum production was felt after the outbreak of war in 1939. This resulted in the construction of the giant Shipshaw No. 2 development completed 1943, with a capacity of 1,200,000 H.P., and in great expansion of productive capacity in both the aluminum and pulp and paper industries. By the end of the period the population had almost doubled to about 165,000, as compared with 73,117 in 1921.

At present the region produces about one-third of the world's supply of aluminum ingot, in the largest aluminum refinery in the world. It also has the greatest concentration of developed hydro-electric power in the world, with more available for development, and the greatest installation of power under one roof. Its paper mills have a capacity of 2360 tons of newsprint a day.

During the recent era small industry has been encouraged,

improved transportation facilities have been constructed, and the number of farms and the occupied area have shown considerable increase. Still further development is possible in many lines of activity, which in the future may give the region a more balanced economy, less dependent on the economic conditions which affect the large scale aluminum and pulp and paper industries, which depend on foreign markets.

Aluminum and Power Development, 1926-1930. In 1926 the Aluminum Company of America, which had the controlling interest in the Isle Maligne power plant, constructed an aluminum refinery at Arvida.[1] The requirements of the aluminum industry are exacting, and no other site in North America presented such a combination of advantages as did the Saguenay region. First, aluminum is produced by refining bauxite, which was to be imported from British Guiana. Tide-water transportation was thus desirable to import this and other raw materials in large quantities, and to export refined aluminum, which has its major markets abroad. Secondly,

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1 Aluminum was first produced in 1825, but not until 1886 was a practicable commercial method of production discovered, using large quantities of electricity. The first smelter in the United States was built at Pittsburg in 1888. The subsequent history of the aluminum industry on this continent has been the establishment of a series of plants at sites where large amounts of cheap power have been available for development. As each refinery was enlarged so that all economically available power was utilized, expansion was then undertaken by constructing a new refinery at the site of a new hydro-electric power development. This policy has led to the construction of plants at Niagara Falls, Shawinigan Falls in 1899, and Arvida in 1926. (Cf. J.J. Brown, "Canadian Aluminum", The Canadian Banker, 56:82, Spring, 1949) The drop in the price of aluminum over these years was sharp. Before 1886 the market price per pound was $27., by 1890 it had dropped to $2., by 1900 to $1., and in 1927 the Aluminum Company of Canada was producing at $0.27 per pound. (Cf. B. Brouillette, "L'aluminium au Saguenay", L'Actualité Economique, 22:426 and 432, October, 1946).

large quantities of cheap hydro-electric power were essential for the refining process. The existing hydro-electric plant at Isle Maligne, and the additional potential of the Saguenay River, presented the largest hydro-electric potential at tide-water on the continent, and determined the choice of the region for aluminum production. Hydro-electric power is the only local resource of the region which is used in aluminum production.[2]

After careful consideration, 6,000 acres of level land were purchased between Chicoutimi and Kenogami, 4 miles south-east of the proposed Shipshaw development. The port facilities at Port Alfred, 20 miles to the east, were purchased from the owners - the Chicoutimi Pulpe Company, and the port was enlarged. The Roberval and Saguenay Railway was also purchased to carry raw materials and finished product between the plant and the port. A town was constructed to house the plant employees, named Arvida, after the then president of the Aluminum Company of America - Arthur Vining Davis. Starting with 270 houses in 1926, the plans provided for expansion for a population of 50,000.

In 1928 a holding company, Aluminium Limited, was created, which has taken control of the foreign holdings of the Aluminum Company of America. The chief subsidiary of this company is the Aluminum Company of Canada, known as Alcan, which controls all aspects of aluminum production in Canada from ore extraction in British Guiana to the production of finished goods. The American company was now to produce for the American market, and Alcan for the Canadian, British, European and all foreign markets. Numerous

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2 Aluminum Company of Canada, Ltd., Meet the Company, 1948, p. 8.

subsidiary and affiliated companies were organized, which control the port and railway facilities, and power production and transmission, in the Saguenay region, and also research and financial operations.[3]

In 1926 production of aluminum began at Arvida, the plant having a productive capacity of 30,000 tons of aluminum ingot a year, and importing 100,000 H.P. from Isle Maligne. Employment in 1927 was 1650 men.[4] Plans envisaged a future production of 300,000 tons a year, when power from the proposed hydro-electric developments near the mouth of the Shipshaw should be available.

Preliminary construction for this project was begun in 1926, but little progress was made until 1928, at the height of the business boom. By this date the 11th turbine had been installed at Isle Maligne, raising the installed capacity to 495,000 H.P. Plans for the Shipshaw project had been revised to provide for two powerhouses, the first (No.1), near Chute à Caron, on the Saguenay to produce 240,000 H.P. A 10,000 foot canal would then divert the Saguenay into the dredged gorge of the Shipshaw River, a 197 foot drop to tide water, where a second plant (No. 2) would be constructed, to produce 800,000 H.P. The plan allowed for the first plant to commence operation as soon as the first dam was built, and to provide power during the construction of the second, after which the generators would be used as spares and in times of high water.[5]

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3 Brouillette, op. cit., p. 421-424.

4 Ibid., p. 425.

5 McN. DuBose, "The Engineering History of Shipshaw", Reprint from the Engineering Journal, April, 1944, p. 5.

Eight hundred workers began construction in 1928 of an oblique, 3,000 foot long cement dam at Chute à Caron, which raised the river level 25 feet.[6] The power house at its foot had a head of water of 160 feet, and the installation of four 60,000 H.P. generating units, totalling 240,000 H.P., was completed in 1930. The remainder of the project was not undertaken, however, as demand for aluminum had dropped due to the economic depression which had commenced with the stock market crash in 1929.

The Depression Years, 1930-38. This great depression affected every phase of the regional economy. Blanchard,[7] visiting the region in 1932 at a time of very low activity, wrote, "Nous nous trouvons là en face d'un cas de surproduction. Trop de pâte, trop de papier, trop de cheveux-vapeur". Overproduction with respect to demand had been apparent in the pulp and paper industry even before 1929, (cf. ante p. 113), the pulp mills at Val Jalbert being closed in 1927, and the two at Chicoutimi in 1927 and 1930. The paper mills at Port Alfred and Riverbend, each with a capacity of 500 tons of newsprint a day, never produced more than half their capacity from their completion in 1926, and in 1931 the Port Alfred mill temporarily closed. In 1932 the Price mills at Jonquière and Kenogami employed only 1000 men instead of the normal 2000, Port Alfred, 250 instead of 350, and Riverbend only one-half its normal employment.[8] Only the Dolbeau mill, which had begun production in 1927 with a 10-year Hearst contract maintained normal employment.

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6 R.Blanchard, L'Est du Canada Francais, Vol.II, 1935, p. 104.

7 Ibid., p. 109.

8 Ibid., p. 110.

In 1934-35 the Price firm was on the verge of bankruptcy.[9]

Hydro-electric power capacity was also largely unused. The newsprint and aluminum mills, profiting by the low price of power, turned to the use of electricity instead of coal for steam generation. Thus the consumption of the Isle Maligne output was maintained at 320,000 H.P., including the 100,000 H.P. which was exported to Quebec, out of a possible 495,000 H.P. firm output.[10] From 1931-38 the Chute à Caron power house produced power for steam generation only, and one-half the river flow was unused the year round.[11]

The aluminum industry suffered in a similar fashion. Production depended almost entirely on foreign markets, and the nationalistic trend of the period resulted in increased production in other countries, especially Germany. Canadian aluminum exports fell from 38,600 tons in 1930 to 7,500 tons in 1933, and output at the Shawinigan and Arvida plants fell from 27,400 tons in 1927 to 10,000 tons in 1932. Employment at Arvida over this same period fell from 1650 to 400 men.[12]

Small industry also suffered, and brickyards and quarries were closed. In all, over 3,000 men were unemployed, with the

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9 B. Brouillette and P. Dagenais, "Quelques aspects de l'économie actuelle du Saguenay-Lac St.Jean". L'Actualité Economique, 23:664, January, 1948.

10 Blanchard, op. cit., p. 111.

11 DuBose, op. cit., p. 6.

12 Brouillette, op. cit., 424-25.

region being one of the most unfavourably affected in the province due to high industrial unemployment. In St. Joseph d'Alma 110 families were on relief, and 900 in Chicoutimi.[13]

Various relief works were undertaken, chiefly road construction. A bridge from Chicoutimi to Ste.Anne was completed in 1934, and a road was commenced from Ste.Anne to Tadoussac on the north shore of the Saguenay in 1936, which was never completed.

Agriculture was also unfavorably affected, as the chief markets, the lumber camps and industrial towns, had shrunk and prices were low. The drop in farm income left many farmers in debt for their large farms and machinery bought during the prosperous preceding years. To relieve industrial unemployment and farm debt, the "back-to-the-land movement" was instituted, which aimed to settle unemployed workers and farmers on the remaining crown lands of the region suitable for agriculture. The settlers were aided financially and were sold the land on easy terms, with certain conditions and rewards for accomplishments, with the cost shared by the provincial and federal governments. By 1932, 2020 families, 14,200 people, had been settled in the region on uncleared land.[14]

Most of these colonists were workers from the industrial towns of the region, others were indebted farmers who had been forced to sell their farms, or farmers' sons who could find no

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13 Blanchard, loc. cit.

14 A. Page, "La colonization dans la province du Québec depuis 1930", Ecole des hautes études commerciales. Etudes économiques 1937, Vol. VII, p. 373.

employment. Over 500 families were installed along the Saguenay fiord and north of the upper Saguenay, and small groups were settled in the Lac Bouchette region, but the majority were settled north and west of Lake St. John.[15] The land which remained to be settled at this time was generally of inferior quality, being sandy, morainic, or remote from means of transportation, and many of the men were not suited to their new role, so that the success of the scheme varied in different areas. Nevertheless in 1937 90% of the colonists had remained on their holdings. By 1933 lumbering operations began to increase, giving a source of income for the farmers and others, and the employment situation soon began to improve in the towns. Since 1933 there has been almost no land available for colonization in the region, and demands for land have been directed to Abitibi.[16]

Wartime and Post-war Expansion, 1939-1950. Recovery in both the aluminum and pulp and paper industries began in the late 1930's, and the outbreak of war in 1939 marked the commencement of an era of expansion and industrial activity.

Power. The price of aluminum had fallen during the decade to 21¢ a pound by 1939, and rising demand in the transportation, aircraft, and re-armament fields had led to increased production. In that year employment at the Arvida plant had increased from 30,000 to 100,000 tons. The last unit of the Isle Maligne plant was installed, giving a capacity of 540,000 H.P. War contracts led to a further increase by 1941 to 218,0000 tons capacity,

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15 Blanchard, op. cit., p. 139.

16 Page, op. cit., p. 374.

absorbing the total supply of power available at Shipshaw No. 1.[17] Immediate further expansion of aluminum production was required, and the completion of the Shipshaw development was necessary in a limited space of time. Two additional units were installed temporarily in Shipshaw No. 1 powerhouse in 1941 to provide a total of 370,000 H.P. while construction of Shipshaw No. 2 was underway.[18] The existing plans for this powerhouse were revised[19] so that it was sited on the Saguenay instead of the Shipshaw River, with an 8,000 foot canal cut through earth and rock leading from the control gate near the No. 1 powerhouse, to the headblock, where a 210 foot head of water could be obtained.

In 1941, two water storage developments were constructed on the upper Peribonka, at Lac Manouan, 170 miles north of Lake St. John, and at Passe Dangereuse, 135 miles north of that lake. Before the construction of these reservoirs, the firm regulated flow of the Saguenay had been 30,000 cu. ft. per sec., which was not sufficient to permit full utilization of the 540,000 H.P. capacity at Isle Maligne, or to supply the new Shipshaw development, which could use a firm flow of 48,000 cu. ft. per sec. The added storage capacity provided by the two developments gave an average regulated flow of 46,000, and a firm regulated flow of 42,500 cu. ft. per sec.[20]

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17 Brouillette, op. cit., p. 427.

18 W. Griesbach, "Construction of Shipshaw No. 2 Power Development", Reprint from the Engineering Journal, April, 1944, p. 42.

19 H.G. Acres, "The Design of the Shipshaw Power Development", Reprint from the Engineering Journal, April, 1944, pp. 30-31.

20 F.L. Lawton, "The Manouan and Passe Dangereuse Water Storage Developments", Reprint from the Engineering Journal, April, 1944, p.8.

Construction of Shipshaw No. 2 began in 1941, with speed the dominant concern. An almost impossibly short time schedule of 15 months for the first units to be in operation, was met by November 1942, and construction was completed in 1943. With four units in the No. 1 powerhouse producing 300,000 H.P., and 12 in No. 2, producing 1,200,000 H.P. (the world's largest concentration of hydro-electric power under one roof), the Shipshaw project can deliver a maximum of 1,500,000 H.P. The generators of Shipshaw No. 1, which receive water from the same source as No. 2, serve as standby generators and are used in times of high water. The firm output of No. 2 is 925,000 H.P., or over 75% of installed capacity.[21] This high percentage of firm power (e.g. Boulder Dam produces only one-third of its installed capacity) resulting from the heavy and even precipitation, a steady run-off, and 400 billion cu. ft. of storage capacity in its three reservoirs, permits very low-cost power production.[22]

A temporary town, now disappeared, was constructed on the north bank of the Saguenay, south of the powerhouse, to house the workers on this project. It could accomodate 3,900 workers, which was the average number employed per day, although a peak of about 10,000 was reached in June 1942.[23] Of the workers, about 30% were local, 25% from Gaspé and the south shore of the St.Lawrence estuary (these men usually worked in the woods in the winter), 12% from the floating working population of Montreal, and

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21 DuBose, op. cit., 97.

22 W.M.Goodwin, "Low-Cost Power on the Saguenay", Reprint from Compressed Air Magazine, December, 1946, pp. 2-4

23 Greisbach, op. cit., p. 56.

10% from Quebec, and the remainder from other areas in the province.[24]

Aluminum. The plant at Arvida received the entire output of the Shipshaw powerhouse, and capacity was further increased in 1942-43 from 218,000 to 360,000 tons a year. Employment at Arvida jumped from 1760 in 1939 to 12,000 in 1943.[25] A small reduction plant was also built at Isle Maligne, employing about 200, and in 1944 a second small plant was built there to produce atomized aluminum powder for explosives. The cost of the Shipshaw development, $70 million, and of the new aluminum producing facilities, $123 million, was financed by American, British, and Australian government loans, and by Canadian government aid.[26]

1943 was the year of peak production at Arvida, and exports and employment were subsequently reduced. Employment had fallen to 5,400 by 1945, and production in 1946 was only 200,000 tons.[27] Due to new post-war uses for the metal, particularly in the fields of building and construction, electricity, transportation, and household supplies, production increased in 1947 to 300,000 tons, and to 330,000 tons in 1948, in spite of an unusual water and power shortage in that year. The continued high demand has been due to the increased prices of competitive materials as compared with the lowered price of aluminum, and also to the high level of construction and low level of aluminum production in former competitive countries, especially Germany and Japan. Of

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24 Brouillette, op. cit. , p. 429.

25 Brouillette, op. cit., p. 432

26 "Aluminum Reborn", editorial in Fortune, 33:218, May 1946.

27 Brouillette, op. cit., p.437.

its 1948 production, 15% was absorbed in Canada, 25% was exported to the United States, and 38% to the United Kingdom, the remainder being shipped to 33 foreign countries.[28]

Further hydro-electric developments are needed to fully utilize existing plant capacity, but expansion of the Arvida plant is doubtful. Following its usual policy, the company prefers to construct a new plant at the site of a large hydro-development, and plans are being made to construct such a project in British Columbia. Plans to harness a power site on the Peribonka, however, would provide the additional power necessary to fully utilize the existing Arvida capacity, and expansion of other facilities is continuing. In 1948 a wharf costing $4 million was completed at Port Alfred, and in 1949 a research laboratory worth $1 million was commenced at Arvida.[29] A decline in demand is not expected at present, due to continued new uses, and the president of the company states[30] "As long as we have economic sources of electricity, we can offer Canadian aluminum on export markets at the world's lowest price", which in 1949 was 15½¢ per pound.[31]

Pulp and Paper. The war similarly brought solvency and increased productive capacity to the pulp and paper industry, due to the increased demand for newsprint, paper and cardboard

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28 Aluminium Limited, Review of the Year 1948, 1949, p.6.

29 Ibid., p. 8

30 R.E. Powell, "Aluminum Field Broadening", The Gazette, Montreal, January 6, 1950, p. 12.

31 J. J. Brown, op. cit., p. 85.

containers, and other paper products, and demand continued high until 1949. By 1941 newsprint capacity had increased to 2160 tons a day as compared with 1830 in 1927, and in 1946 the mills were producing 100% of capacity.[32] By 1949 capacity had increased to 2360 tons a day, and production at the four largest mills had increased over the period as follows: (tons of newsprint per day)

	1927	1941	1949
Kenogami	500	700	750
Riverbend	500	580	680
Port Alfred	500	550	600
Dolbeau	300	330	330

From 1942-47 the industry in the region suffered from a scarcity of labour, and in 1946 employed 13,000 men, 10,000 of whom worked in the woods. Of these, 2,500 were part-time farmers, and of the total, 90% were local workers.[33]

In 1949 conditions of foreign trade resulted in reduced exports to European countries, and the Jonquière pulp mill closed for part of the summer. The newsprint mills, exporting chiefly to the United States, were less affected.

Employment. The high unemployment figures of the early 1930's, over 3,000 men, had been reduced by 1941 to only 872 men, or 4% of the total working population, and during the subsequent years thousands of workers immigrated into the region for work in the major industries, and on the construction projects. In 1943 there were 12,000 workers from outside the region, and at the com-

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32 Brouillette and Dagenais, op. cit. p. 664

33 Ibid., p. 666.

pletion of the Shipshaw project, 10,000 left the region. In 1945 unemployment had re-appeared, and in 1946 there were 3,600 unemployed industrial workers.[34] This figure has continued to rise, and is a source of concern to local municipalities, which are attempting to develop small, diverse industry as an alternative source of employment.

Development of Transportation facilities over the period. The local highway network of the region, and that connecting it with Quebec, has been improved and extended. Improvement of the Laurentide Park road from Quebec to St. Jerome and Hébertville, was completed in 1929, and of the two roads from Quebec to Grande Baie, Routes 15-56 and 15-16, by 1935.[35] An important addition was the opening of the Talbot Highway in 1948, which is a branch from Route 54 to Chicoutimi. By this "super-highway", which is open all year, the region is within three hours from Quebec by road, as compared with the eight hour train journey.

Local roads were also improved. In 1934 the Saguenay was spanned between Ste.Anne and Chicoutimi, and in 1936 a road was commenced from Ste.Anne to Tadoussac on the north shore of the Saguenay, which is only partially completed. A winter road to the Chibougamau mining district was opened from St. Felicien in 1937,[36] and will be opened for year-round use early in 1950.

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34 Loc. cit.

35 Blanchard, op. cit., p. 87

36 P.E.Roy and F.X. Gagnon, editors, Chicoutimi, Lac St. Jean, et Chibougamau, 1937, p. 103

Another bridge across the Saguenay connecting Arvida and Shipshaw will also be completed in 1950.[37]

Port improvement over the period was undertaken. In 1930 improvement of Chicoutimi harbour was completed by the National Harbours Board, which spent $4 million dredging the channel from St. Fulgence to Shipshaw, and constructing port facilities. Although it is the commercial port of the region, its use has never justified the large expense, and there has been a large annual deficit.[38]

The port facilities at Port Alfred, constructed in 1917 by a subsidiary of the Chicoutimi Pulpe Company, were taken over in 1926 by Saguenay Terminals Ltd., a subsidiary of Alcan, and the port was enlarged. Further expansion costing $4 millions was undertaken in 1949. The port handles the industrial raw materials and finished goods of the region, which total 10 times the tonnage handled by Chicoutimi.

The advent of air transport to the region resulted from the recent war. Airforce training centres and airports were constructed after 1940 at Bagotville, Roberval, Dolbeau, and St. Felicien. After the war the last three were closed, but the airport near Bagotville was purchased by Canadian Pacific Airlines in 1945, and is the terminus of a regular Montreal-Quebec-Saguenay service.

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37 News item in the Montreal Daily Star, November 29, 1949.

38 National Harbours Board, Annual Report, 1948, 1949, p. 32

No additions to the railway network have been constructed since 1927. A line was surveyed in 1929 to complete the line around the lake, from Isle Maligne to Dolbeau, but was never constructed, although the route is marked "abandoned" on government maps.

DESCRIPTION OF THE PRESENT LANDSCAPE

The landscape of 1927 has been greatly modified during the period. The population has more than doubled, and is even more urban and industrialized. The construction of two aluminum refineries and two large-scale hydro-electric power projects, and enlargement of the pulp and paper mills have been important additions to the industrial landscape. Port and highway facilities have been improved and extended, and the region is now regularly serviced by air. The number of farms and the occupied area have increased, and attempts are being made to improve agricultural methods and yields. It is the eastern section, the upper Saguenay region, that has received the greatest population increase, the population almost trebling over the period, and industrial development; the Lake St. John basin, although nearly doubling in population, remains predominantly rural and agricultural.

Population and Settlement. The population of the region more than doubled over the period, from 73,117 in 1921 to 143,187 in 1941[40] and to 164,700 in 1944.[41] Figure 43 shows the distri-

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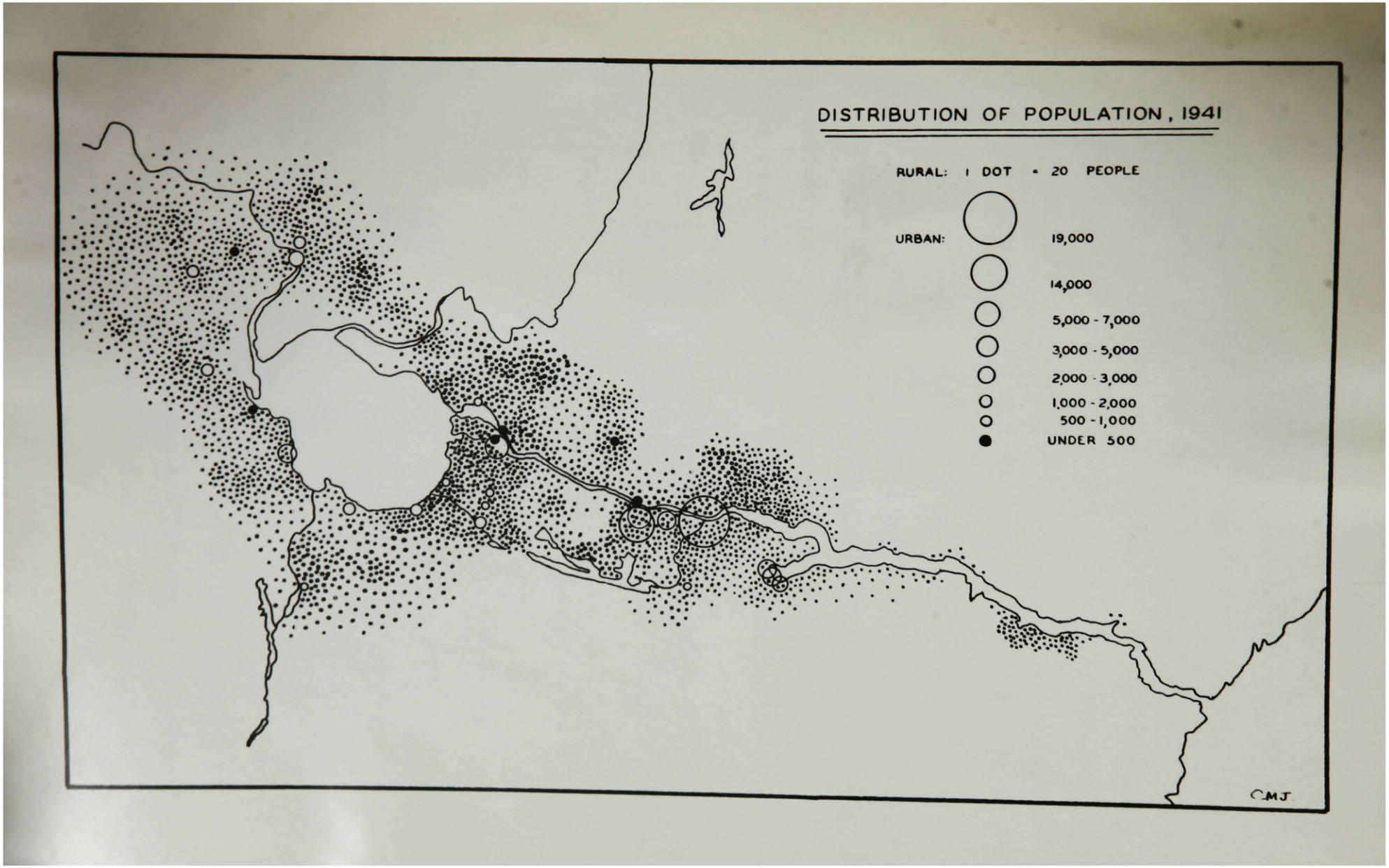
40 These and all subsequent figures for 1941 from the Eighth Census of Canada, 1941

41 Population figures for 1944 were estimated by B.Brouillette from the issue of ration books in that year, given in B. Brouillette. "L'habitat et la population au Saguenay", L'Actualité Economique, 22:558-71, January, 1947.

Figure 43. Distribution of Population, 1941.

A comparison with Figure 29 (Distribution of Population, 1921) shows the increased density of population especially east of Lake St.John and in the Chicoutimi region, the extension of settlement to the peripheral areas of the Lake St.John lowland, and the increased number and size of the urban centres, especially in the upper Saguenay region.


DISTRIBUTION OF POPULATION, 1941
RURAL: 1 DOT = 20 PEOPLE
URBAN:
19,000
14,000
5,000 - 7,000
3,000 - 5,000
2,000 - 3,000
1,000 - 2,000
500 - 1,000
UNDER 500
CMJ

bution of population in 1941, and a comparison with Figure 29 showing that of 1921, shows the extension of population to the peripheral areas of the Lake St. John lowland, the great increase in density especially east of the lake and in the Chicoutimi region, the increased number of urban centres, including the new towns of Arvida, Dolbeau, Isle Maligne and Riverbend, established after 1921, and the great increase in the size of the urban centres in Chicoutimi County.

The population growth of the region over the period is given in Table IX, which also shows the percentage increase of the population over each 10 year period, and over the war years, and the percentages of urban and rural population in each county.

TABLE IX. POPULATION AND PERCENTAGE INCREASES OF POPULATION FOR THE SAGUENAY REGION, CHICOUTIMI CO., AND LAKE ST. JOHN CO. SHOWING PERCENTAGES URBAN AND RURAL 1921-1944.

(Where . . Pop. Population,
(Incr. over Dec. Increases over Decade
(Urb Urban
(and Rur Rural

	REGION		CHICOUTIMI COUNTY				LAC ST. JEAN COUNTY			
Year	Pop.	Inc. over Dec.	Pop.	Inc. over Dec.	Urb.	Rur.	Pop.	Inc. over Dec.	Urb.	Rur.
1921	73117	44%	37578	60%	62%	38%	35539	31%	25%	75%
1931	105977	45%	55724	50%	64%	36%	50253	41%	39%	61%
1941	143187	35%	78881	41%	68%	32%	64306	28%	41%	59%
1944	164700	15%	96296	22%			68404	4%		

In 1931 the county of Lac St.Jean was divided into Lac St.Jean and Roberval, also known as Lac St.Jean Est and Lac St. Jean Ouest. So that the figures will be comparable, the population figures

for these two counties have been combined for 1941 and 1944.

The average birth rate for the two counties over the period 1926-46 was 42 per 1000,[42] with an average death rate of 10 per 1000,[43] giving a rate of natural increase of 32% each decade. Over the whole region, then, there had been continued immigration, shown by the high rates of population increase. The population growth of the region and of each county, showing urban and rural proportions, is shown graphically in Figure 44, and the percentage increases in population for the region and for each county are shown in Figure 45. Immigration to the Lake St. John region was high 1921-31, but has since dropped to negligible proportions as suitable land has been completely occupied. The urban population of this section increased from 25-41%, the chief increase being in Dolbeau, Roberval, and especially St. Joseph d'Alma. There were 20 incorporated urban centres in 1941, including 5 towns, as compared with 10 in 1921. In Chicoutimi County population increase and immigration were higher, especially during the war. The urban population increased over the period from 62-68%, and there were 13 incorporated urban centres, including 2 cities and 4 towns, as compared with 9 in 1921. Figure 46 shows graphically the growth of the 11 cities and towns of the region from the date of the first census after their incorporation until 1944. The increase over the recent period, and especially during the war years, is striking.

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42 Province of Quebec, Department of Trade and Commerce, Statistical Year Book, Quebec, 1948. p. 119.

43 Ibid., pp. 124-25.

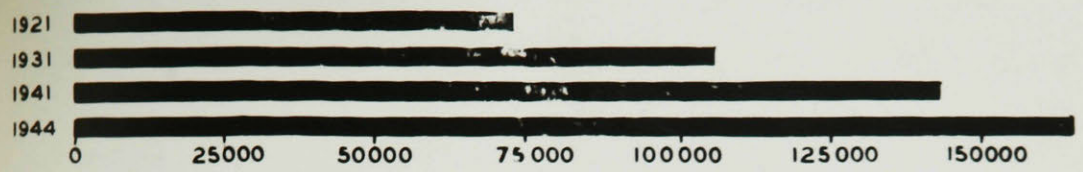
Figure 44. Graphical Representation of the Population Growth 1921-1944.

a. Total population of the region, 1921-44

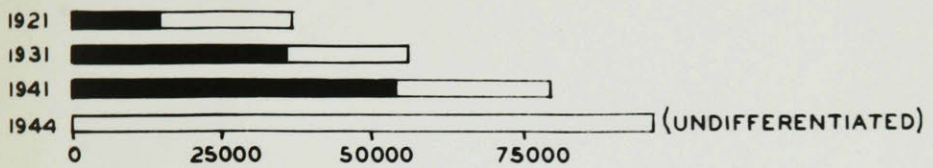
b. Population of Chicoutimi County, 1921-44, showing proportions of urban and rural

c. Population of the Lac St. Jean Counties, 1921-44, showing proportions of urban and rural

Figure 45. Percentage increases of the population 1921-41, for the region and for each county.

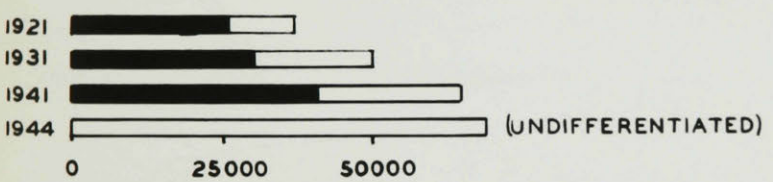


A. POPULATION OF THE SAGUENAY REGION 1921-1944



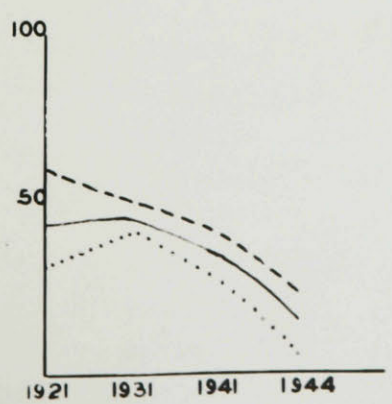
B. POPULATION OF CHICOUTIMI COUNTY 1921-1944

RURAL
URBAN



C. POPULATION OF LAC ST. JEAN COUNTY 1921-1944

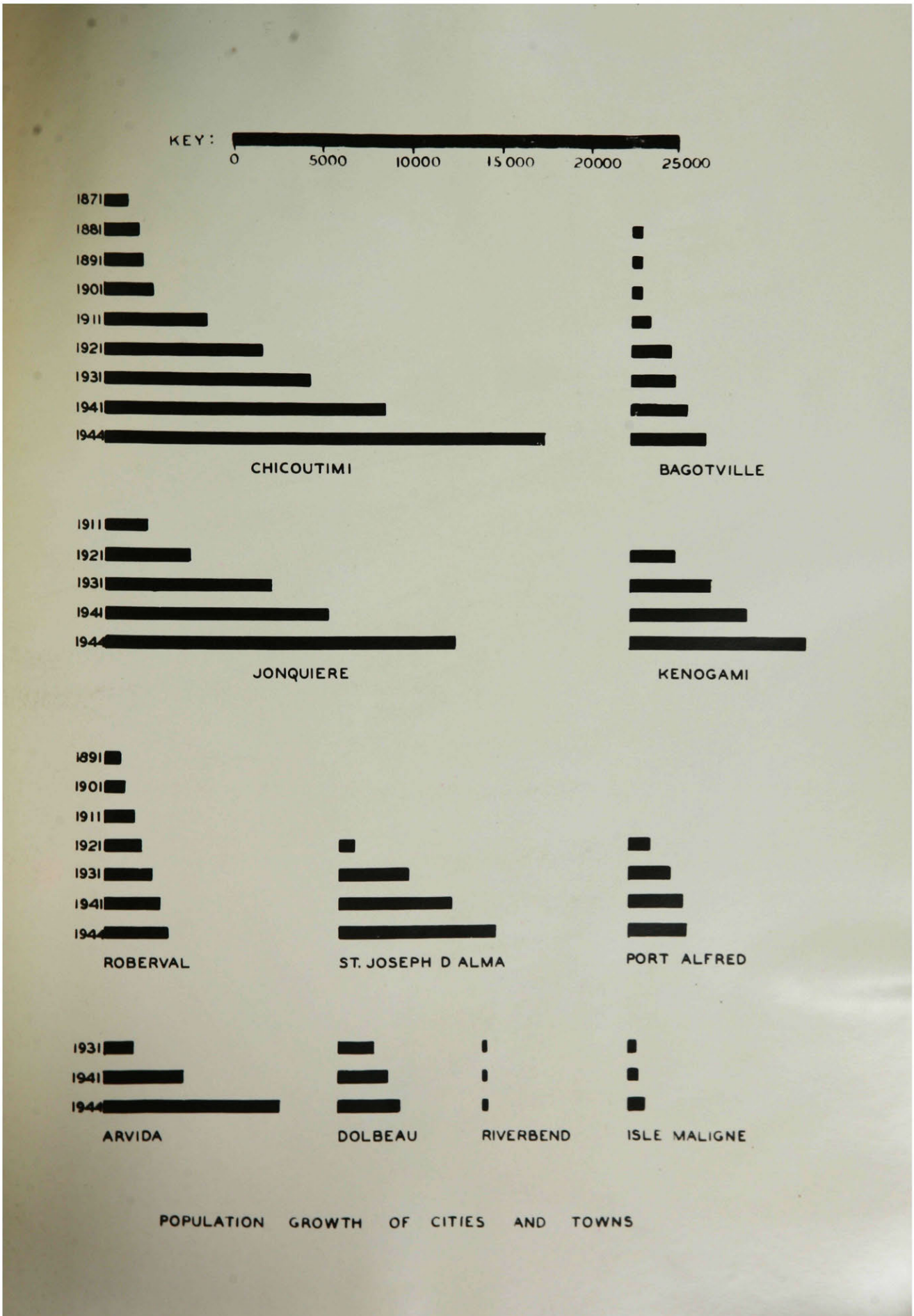
RURAL
URBAN



PERCENTAGE INCREASE OF POPULATION 1921-1944

SAGUENAY REGION
CHICOUTIMI COUNTY
LAC ST. JEAN COUNTY

Figure 46. Growth of the population of the cities and towns of the region, from the first census after their incorporation to 1944.



POPULATION GROWTH OF CITIES AND TOWNS

The rural population density, calculated on the actual occupied area, in 1941, was 47.7 persons per square mile in Chicoutimi County, 45.9 in Lac St. Jean Est, and 40.8 in Lac St.Jean Ouest. Urban densities varied sharply, and were lowest in the planned company towns, being 6030 persons per square mile in Chicoutimi, 5,200 in the urban group of Jonquière-Kenogami, 2,800 in that of Port Alfred-Bagotville-Grande Baie, 1650 in that of St. Joseph d'Alma-Riverbend-Isle Maligne, and 488 in Arvida.[44]

The rate of natural increase over the period 1926-46, 32 per 1000, was the highest in the province, the provincial average being 17 per 1000.[45] In the immediate post-war years the birth rate continued to rise, being 44 per 1000 in 1946 as compared with 42 over the preceding 20 years. The highest rates have been in the industrial towns, in 1945 those of Chicoutimi and Jonquière were 52 and 58 per 1000, respectively.[46] The death rate, in contrast, has fallen, being 11 per 1000 1926-35, and 9 per 1000 1935-46.[47] The present natural increase is thus 35 per 1000, which will assure continued high population increase in the region as long as industrial activity maintains high employment and low emigration. The highest population so far was 174,300 in 1943, a year of peak activity, which dropped to 165,000 in 1945,[48] due

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44 Brouillette, op. cit., p. 661.

45 Province of Quebec, Department of Trade and Commerce, op. cit., p. 112

46 Ibid., pp. 119-120.

47 Ibid., pp. 124-125.

48 Brouillette, op. cit., p. 656.

to the emigration of the constructional workers.

Of the total population in 1941, 96% were French-Canadian, with 3% British, the latter forming the managerial, technical and skilled staff of the large industries.[49] The occupations of the people in 1941,[50] shown in Table X, point out the differing economies of the two sections of the region - that of Chicoutimi County being primarily industrial and urban and that of the Lake St. John region being primarily agricultural and rural.

TABLE X. GAINFULLY EMPLOYED OF SAGUENAY REGION BY OCCUPATION GROUPS AND COUNTIES, 1941

	Chicoutimi County	Lac St.-Jean Est County	Lac St.-Jean Ouest County
Total population	78,881	25,245	39,061
All occupations	24,901	7,214	11,213
Agriculture	18%	35%	50.5%
Fishing, Logging, Mining	5.5%	10%	10%
Manufacturing	18.5%	13%	7%
Construction	8.5%	6%	3%
Transportation and Communication	5.5%	4%	4%
Commerce and Finance	6.5%	6%	5%
Personnel and Professional Services	16.5%	13.5%	12.5%
Labourers	17%	9%	6%
Clerical	4%	3.5%	2%
	100%	100%	100%

The rural settlement pattern of the region showed little change from that which had evolved during the preceding eras, with farmsteads and linear villages concentrating along the range roads.

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49 Province of Quebec, Department of Trade and Commerce, op. cit., p. 64.

50 Ibid., pp. 90-91.

The survey divisions of the region - the ranges, townships, and lots are shown in Figure 47, in which the field pattern with respect to the roads and the waterways can be seen.[51] Outlined on this map is the area which is shown in the aerial photograph, Figure 48, west of Ha Ha Bay. This photograph, together with the map which shows the exact boundaries, designates clearly the relationship of settlement to the road network. Six roads are visible: two in the foreground run south-west along the Ha Ha and à Mars Rivers, further north two run north-west from Bagotville to Chicoutimi, and in the left background two run north-east, meeting the last two at right-angles. In spite of their varying directions, all six are range roads, with the long narrow lots running back from them at right-angles, and with the farmsteads edging the road. The twisted survey pattern in this region, as explained in the previous sections, has resulted from arranging the lots to edge the water wherever possible; in the Lake St.John lowland the pattern is more regular, as can be seen in Figure 49. In this view of the basin, looking east over St. Jerome, 3 parallel range roads lined with settlement run eastward, with the long narrow farms perpendicular to the roads.

In Chicoutimi County in 1941 there were 5 villages - Grande Baie with a population of 2230, Ste.Anne and Rivière du Moulin, suburbs of Chicoutimi, each with about 1500, St.Ambroise and Laterrière, the only new village incorporated since 1921, each

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51 Province of Quebec, Department of Lands and Forests, Surveys Branch, Carte Regionale No. 3, 3 miles to 1 inch, Quebec 1943. Photographic reduction, with contour lines and fault boundaries added.

Figure 47. Map of the Saguenay Region showing County, Township, Range and Lot Boundaries.

The twisted survey pattern has resulted from having as many as possible of the long narrow lots edge the water, - whether lake, river or stream. This is more pronounced in the older upper Saguenay region than in the Lake St. John basin.

Photographic reduction of Carte Regionale No. 3, Quebec Department of Lands and Forests, Surveys Branch, 1945. The fault boundary of the lowland and the contour lines have been added.


QUESNEL
DUFFERIN
RACINE
DALMAS
PARENT
GARNIER
TAILLON
LABRECQUE
DEMEULES
DELISLE
LAC ST-JEAN
ASHUAPMOUCHOUAN
BOURGET
OUIATCHOUAN
SIMARD
TREMBLAY
HARVEY
ST-GERMAINS
ROBERVAL
ROBERVAL
LABARRE
KENOGAMI
CHARLEVOIX
METABETCHOUAN
CARON
DECHENE
DEQUEN
PLESSIS
HILAIRE
CHABANEL
DABLON
LARTIGUE
CRESPIEUL
MALHERBE
BÉCART
LAPOINTE
DUBUC
BOILEAU
LALEMENT
PERIGNY
DUCREUX
SAGARD
SAGUENAY
DUMAS
TADOUSSAC
BERGERONNES
ESCOUMAINS
PONTGRAVÉ
CHAUVIN
COQUART
LABROSSE
CHAMPIGNY
DUROCHER
HÉBERT
BRÉBEUF
GAGNÉ
CHARDON
SILVY
ALBANEL
PELLETIER
DOLBEAU
RIVIÈRE SAGUENAY
CHICOUTIMI
OTIS

Figure 48. Aerial View of the Region west of Bagotville and Port Alfred.

The area covered by the photograph is outlined on Figure 47. The relationship of the settlement pattern to the range roads is clearly seen.

(Canadian Pacific Airlines, 1945)

Figure 49. Aerial view of a section of the Lake St. John basin.

St. Jerome on the south shore of Lake St. John can be seen at the left of the photograph. Three parallel range roads, lined with settlement, can be seen running eastward, with the long narrow farms perpendicular to the range lines.

Surveys Branch, Department of Lands and Forests, Quebec.

with about 500. In the Lac St.Jean Counties there were 15 villages. as compared with 8 in 1921 - St.Felicien with a population of 1603, St. Jerome with 1469, Mistassini with 1294, Normandin, Hébertville, Chambord and St.Emilien with about 1025, and Hébertville Station, St. Gédéon, St. Prime, Albanel, Lac Bouchette, St.Bruno, St.Coeur de Marie, and Val Jalbert, all with under 1000. Except for Val Jalbert, which had a population of 29, and has been a "ghost town" since the closing of the pulp mill in 1927, the villages were commercial centres for their surrounding parishes, with some small industry based on local resources, usually processing agricultural or forest products.

The role of several of the towns of the region had become diversified over the period.[52] Roberval, with a population of 3220 in 1941 as compared with 2068 in 1921, was the least affected, and remains an important commercial and administrative centre for the Lake St. John region. St. Joseph d'Alma, Bagotville, and Jonquière, although still agricultural and commercial centres processing agricultural and forest products and distributing imported goods, had benefitted from their proximity to the increased industrial activity of the period and had become industrial suburbs.

The population of St. Joseph d'Alma on the Petite Décharge, had increased from 850 in 1921 to 6449 in 1941 and 9000 in 1944. A comparison of Figure 50, an aerial view of the town taken from the south in 1945, with Figure 37 taken from the west

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52 The population growth of each of the following urban centres from its incorporation to 1944 has been shown in Figure 46 to which reference can be made.

Figure 50. Aerial view of St. Joseph d'Alma, with Riverbend and the Riverbend paper mill of Price Bros. and Co. to the north-west.

A comparison with Figure 37 (aerial view of St. Joseph d'Alma, 1924) shows the growth of the town of St. Joseph d'Alma over the period, its population having increased from 850 to 9,000

in 1924, shows this tremendous growth, which has resulted from the construction of the Riverbend paper mill in 1925, and the Isle Maligne aluminum plant in 1943. The small towns of Riverbend and Isle Maligne house only senior staff of these plants, the labourers live in nearby St. Joseph d'Alma, which has become a workers' suburb. Its own small industries - the Granit National, a sawmill, and small dairy and wood products industries, employ about 75. By comparison, 600 of its population are employed by Price Bros. at Riverbend, 150 by the Aluminum Company, and 120 by Saguenay Power at Isle Maligne. Its importance as a commercial centre is shown by 108 retail, 5 wholesale, and 46 service establishments.[53]

Bagotville, adjoining the paper town of Port Alfred on Ha Ha Bay, can be seen in Figure 51, and also in Figure 49. Its population doubled from 2204 in 1921 to 4200 in 1944. It is a commercial centre for a prosperous agricultural parish, with 26 service and 57 retail establishments. Three cheese factories, two large sawmills, a cement factory, tool factory, and smaller factories producing wood products, employ about 130 men, and 125 are employed in the paper mill at Port Alfred. There are two small wharves - one is owned by the federal Minister of Public Works and handles small quantities of imports and agricultural and lumber exports, the other is owned by Canada Steamship Lines whose tourist steamers call daily in summer.

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53 Figures on employment and industrial and commercial establishments for St. Joseph d'Alma and subsequent municipalities from an unpublished report on the municipalities of the region, prepared by the Conseil d'Orientation du Saguenay, Chicoutimi, 1948.

Figure 51. Aerial view of Bagotville (on the right) and Port Alfred on Ha Ha Bay.

The mill of Consolidated Paper can be seen on the left, and the port facilities of Saguenay Terminals in the centre.

(Canadian Pacific Airlines, 1945. Courtesy of the Aluminum Company of Canada.)

The population of Jonquière on the Rivière au Sable, the second largest city of the region, increased from 4,851 in 1921 to 13,769 in 1941 and 20,000 in 1944, due to increased activity at the paper mill of adjoining Kenogami, and at the Arvida aluminum plant, three miles to the east. The former employs 300, the latter about 1500, Jonquière residents. The city also has prosperous smaller industries - the C.N.R. repair shops employ 200 , three wood products firms employ 100, a sawmill, shoe factory, cement factory, and javel water factory each employ about 10, and large bakeries, dairies, and soft drink bottling plants employ about 180. There are 185 retail, 12 wholesale, and 43 service establishments. Its role is thus multiple - it is an agricultural, commercial, and industrial centre, and an industrial suburb.

The roles of the five company towns established during the preceding period - Dolbeau, Port Alfred, Kenogami, Isle Maligne, and Riverbend - are unchanged, and a new one, Arvida, had been established in 1926. All showed great population increase over the period due to the high level of industrial activity.

The paper town of Dolbeau, established 1927 on the Mistassini, had a population of 3500 in 1944 as compared with 2032 in 1931. Port Alfred, established 1917 on Ha Ha Bay, had a population of 3380 in 1944 as compared with 1213 in 1921. The site of this town with its mill and port can be seen to the left of Figure 51, and also in Figure 49. The paper mill of Consolidated Paper Corp. employs 425 of the inhabitants, and 50 are employed by Saguenay Terminals. There are 35 retail and 12 service establishments. The single role of this and the other company towns

is in strong contrast to the diverse functions of the older centres.

Kénogami, the "twin-city" of Jonquière, established in 1912, had a population of 10,000 in 1944 as compared with 4851 in 1921. A view of the town in 1945 is shown in Figure 52. Of its working population, 1,000 are employed in the Price Bros. paper mill, and 74 in small industry, and there are 120 retail and 45 service establishments.

These three paper towns differ from the other three "model" company towns in that they house and service over 80% of the employees of their mill, comfortably and within walking distance of their work. They are neat and well cared for, but unlike the "garden-cities" of Isle Maligne, Riverbend, and Arvida, they are not models of town planning.

Isle Maligne, constructed 1925, had a population of about 500 in 1948 as compared with 449 in 1931. A view of the townsite can be seen in Figure 28. Large lots, curving streets, large attractive homes, and large areas of park and garden combine to create an attractive townsite north of the Grande Décharge, and there are company-provided educational, recreational, and commercial establishments. It houses senior staff only of affiliated companies of Alcan, of whom 57 work for Saguenay Power, 10 at the aluminum refinery, and 9 for the Alma and Jonquière Railroad.

Riverbend, constructed in 1925 on the Petite Décharge, can be seen in Figure 50 south of the Price Bros. Paper Mill. The population was 284 in 1944 as compared with 188 in 1931, and

Figure 52. Aerial view of Kenogami.

At the left of the photograph is the Rivière au Sable, partly covered with pulpwood, with the Kenogami paper mill on the east bank. The flume carrying pulpwood supplies from north of the Saguenay can be seen in the left background crossing the Saguenay below the Chute à Caron powerhouse, constructed 1928. In the right background is the Shipshaw No. 2 power house, completed 1943.

(Canadian Pacific Airlines, 1945.)

its employed population consists of 70 senior staff of the paper mill, which employs 670, the remainder living in St. Joseph d'Alma. Except for the mill there are no commercial or industrial establishments. As with Isle Maligne, careful planning has produced an attractive townsite with excellent recreational and educational facilities. An area to the north-east has been planned for future development,[54] although extension is unlikely in the foreseeable future.

The city of Arvida, constructed in 1926, to house the workers of the aluminum plant, was sited on a level terrace cut by ravines, 5 miles west of Chicoutimi. Figure 53 is an aerial view of the city in 1930, when the population was 1790. Expansion of the city has paralleled plant expansion, and the population in 1941 was 4581 . The highest population has been 12,280 in 1943, and has since fallen to about 10,000.[55] This great expansion, which has taken place by sections following a master plan for a population of 50.000,[56] can be seen by a comparison of Figure 53 with Figure 54, an aerial view taken 1945. Curving residential streets, with main arteries leading to the business centre and the plant, well-spaced attractive houses, and landscaped parks and gardens result in a pleasant city with varied recreational facilities. and adequate educational and commercial facilities. There are 13 schools, 28 retail, and 21 service establishments. Planning will permit further expansion, should it

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54 Price Bros. and Co. Ltd., Plan showing proposed subdivision of Lot 97. Riverbend, 1946

55 Brouillette, "L'aluminium au Saguenay", op.cit., p. 441.

56. B. Ellison, "Arvida, a Modern City", Reprint of the Engineering and Contract Record, July, 1945, p. 1.

Figure 53. Aerial view of the Arvida plant and and townsite, 1930.

(R.C.A.F., 1930)


13064-61 ARVIDA, PQ. TOWNSITE AND PLANT

Figure 54. Aerial view of Arvida, 1945.

A comparison with Figure 53 shows the growth of the city over the period 1930-45. The first sections, constructed by 1930, can be identified in the later photograph by the greater size of the trees. Developed in sections, the expansion has followed a master plan allowing for a population of 50,000. The increased size of the aluminum plant, now the largest in the world, 1½ miles long by 3/4 mile wide, can also be seen.

(Canadian Pacific Airlines, 1945.
Courtesy of Aluminum Company of Canada)

be desired, by constructing additional sections without destroying the balance of the city. This exemplary "company town" houses about one-quarter of the plant employees, 1828 out of 6456, chiefly office staff and senior workers, with the remainder living in Jonquière and Chicoutimi and its suburbs.

The largest city of the region is Chicoutimi, which has retained and developed its role as commercial centre of the region. Figure 55 is an aerial view of the town in 1945, and a comparison with Figure 39 taken 1924 shows the growth of the city, over the period, when the population trebled from 8,937 in 1921 to about 25,000 in 1944. The early advantages of site remain advantages today. At the head of tide water and at the entrance to the interior by rail and highway, it is the regional centre as far as Lake St. John. Its function is a multiple one.

It is an industrial suburb, housing over 1,000 workers of the aluminum plant of Arvida. It is a city of small and medium industry, with factories producing furniture and other wood products, shoes, woollen goods, ornamental iron, aluminum goods, bricks, cement, and pottery. There are also 2 bakeries, 4 dairies, and 2 soft drink bottling plants. The pulp mills were closed by 1930. It is a commercial centre, with 175 retail, 16 wholesale, and 93 service establishments. It is also the regional centre for insurance companies, lawyers, the Saguenay Electric Co., the Saguenay Telephone Co., the county agricultural co-operative, and other professional and commercial establishments. It is the ecclesiastical centre of the region, the seat of a bishop and a

Figure 55. Aerial view of Chicoutimi, 1945

A comparison with Figure 39 (Aerial view of Chicoutimi, 1924) shows the growth of this chief city of the region over the years 1924-45. The new wharves, completed 1930, with the old wharf adjoining to the east, and the bridge to Ste.Anne, are striking additions to the scene.

(Canadian Pacific Airlines. 1945)

cathedral. It is the educational centre of the county, with a seminary, normal school, agricultural college, trade school, 3 commercial schools, 4 convent schools, and an orphanage. It is also the administrative and judicial centre of the county, with the county court house, prison, and Registrar's office, and the customs house. It is a centre of information, with a radio station, two large newspapers, and 3 printing establishments. It has the largest hospital of the region. It is the regional tourist centre with the headquarters of the Saguenay-Lake St. John Tourist Association and 7 hotels. It is the centre of the highway network, and is the second port of the region, receiving about 200 ships a year, including weekly calls by the Canada Steamship Lines tourist steamers. With no large scale industry, it has nevertheless benefitted from the industrial growth of the region it serves.

LARGE SCALE INDUSTRY

The Aluminum Industry. The aluminum smelter at Arvida (which can be seen in Figure 54), constructed in 1926, is now the largest in the world, with a capacity of 360,000 tons of aluminum ingot a year, or one-third of the total world production, which sells at the world's lowest price. The large scale plans for expansion have been more than fulfilled. The original plant produced 30,000 tons of aluminum a year, but plans allowed for a future capacity of 300,000 tons, which has been surpassed. The plans for an installed capacity of 1,500,000 H.P. at Shipshaw, to

supply power for the plant, have also been carried out. The industry also created the town of Arvida, which has a population of 10,000.

A brief description of the raw materials and processes of aluminum production helps to explain the siting of the industry at Arvida, its subsequent expansion, and its importance in the region.

Bauxite, the basic raw material, is imported from British Guiana to Port Alfred, whence it is transported to Arvida by rail. At the ore plant it is crushed, treated with caustic soda, filtered and calcined in oil-fired kilns, producing alumina. The residue from this process - red mud - now forms large waste piles near the plant, but may be of use in the future. Next, in the reduction plant, the alumina is dissolved in molten cryolite and aluminum fluoride, and by electrolysis the dissolved alumina is separated into oxygen and aluminum. The aluminum is tapped off, purified, and molded into ingots, and is shipped in this form to fabricating plants in other parts of Canada, where it may be rolled, cast, or forged. The carbon electrodes used in the electric process are manufactured in the carbon plant from imported coke and petroleum products.[57]

As a consequence of the recent war, production of several materials and by-products is now carried on at the plant. Most of the cryolite used, originally imported from Greenland, is now manufactured synthetically from fluorspar, which is imported from

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57 Aluminum Company of Canada, op. cit., p. 20

Newfoundland. A sulphuric acid plant, using imported sulphur from Texas, was also added to produce aluminum fluoride. Caustic soda is now also made at the plant by electrolytic means. By-products - chlorine gas and aluminum fluoride, are produced and sold. Aluminum alloys, aluminum paint pigment, and magnesium are also produced.

The raw materials needed for the production of aluminum and their sources are listed in Table XI

TABLE XI. MATERIALS NEEDED FOR THE PRODUCTION OF ALUMINUM AND THEIR SOURCES.

Bauxite	British Guiana
Caustic Soda	Ontario (now manufactured at Arvida)
Oil	Texas
Cryolite	Greenland (now manufactured at Arvida)
Fluorspar	Newfoundland
Sulphur	Texas
Petroleum Coke	Texas
Pitch	Texas
Tar	Texas
Metallurgical Coke	Illinois
Electric Power	Shipshaw.

In all, 7 tons of raw materials, of which 4 tons are bauxite, are required to produce 1 ton of aluminum, plus electric energy equivalent to 16 tons of coal.[58] The cost of electricity totals 10% of the total cost of production, more than in any other commercial process.[59] It is worth reiterating that all the raw materials are imported, by tide water, to the source of energy.

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58 Ibid., p. 24.

59 Brown, op. cit., p. 80

The chief uses for aluminum have been in the transportational, aircraft, electrical, and armament fields, but constructional uses are now becoming important. Its advantages are that it is light yet strong, does not rust, and can be alloyed to varying consistencies. Continued expansion of its market has been dependent on continued decrease in price, for other materials are its constant competitors. These new uses, and the present low price of 15½ per pound, are expected to keep demand high in the foreseeable future, and although plant expansion at Arvida is unlikely, since planned further power developments can be utilized by existing capacity, production and employment are expected to remain high, barring a deep economic depression. The prosperity of the plant, employing 6,500 men at wages which are above average in the province, is vital to that of the region.

Hydro-Electric Power. The construction of the Shipshaw development during the period, with a total installed capacity of 1,500,000 H.P., and the expansion of capacity at Isle Maligne to 540,000 H.P., has resulted in a total installed capacity in the region of 2,157, 416 H.P., as compared with 5,878,372 in the province of Quebec.[60] This is considerably more than the 1927 estimated capacity of 1,534,008 H.P..(Cf. ante p.115), which did not take into account the possibility of increasing potential capacity by creating storage facilities, or concentrating the head of river slope by dams. The Shipshaw project created additional storage facilities and, by re-routing a section of the Saguenay, obtained

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60 Province of Quebec, Department of Trade and Commerce, op. cit., p. 433.

a greater head of water than was estimated. An aerial view of the complete Shipshaw development is seen in Figure 56, with No. 1 powerhouse in the left background, and the man-made 1½ mile canal leading from the control gates to the No. 2 powerhouse in the right foreground. There still remains undeveloped capacity in the region, the largest sites being on the Peribonka and Ashuapmouchouan Rivers, which are estimated as capable of producing 300,000 H.P. each.

The closing of the pulp mills at Chicoutimi and Val Jalbert have left their power installations idle. These include 3 out of the 5 plants on the Chicoutimi River, with an installed capacity totalling 27,870 H.P ., and the plant at Val Jalbert with 7,300 H.P. installed.[61] Four small plants, controlled by the Saguenay Electric Company, have been closed, due to more economical production at Isle Maligne, where the company obtains most of its power. These are at Hébertville, St. Prime, St. Felicien, and Ste.Anne, totalling 845 H.P.[62]

The power installations of the region, showing the total installed capacity of 2,157,416 H.P. are pictured in Figure 57, which can be compared with those of 1927 in Figure 41.

The production of power at Shipshaw No. 2 plant is absorbed by the aluminum plant at Arvida. Shipshaw No. 1 serves only as standby capacity. The Isle Maligne output is sold wholesale in large blocks to the pulp and paper mills of the region.

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61 Ibid., p. 435.

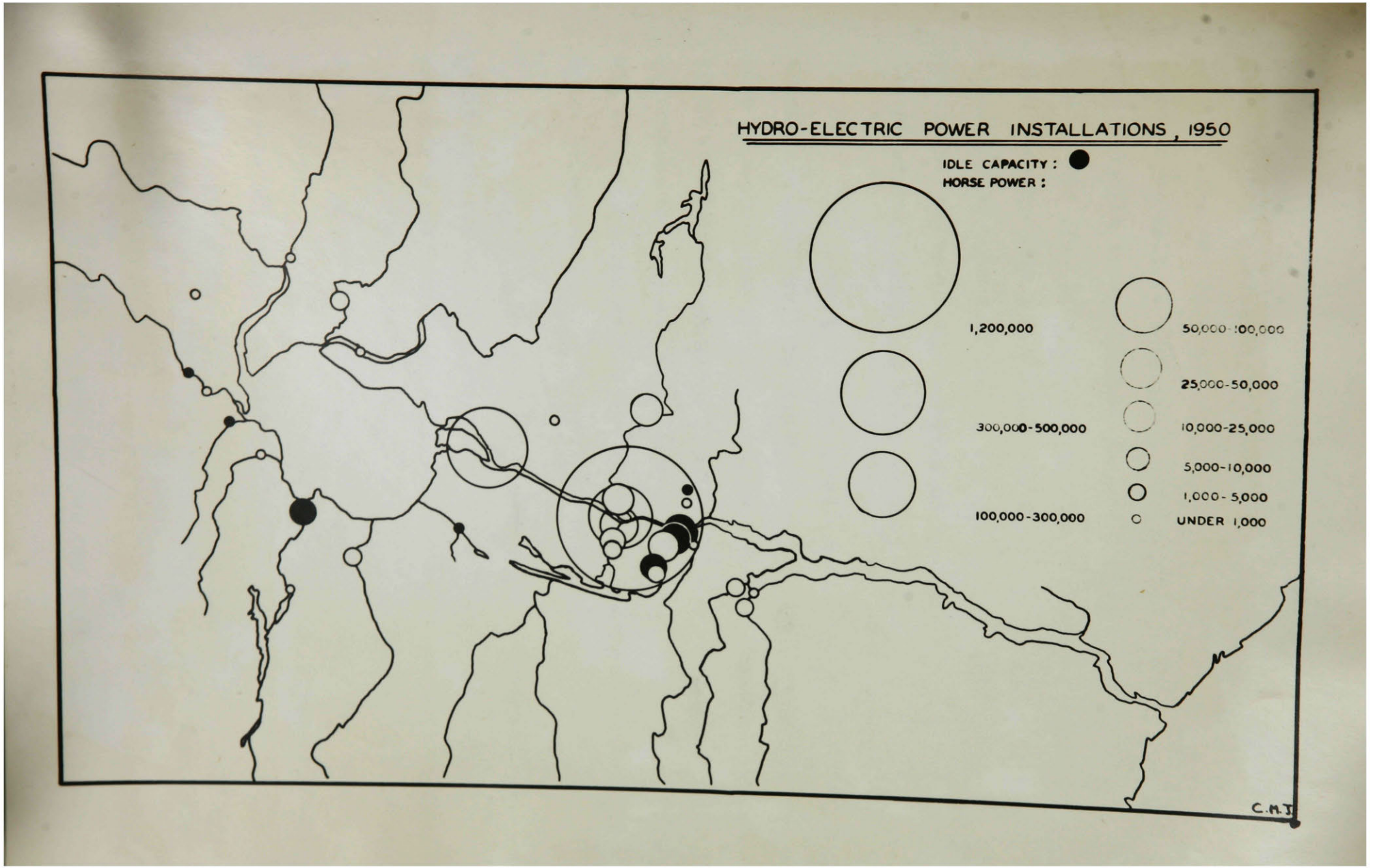
62 Canada, Department of Mines and Resources, Dominion Water and Power Bureau, List of Central Electric Stations in the Province of Quebec, 1948, p. 3.

Figure 56. Aerial View of the Complete Shipshaw Development.

Shipshaw No. 1 powerhouse is in the left background. Beside it are the control gates at the entrance to the 1½ mile man-made canal leading to the No. 2 powerhouse, which is in the right foreground. Total installed capacity 1,500,000 H.P.

(Canadian Pacific Airlines. 1945. Courtesy of the Aluminum Company of Canada.)

Figure 57. Hydro-Electric Power Installations, 1950, showing Idle Capacity.


HYDRO-ELECTRIC POWER INSTALLATIONS, 1950
IDLE CAPACITY :
HORSE POWER :
1,200,000
300,000-500,000
100,000-300,000
50,000-100,000
25,000-50,000
10,000-25,000
5,000-10,000
1,000-5,000
UNDER 1,000
C.M.I.

with Riverbend using 65,000 H.P., Dolbeau 82,000 H.P., Kenogami 15,000 H.P., and Port Alfred 53,000 H.P. These plants also have electric as well as coal-fired boilers, and in periods of high water benefit from secondary power to generate steam in this manner. Power from Isle Maligne is also used at the small aluminum plant nearby, and 100,000 H.P. is exported to Quebec. It is interesting to note that during the period of low water in the Saguenay in 1949 power was imported to the region by this line, from the Shawinigan Water and Power system.

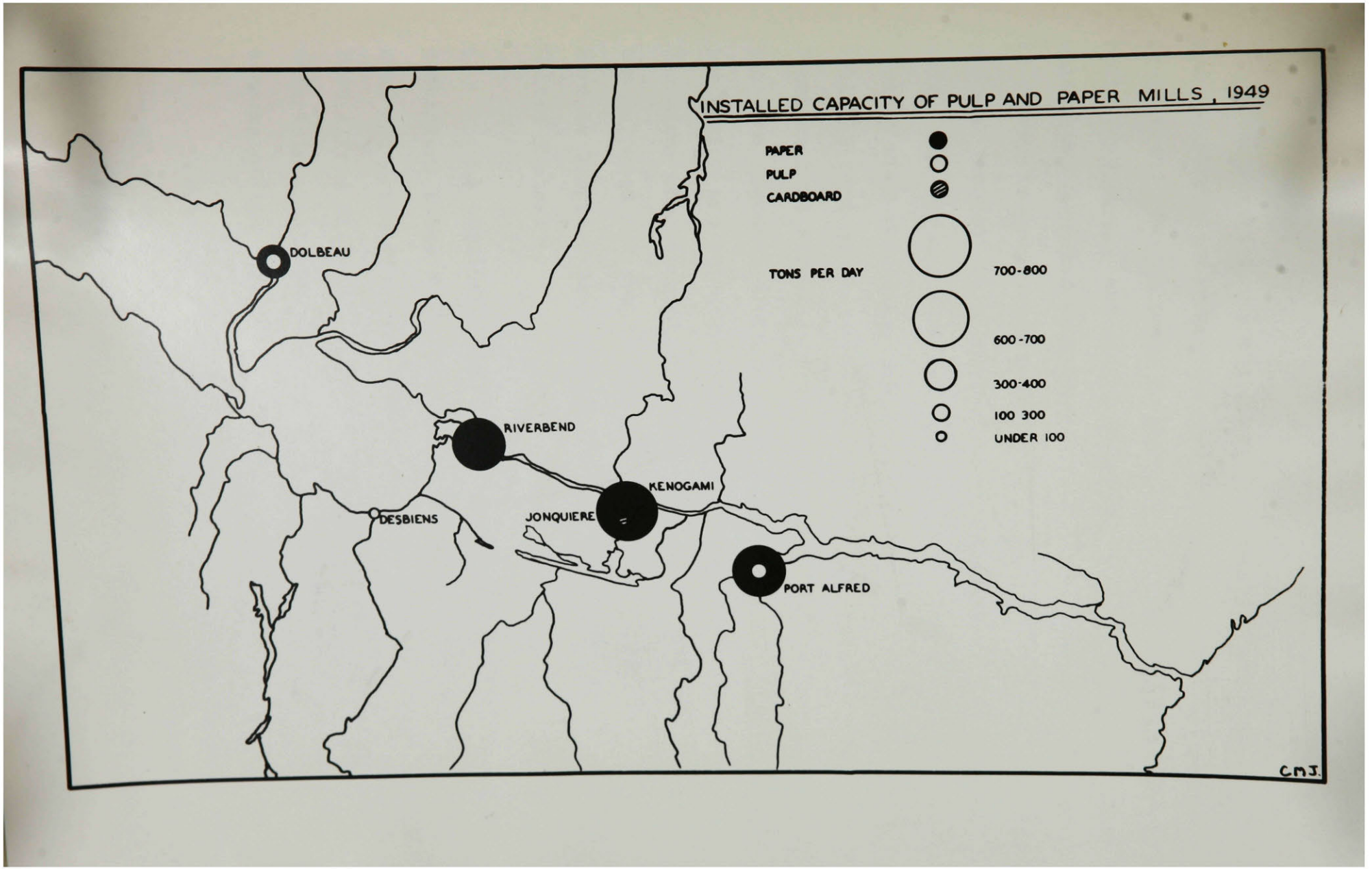
Two plans have been considered by the Aluminum Company to produce more power in the region. One is the diversion of Lake Pipmaukin and the upper Bersimis River into the Peribonka which would make more water available at Shipshaw. The provincial government has refused to approve this scheme. The other, which has been approved, is the development of 300,000 H.P. on the Peribonka River. This will be absorbed by the Arvida plant.

The Pulp and Paper Industry. At the present time newsprint capacity of the region totals 2360 tons a day, sulphite pulp capacity totals 280 tons a day, and cardboard capacity totals 95 tons a day. The groundwood pulp capacity of the Val Jalbert and Chicoutimi mills - 100 and 350 tons respectively - has been unused since 1930. Capacity is distributed among the mills as pictured in Figure 58, and as follows:

Newsprint		Sulphite Pulp		Cardboard	
Kenogami	750	Port Alfred	100	Jonquière	95
Riverbend	680	Dolbeau	100		
Port Alfred	600	Desbiens	80		
Dolbeau	330				

(All figures in tons per day)

Figure 58. Installed capacity of Pulp and Paper Mills, 1949


INSTALLED CAPACITY OF PULP AND PAPER MILLS, 1949
PAPER
PULP
CARDBOARD
TONS PER DAY
700-800
600-700
300-400
100 300
UNDER 100
DOLBEAU
RIVERBEND
KENOGAMI
DESBIENS
JONQUIERE
PORT ALFRED
C.M.J.

Except for small quantities of chemicals, pulpwood and hydro-electric power are the raw materials of pulp and newsprint production. The pulpwood is carried from the water by conveyor belts, debarked, and stored in piles for the year's use. Meanwhile some debarked wood continues to the grinder room, where it is ground to groundwood pulp, while other supplies are being chipped and "cooked" in a sulphuric acid solution to make sulphite pulp. The two are combined (80% sulphite and 20% groundwood pulp), treated with chemicals, and fed to the huge paper machines, which roll 950 feet of newsprint onto cylinders a minute. Consolidated Paper at Port Alfred imports about 50% of its pulpwood from outside the Saguenay drainage area by schooner, and other mills of the region are supplied from holdings within the drainage area. The minor raw materials and fuels are imported to the source of the pulpwood and power - sulphur from Texas, limestone from St. Marc de Carrière near Quebec, and coal from Nova Scotia and the United States.

A consideration of the organization of the two largest companies, Price Bros., owners of the mills at Kenogami, Riverbend and Jonquière, and Consolidated Paper Corp., owners of the Port Alfred Mill, demonstrates the methods and sources of raw materials and power of these mills, and their position in the economy of the region.

Price Bros. control pulpwood concessions on 6,451 square miles of Crown land, and own 232 square miles in freehold, in the Saguenay drainage basin. These limits, which supply the three

mills, are shown in Figure 59. The newsprint production of the company totals 400,000 tons a year, of which over 80% is exported by rail to points in Canada and the United States; the remainder, about 70,000 tons, is exported by sea from Port Alfred to Great Britain, South Africa, and South America.[63]

The Kenogami mill, on the Rivière au Sable, the largest in the region, employs 1225 men, and produces 750 tons of newsprint a day. Its power supplies come chiefly from the company's power plants - 2 on the Shipshaw, 1 on the Chicoutimi, and 1 on the au Sable rivers, totalling about 65,000 H.P., and an additional 15,000 H.P. is imported from Isle Maligne. It also consumes 100,000 tons of coal a year for steam generation, imported chiefly by water through Port Alfred and Chicoutimi. In 1948 it consumed about 260,000 cords of pulpwood, of which 2/3 was cut in the Lake Kenogami area and floated down the au Sable River to the mill, and 1/3 was cut in the Shipshaw and Valin basins north of the Saguenay, and floated down these rivers, and across the Saguenay by means of a flume. The site of the mill can be seen in Figure 52.

The Riverbend mill on the Petite Décharge employs 740 men, and produces 680 tons of newsprint a day. Completely powered by electricity, it consumes 65,000 H.P., obtained from Isle Maligne. In 1948 it consumed about 230,000 cords of pulpwood, of which 180,000 cords were cut on the Peribonka holdings of the company, north of Lake St. John, towed across the lake, and floated

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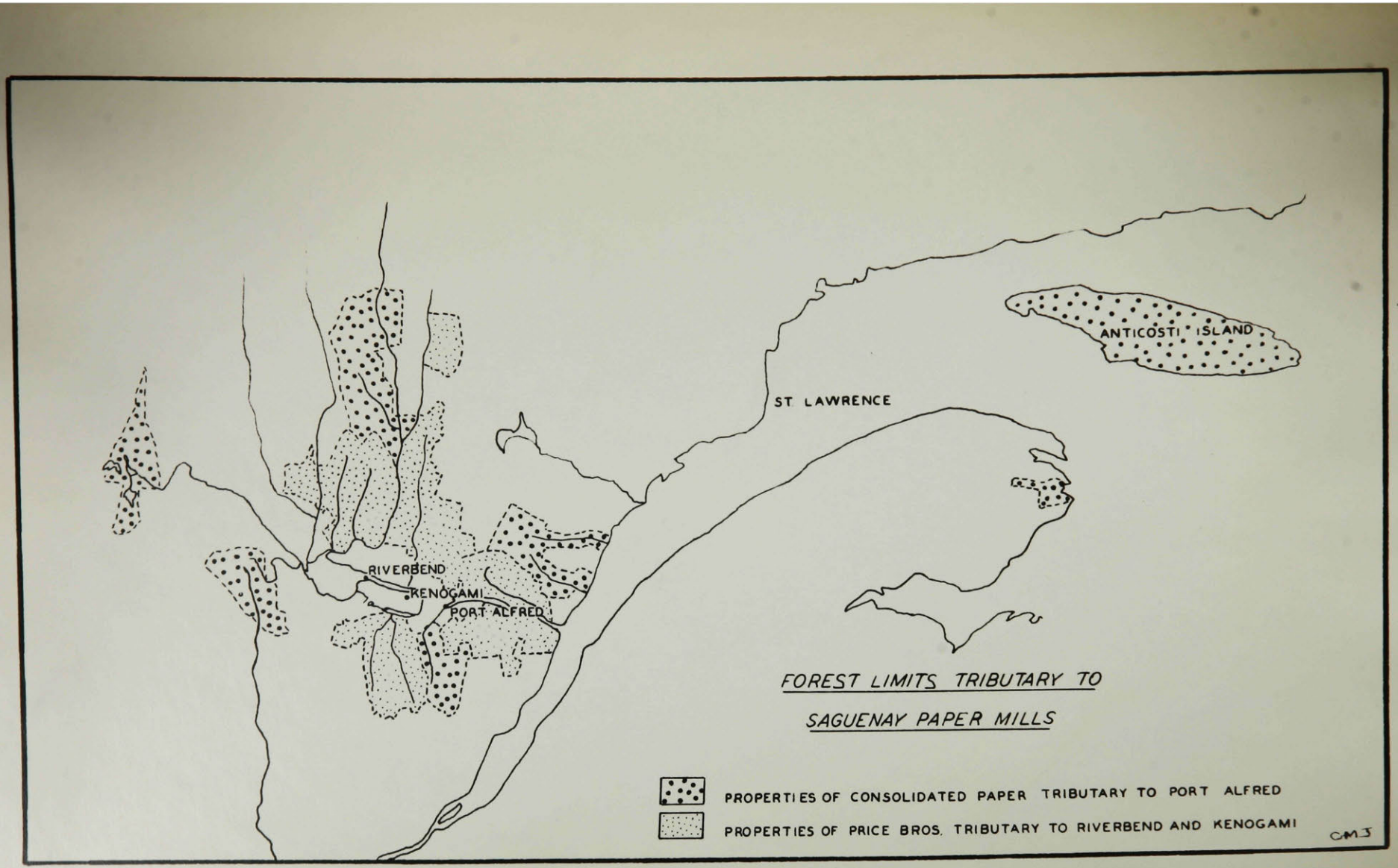
63 These and subsequent figures courtesy Price Bros. and Co. Ltd., Kenogami and Chicoutimi.

Figure 59. Map of the pulpwood concessions of Price Bros. and Consolidated Paper Corp, tributary to their Saguenay pulp and paper mills.


ANTICOSTI ISLAND
ST. LAWRENCE
RIVERBEND
KENOGAMI
PORT ALFRED
FOREST LIMITS TRIBUTARY TO
SAGUENAY PAPER MILLS
PROPERTIES OF CONSOLIDATED PAPER TRIBUTARY TO PORT ALFRED
PROPERTIES OF PRICE BROS. TRIBUTARY TO RIVERBEND AND KENOGAMI
CMJ

down the Petite Décharge to the mill, the site of which can be seen in Figure 50. The remaining 50,000 cords were obtained by an enlightened and geographically sound system of exchange with the Consolidated Paper Corp. By this, wood from the Peribonka limits of the latter company is consumed at Riverbend, in exchange for wood from the Price Bros. limits south of Lake Kenogami and on the north shore of the St. Lawrence, which is consumed at Port Alfred.

The oldest and smallest mill, Jonquière, employs 297 men, and produces 95 tons of cardboard a day. It consumes 6,000 H.P., from the two company owned plants on the au Sable River, and 20,000 tons of coal a year. In 1948 it consumed 60,000 cords of pulpwood, from the same sources as the Kenogami mill.

The total cut of pulpwood from Price Bros. limits in the Saguenay region in 1948 was thus about 550,000 cords.[64] The estimates of the company show a total possible cut in perpetuity of only 170,000 cords a year, but in times of depression less than the possible cut per year is consumed, and even today, the limits of the Ste.Marguerite drainage basin are not being cut and constitute a large reserve.

The paper mill at Port Alfred, which can be seen in Figure 51 has been controlled by Consolidated Paper Corporation since 1931. This company has pulpwood concessions on 13,685 square

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64 Province of Quebec, Department of Lands and Forests, Forest Service, Report, 1948, 1949, p. 42

miles of Crown land in Ontario and Quebec, of which 2,912 square miles are in the Saguenay drainage area, and owns the island of Anticosti in freehold. The limits which are tributary to the Port Alfred mill are shown in Figure 59.[65] The mill employs 550 men, and has a capacity of 600 tons of newsprint and 100 tons of sulphite pulp a day.[66] In 1948 the company exported 185,000 tons of newsprint and 30,000 tons of pulp, of which 85% was exported by rail, to the United States and Canada, the rest by sea to various foreign countries, chiefly Great Britain. The mill consumes 53,000 H.P. imported from Isle Maligne, and 2,000 H.P. from their 2 small plants on the Ha Ha River. They consume 75,000 tons of coal a year for steam generation, and as with the other mills, use secondary hydro-electric power in times of high water for this purpose. In 1948 240,000 cords of pulpwood were consumed.

To show the source of the pulpwood consumed by this mill, the means of transportation, and the varying cuts in each area from year to year as disease, fire, or convenience modify plans, a rough estimate of the sources of the 1948 and 1949 consumption is given

(in cords) as follows:	1948	1949	
Total consumption	240,000	225,000	
Anticosti and Gaspe	48,000	71,000	imported by schooner to mill
North shore of the St. Lawrence (a)	72,000	61,000	
Ha Ha and Lake Kenogami drainage (a)	35,000	60,000	floated down river to mill
à Mars drainage	25,000	----	
St. Maurice watershed to St. Felicien	60,000	34,000	floated by river to St. Felicien, then by rail to mill.

(a) Part of the wood from these areas is from Price Bros. limits, in exchange for wood from Peribonka holdings of Consolidated Paper which is sent to Riverbend.

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65 Consolidated Paper Corporation Ltd. Map indicating Properties in the Provinces of Quebec and Ontario. 1940

66 These and subsequent figures courtesy Consolidated Paper Corp. Ltd., Montreal and Port Alfred.

These two companies are the two largest of several which hold pulpwood concessions in the Saguenay drainage basin. Of the 27,889 square mile drainage basin, 86% is forested, and is divided into several types of holdings, as shown in Table XII.[67]

TABLE XII. DIVISION OF FORESTS IN THE SAGUENAY DRAINAGE BASIN.

Type of Holding	Area in Square Miles		
Forests conceded -	13,039 [a]		
		Price Bros	6,451
		Consolidated Paper Corp	2,912
		Lake St. John Power and Paper	1,859
		Brompton Pulp and Paper	634
		St. Lawrence Paper Mills	873
		St. Raymond Paper	160
		Other	150
Forests vacant -	10,750		
Township reserves-	674		
Federal reserves -	18		
Privately owned -	2,059		

a. The limits of the Quebec Pulp and Paper Corp, which controlled the Chicoutimi pulp mills, 131 square miles, were returned to the Crown in 1949

From these concessions in 1948 about 1,000,000 cords were cut for pulpwood,[68] of which 550,000 cords were cut by Price Bros. for their Kenogami, Riverbend, and Jonquière mills, 120,000 by Consolidated Paper for the Port Alfred mill, 220,000 by Lake St. John Power and Paper for the Dolbeau mill, 60,000 by St.Raymond Paper for the Desbiens mill, and the remainder was cut by St. Lawrence Paper Mills and exported from the region. At present, no company in the region has the expense of sorting logs which is necessary when several companies drive logs on the same river, as in the St. Maurice Valley.

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67 Province of Quebec, Dept. of Lands and Forests, Forest Service, op. cit., pp. 16-19.

68 Ibid., pp. 41-43.

In 1942 a provincial forest expert[69] estimated that at an annual consumption of 600,000 cords, the southern half of the Saguenay drainage basin, which is under forest management and has a present stock 21,000,000 cords, could supply the needs of the industry for 35 years. At the end of this time, at an annual increase of 1,500,000 cords (at 16 cords to the acre), 50,000,000 cords would be available. However, as it is not economical to exploit a forest which is less than 70 years old, the northern half of the basin, with a present stock of 80,000,000 cords, could then be exploited. This system, under proper management, would give a 100 year rotation in perpetuity. The present annual cut, however, is 1,000,000 cords, almost double his estimate, which would result in too fast a rotation.

The great majority of the holdings in the area are either under active management or management is in preparation.[70] The enormous capital investment of the paper companies in the region, in mills, townsites, hydro-electric plants and roads, encourages scientific cutting of their forest limits, as does provincial supervision of their annual cut and general practices. Although in prosperous periods, as in the recent decade, the cut on conceded land is higher than the annual increase, this is not necessarily a cause for alarm unless it is continued for a long period. In less active periods, the cut has been, and will be, lower than the annual increase, and even today over one-third of the forests

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69 Racine and Richard, "La Foret dans l'Economie du Saguenay-Lac St.Jean." Compte-rendu du 1er Congrès provincial, L'Association Forestière Québecoise, Bulletin No. 10, 1944, p.290.

Prov. of Quebec, Dept. of Lands and Forests, Forest Service, op. cit., pp. 16-17

of the area are vacant, constituting large reserves. The paper companies have a vital interest in preserving the forest cover so as to maintain hydro-electric power supplies as well as pulpwood supplies. Fire and disease, which are partly controlled by company and provincial foresters, still consume more than the annual cut. In 1941 Price Bros. alone suffered a loss of 1,000,000 cords (the present total annual cut of the region) by fire.

With the end of abnormal war and post-war conditions of demand, there will probably be a slight recession in newsprint output in the region. However, as long as business activity, especially in the United States, remains high, the pulp and paper industry will prosper. In the event of a serious recession, a drop in production and employment in this industry, which employed 13,000 men of the region in 1947, will almost certainly result, with consequent distress.

Small and Medium Industry. Small and medium industry using local materials is underdeveloped and lacks variety. Employment in such industry in 1947 was about 800 men, of whom 300 worked in Chicoutimi, 250 in Jonquière-Kenogami, 100 in Roberval, and 50 in St. Joseph d'Alma. This did not include employment in sawmills, over 200 of which employed about 5,000 men, of which 1/2 were permanently employed, with 1/3 being part-time farmers.[71]

The wood products and agricultural industries are among the most successful, although not fully developed. Sash and door and lumber factories occur in almost every village and town, the

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71 Brouillette and Dagenais, op. cit., p. 667.

largest being at Bagotville, Chicoutimi, Arvida, Kenogami, and two each in Jonquière and St. Jerome. A factory at Jonquière producing wallboard and boxes employs 70, and there are 2 prosperous furniture factories at Chicoutimi and Rivière du Moulin, employing about 50 each. White pine is used for door and sash manufacture, and birch, wild cherry, and imported walnut are used for furniture.

Local leather is used in shoe factories at Chicoutimi, Bagotville, and Jonquière; woollen mills at Chicoutimi and St. Jerome use both local and imported wool. Other agricultural industries include blueberry canning at Dolbeau, a flour mill and powdered milk factory at Chicoutimi, a meat packing plant at Ste. Anne, and 65 cheese, 6 butter, and 35 butter and cheese factories. All the major towns have dairies, bakeries, and soft drink bottling establishments.

Cement and tiles are produced at Chicoutimi, Bagotville, and Jonquière, and a brick factory at Chicoutimi employes 75. Black granite (anorthosite) is quarried at St. Joseph d'Alma, the only supply in North America. During the war it replaced Swedish imports, and in spite of the high cost of transportation ($6 a ton to Montreal) a firm - Granit National Ltée., is thriving, and exported 2,500 tons in 1945 for monuments and constructional stone.[72] Blue and rose granite is quarried near Roberval, Jonquière, and Chicoutimi for building stone and monuments. Limestone is quarried near Dolbeau and Desbiens for use in the sulphite pulp mills. (The other mills use imported limestone.) It has also

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72 Ibid., p. 674

been quarried for road metal and agricultural and constructional use near Bagotville, near Ste.Anne, and south and west of Lake St. John.

Variety is provided by the production of pine needle oil at Bagotville, aluminum goods at Chicoutimi, Ste.Anne and Arvida, aluminum canoes at Chicoutimi, and ornamental iron work and pottery at Chicoutimi. There are tool factories at Bagotville, St. Jerome and Jonquière, and C.N.R. repair shops at Jonquière and Chicoutimi. The Abrasive Company of Canada at Arvida uses bauxite and large quantities of power, and employs 50 men.

There are two associations in the region who aim, with different methods and slightly different motives, to establish and encourage secondary or small industry.

The first is the Saguenay Industrial Development Association, formed in 1946.[73] Its members consist of the seven largest municipalities, the public utilities, the Aluminum Company of Canada, and its six power and transportation subsidiaries, Price Bros. and Co., the major public utilities, and a few small services and industries. Its aim is to bring to the attention of both small and large industries the advantages of locating in the district. It has collected data on the advantages of the region for industries needing the following factors which it can supply: low-cost hydro-electric power, deep water ports, rail, highway, and air transport, skilled workers, attractive living conditions, space

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73 Saguenay Industrial Development Association, Report of Activities for 1946.

for large factory sites, and the raw materials available in the region. These include wood, limestone, granite, and clay, and some undeveloped deposits of titaniferous iron ore north of the Saguenay, which could produce both pig iron and titanium by-products. Also available are the chemical and metallurgical products and by-products of pulp and paper and aluminum industries. But it is unusual to find all necessary raw materials in any one locality, and low cost power and water transportation could be the main attractions for many industries, which could import raw materials as is done by the aluminum industry.

The publicity of this organization is extensive, and is aimed to attract tourists as well as industrialists. It includes the use of radio, film, and magazine advertising, all emphasizing industrial advantages. Advertising is only one aspect of the program. The advantages and limitations of the area for each particular industry which could thrive in the area are studied and presented, among them the manufacture of metallic silicon, glass, Portland or aluminous cement, mineral wool, ammonium sulphate, cyanimide, phosphorus, lime and superphosphate, the refining of zinc, and the reduction of the titanium iron ore, producing titanium white as a by-product. Also considered has been the use of the red mud waste left from the refining of bauxite, which contains silica, iron, magnesium, and aluminum oxides, and could be used to produce cement and insulation among other products. Another possibility is the manufacture of sugar and yeast from the waste from pulp liquor.

At present the aluminum plant is using all the power available in the region, however, and large scale industrial promotion is being postponed until a further 300,000 H.P. is developed on the Peribonka.

The other association is Le Conseil d'Orientation Economique du Saguenay, also created in 1946. Lacking the funds and equipment of the other body, it functions like a regional chamber of commerce, advertising and encouraging industry. The industries it wishes to establish are those based on local raw materials.

In 1946 it made a study of the possibilities for small industry.[74] This divided the possible industries into 8 groups. The 4 major ones were:

Vegetable products:	cereals, animal and poultry feed, canning of fruits and vegetables, biscuits and candy.
Animal products:	condensed milk, leather goods, treatment of furs, meat packing and curing.
Wood and paper products:	boats, paper and wooden containers, excelsior, sporting equipment, shingles.
Textiles:	woven and knitted woolen goods, carpets, clothing.

The conclusion was that 29 establishments could be successful in such activities, which would employ about 1,000 men, and would need a capital outlay of about $12 million.

The other 4 groups fall under the headings: metal products, the largest of which would produce aluminum products; stone

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74 Le Conseil d'Orientation Economique du Saguenay, Rapport du Comité des Statistiques Economiques, sur les possibilités de créer dans la région de nouvelles industries. 1946, pp. 1-4.

and clay products; chemical products; and diverse industry. These could occupy 15 establishments, employing 585, and would need a capital outlay of about $4 million.

Industries in the first three groups would probably succeed if established. If local wool production were increased (at present it is not sufficient to supply the mill at Chicoutimi) textile industries would also probably succeed. In the last four groups the association appears to be unrealistic. In these groups the industry would have to import both its raw materials and export most of its finished product, and would be at a disadvantage against other regions with lower transportation costs. Local clay is not suitable for clay products, (only for brick) and the present pottery factory at Chicoutimi imports much of its clay from Beauce County, and exports its output. Electrical equipment and aluminum products could be produced more economically where parts and raw materials are closer to the market, as in Montreal and Toronto . The present aluminum canoe factory at Chicoutimi imports rolled aluminum from Kingston (Arvida produces only aluminum ingot) and exports its finished product. On the other hand, ornamental stone work and the production of lime, which are mentioned, have plentiful local raw materials, but a restricted local market.

Although the aims of these two organizations appear to be similar, they would produce different results. The SIDA is concerned with larger scale industry, chiefly in the chemical and metallurgical fields, which will produce materials for use by

other industries in the region, or will use the products or by-products of existing industries as their raw material. The Conseil d'Orientation Economique aims to establish diverse light industry which would create a more balanced economy and provide employment if depression were to affect the large industries adversely. The type of industry encouraged by the SIDA, however, is closely tied in with these industries, especially the aluminum industry, and would probably be affected similarly in times of economic fluctuation.

Light industry must be carefully chosen to succeed in the region. The local market contains only 165,000 people, and production for export must compete with goods from areas like Montreal, where there is a larger skilled labour force and a close market, hence lower transportation costs. Except for wood and agricultural products, raw materials are also closer to these areas than to the Saguenay, which must import materials and export finished goods. Although too far from its raw materials and its market to compete with the output of more populous areas, it is too close to these areas to prevent their more economical output from competing in the local market. The Talbot highway, which put Quebec within 3 hours of Chicoutimi, has accentuated this disadvantage.

However, certain diversified small industry does succeed in the area, and expansion is possible. Industries producing primarily for the local market, but also for export can compete with production from outside areas if they are based on local raw materials, as in the vegetable, animal, and wood and paper

products groups. A possibility for future industry in the region is the refining of Chibougamau ores, when development of that area is increased. After the completion of the highway to the area in 1950, the district will be supplied from the Saguenay area and will export ore through it.

Tourist Industry. The tourist industry is yearly becoming of greater importance to the economy of the region. To encourage this industry, the Saguenay and Lake St. John Tourist Association was formed in 1933, and re-organized by the Conseil d'Orientation Economique in 1945. This organization, with headquarters in Chicoutimi, aims to inventory and develop tourist services, and promote tourist travel. Their report of 1945 showed 57 hotels in the region, with 960 rooms, the largest being that at Tadoussac with 150 rooms,[75] and they have also classified other types of tourist accomodation.

The tourist steamers and Tadoussac Hotel, of Canada Steamship Lines, are major tourist attractions. The S.S.Richelieu makes a 7-day trip from Montreal to Chicoutimi and back, carrying over 6,000 passengers a season. The S.S. Tadoussac, Quebec, and St. Lawrence make 3-day trips from Montreal to Bagotville and back, carrying an estimated 50,000 passengers a season.[76] The attractive scenery both on the St. Lawrence and in the Saguenay fiord result in a pleasant cruise. These steamers also carry tourists to Tadoussac, the chief tourist resort of the region, with its large hotel, rebuilt in 1941, and with a large number

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75 Brouillette and Dagenais, op. cit., p. 689.

76 Ibid., p. 680.

of summer homes.

Other tourists come by highway, primarily to fish and hunt. In 1949 the region received 75,000 foreign automobiles (i.e. from outside of the province of Quebec) carrying about 225,900 tourists, who spent about $12,500,000, or 10% of the total spent by tourists in the province of Quebec.[77] Game birds and animals abound on the plateau both north and south of the region. Fishing in the many lakes and streams is excellent, particularly for trout, salmon, and ouananiche, with fishing clubs, camps, and guides available. Many tourists also visit the industrial developments and their model towns, for example in 1946 10,000 tourists visited the Shipshaw power development.[78]

Agriculture. During the period some progress has been made towards regional self-sufficiency in agricultural produce, and improved farming methods. This has resulted from more general use of chemical fertilizers and scientific rotations, increased butter production, and greater self-sufficiency in meat, vegetables, and poultry products. These have been due partly to the increased activity and prosperity of the war years with high agricultural prices, and partly to the establishment of agricultural co-operatives and a Dominion experimental farm in the region. A central agricultural co-operative was formed in Chicoutimi in 1939, and 43 local branches have been established, of which 19 have dairy

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77 Letter to the author from Mr. R.Baby, Superintendent, Tourist Branch, Provincial Publicity Bureau, Quebec, Jan.31, 1950

78. Saguenay Industrial Development Association, op. cit.

factories.[79] These have been of great value in giving technical service, serving as marketing guides, and controlling purchases and sales. The experimental farm was established at Normandin in 1936, with 5 demonstration stations in the region to practice and publicize its findings. The station has studied varieties of pasture and crops, livestock and poultry, and types of fertilizers and rotations, with respect to their suitability to local conditions.[80]

Agricultural figures for 1941 and 1921 are given in Table XIII, by which the change in the agricultural picture over the period can be seen. Figures are also given for acreages of field crops and livestock for 1949,[91] and the yields of the Dominion experimental farm for 1941 have been given for comparison with the average yields of the region in the same year.[82]

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79 P. Boucher, of the Information Branch, Province of Quebec Department of Agriculture, Copy of radio address given on Le Reveil Rural, Aug. 11, 1949, p.5.

80 Canada, Department of Agriculture, Experimental Farms Service Progress Report, 1936-46, Dominion Experimental Station, Normandin, Quebec, 1949, p. 5.

81 Province of Quebec, Department of Trade and Commerce, Bureau of Statistics, Areas under Crop and Livestock on Farms at June 1, 1949, passim.

82 Canada, Department of Agriculture, Experimental Farms Service, op. cit. passim.

TABLE XIII. AGRICULTURAL FIGURES FOR THE SAGUENAY REGION FOR 1921, 1941, and 1949, WITH YIELDS ON THE DOMINION EXPERIMENTAL FARM AT NORMANDIN IN 1941.

	1921	1941	Experimental Farm 1941	1949
Area occupied (acres)	801,018	920,474		
Area improved "	392,863	446,580		
Percentage improved	50%	48%		
No. of farms	4,655	6,439		
Average size of farm (acres)	172	142		
Acreages Field Crops:				
Wheat	8,650	1,239		800
Mixed grain	10,950	14,718		27,600
Barley	3,568	4,363		3,930
Oats	78,825	86,639		80,200
Potatoes	5,191	5,910		7,100
Cultivated hay	114,764	156,997		139,010
Crop Yields:				
Wheat (bus.)	15	13	over 30	
Mixed grain (bus)	20	18	--	
Oats "	23.5	18	over 80	
Potatoes "	137	81	200-450	
Cultivated hay (tons)	1	1	over 1.5	
Livestock:				
Milch cows	39,139	47,361		56,300
Yield of milk per cow milked (lbs)	4,391	4,352		
Milch cows per farm	9	7		
Other cattle	40,716	40,030		45,420
Other cattle per farm	9	6		
Sheep	58,747	46,488		43,230
Sheep per farm	13	7		
Swine	51,984	46,269		72,700
Swine per farm	11	7		
Horses	13,478	14,506		13,790
Poultry	155,000	373,526		480,000

As seen from the table, over the 1921-41 period the number of farms had increased by 1782, resulting chiefly from the colonization movement of the 1930's. These additional farms, which were chiefly on the less favorable soil of the region, were prob-

ably the cause of the lowered average crop yields and the smaller size of the average farm. Of the improved acreage, 30% was in pasture and 35% in hay, or a total of 65% under grass, with 35% in field crops other than hay. Of these, oats remained the leader, with 75% of the total, and an increased acreage, and the acreages of mixed grains, roots, and other fodder crops had also increased, whereas those of wheat, rye, buckwheat and peas had decreased. The number of cattle per farm had decreased and the milk yield was unchanged. The numbers of sheep and swine shows substantial decrease, whereas the number of poultry had doubled. Note the low average yields as compared with those of the experimental farm. Vast improvement in agricultural returns was possible in the region.

The effects of the prosperous war and post-war years can be seen in the 1949 figures. The most noticeable change in field crops was a doubling of the mixed grains acreage, with the acreages of wheat, oats and barley showing a decrease. The number of cattle, poultry, and espeically swine, showed a large increase, due to high prices for pork, poultry, and dairy products.

Table XIV shows the decreased dependence of the region on certain imported foodstuffs over the period 1931-44.[83]

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83 Brouillette and Dagenais, op. cit., pp. 657-58.

TABLE XIV. PERCENTAGE OF FOODSTUFFS CONSUMED IN THE REGION WHICH WERE IMPORTED 1931 and 1944.

	1931	1944
Beef	45%	39%
Pork	31%	11%
Mutton	4%	-
Poultry	49%	28%
Butter	70%	78%
Eggs	68%	44%
Potatoes	60%	-

In spite of decreased imports (except in butter), the paradox remains of a dairy and livestock region which imports about three-quarters of its butter, half its eggs, and much of its meat and grain for fodder, and exports only cheese, mutton, blueberries, and some poultry and hogs in certain seasons. Fruit, except blueberries, and vegetables are imported, market gardens being rare. In 1932 the region imported fresh milk,[84] now local supplies are adequate, but the large butter shortage remains in spite of cheese exports. Tradition and the advantages of an assured market and less need for careful refrigeration turn the surplus milk supply towards the production of cheese instead of butter. The situation has recently improved due to high butter prices. In 1946 the region produced 1,513,619 lbs. of butter and 9,180,961 lbs. of cheese in 100 butter and cheese factories, and sold over 2 million gals. of liquid milk, of which 95% was sold in the urban centres of Chicoutimi County.[85] In 1947 butter production had increased to 2,292,254 lbs. or 25% of that produced in the province, and cheese production had fallen to 6,887,648 lbs.

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84 Ibid., p. 659

85 Province of Quebec, Department of Trade and Commerce, Bureau of Statistics, Census of Dairy Plants, 1946, pp. 4-and 6.

or 30% of that produced in the province.[86] All the hay and grain produced in the region is consumed on the farm for the feeding of livestock, and additional grain is also imported for this purpose.[87]

The blueberry crop of the sandy and burnt-over areas remains an important source of farm revenue, especially in the peripheral parishes north and west of Lake St. John, and north of Chicoutimi, the chief collecting stations being at Dolbeau, St. Felicien, Roberval, Normandin, St. Joseph d'Alma, and Chicoutimi. Both the crop and the price vary considerably in different years; for example the 1945 [88] and 1949 [89] crops were about 12.5 million lbs., whereas the 1942 crop was under 4 million, and the price per lb. in 1945 was 21¢, as compared with 10¢ in 1949, and 4¢ in 1937. The highest revenue from this source has been $2.7 million in 1945.

Forest products off farms were valued at over $750,000 in 1941, of which one half was used in the farm, the remainder being sold as firewood, pulpwood, or lumber. The fur farming industry, which had started at the end of the previous period, was prosperous, and in 1947 [90] there were 73 fur farms in the region,

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86 Province of Quebec, Department of Trade and Commerce, Bureau of Statistics, Dairy Products, 1947, p.7.

87 Letter to the author from Mr. A. Belzile, Superintendent, Experimental Station, Normandin, Que., February 7, 1950.

88 Figures for 1942-47 from Canada, Department of Agriculture, Experimental Farms Service, "Le Bluet Nain Sauvage," Publication 822, Farmers Bulletin 155, 1949, pp. 13-15.

89 Province of Quebec, Department of Trade and Commerce, Bureau of Statistics, Blueberry Crop, 1949, p. 2.

90 Province of Quebec, Department of Trade and Commerce, Bureau of Statistics, Fur Farming Industry, 1947, p. 6.

with a total valuation of almost $140,000, raising varieties of fox and mink.

Throughout the 110 years of agricultural settlement, then, the region has developed primarily as a dairy and livestock region, raising the grain and fodder crops complementary to such an economy, and with forest products off the farms, and blueberries, as important sources of income except in the most fertile regions. Two-thirds of the agricultural activity might be said to be in the Lake St. John area, which in 1941 had two-thirds of the improved acreage, two-thirds of the farms and cattle, and produced two-thirds of the butter and cheese of the region. The region can be divided into three distinct agricultural divisions on the basis of the predominant type of farming, which are shown in Figure 60.[91]

The farms of the lower Saguenay and Ha Ha Bay region are classed as forest products-dairy-livestock farms of a semi-commercial nature, i.e. the farm sales being less than 50% of the total revenue. Of the farm sales, 35% are forest products, 23% are dairy products, and 24% are livestock products, 9% are poultry products, and the remainder grains and vegetables. The products consumed on the farm amount to 50% of the farm sales, and outside income, chiefly from lumbering, amounts to 25% of the total farm revenue.

The Lake St. John and Upper Saguenay lowlands are classed

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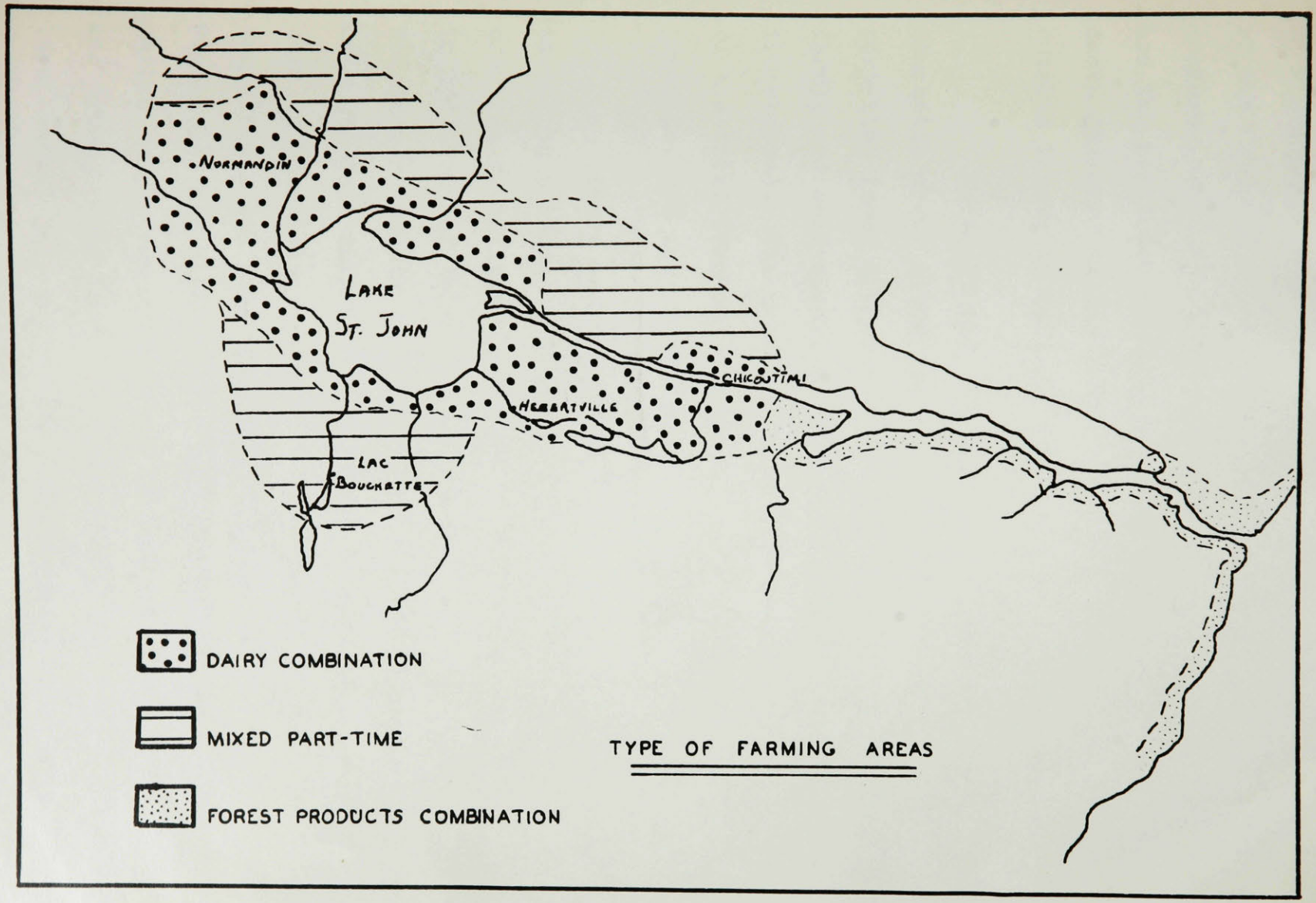
91 Hudson, S.C. and others, "Types of Farming in Canada", Canada, Department of Agriculture, Publication 825, Farmers Bulletin 157, 1949, pp. 64-and 82.

Figure 60. Type-of-Farming Regions, 1941


NORMANDIN
LAKE
ST. JOHN
CHICOUTIMI
HEBERTVILLE
LAC
BOUCHETTE
DAIRY COMBINATION
MIXED PART-TIME
FOREST PRODUCTS COMBINATION
TYPE OF FARMING AREAS

as a region of commercial dairy and livestock farms. Here 50% of the farm sales are dairy products, and 30% are livestock products, with 7% being poultry products, only 4% forest products, and the remainder grains, potatoes and forage crops. The products consumed on the farm amount to 30% of the farm sales, and outside income is only 15% of the total farm revenue.

North of this lowland area, and south of it in the Lac Bouchette area, mixed farming is carried on, of a type classed as part-time (over 40% of the total revenue being obtained off the farm), and self-sufficing (sale of farm products being of minor importance). The products consumed on the farm amount to 70-80% of the total farm sales, and of the small sales, 35% are dairy products, 25% are forest products, and 25% are livestock products.

There is great improvement possible in farming and marketing methods to improve the milk and crop yields. Use of chemical fertilizers increased from 350 tons in 1932 to 2,800 tons in 1945, but of this, 2,000 tons was used in Chicoutimi County, and larger amounts could be used with advantage especially in the Lake St. John region.[92] The experimental farm is having some success in increasing the use of crop varieties which are adapted to the climate and soil, and in upgrading the livestock of the region. Vegetables and bush fruits could be produced to supply the local market, milk production could be increased by upgrading the cattle and using better feed, beef cattle could be raised to supply the local market (at present all local beef is from dairy cattle).

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92 Brouillette and Dagenais, loc. cit.

Although the use of better quality seed and fertilizer is more general, crop yields remain low due to the increasing loss of organic matter in the soil. Where liberal use of manure, in combination with commercial fertilizers and proper crop rotations has been used, yields have been increased.[93]

Except for these possible important improvements, the future will probably bring little change in the agricultural economy. Dairy and livestock farming, based on the excellent grassland produced by the suitable climate and soil, seems to be permanently established in the region.

Transportation Facilities. There have been great improvements and additions to the transportation system since 1927, which can be seen by a comparison of Figure 61, showing present network of land transportation, with Figure 43 showing that of 1927.

There were no additions to the railway network over the period. A summary of the network as it stands today is shown in Table XV.

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93 Letter from Mr. A. Belzile, previously cited.

Figure 61. Land Transportation, 1949.

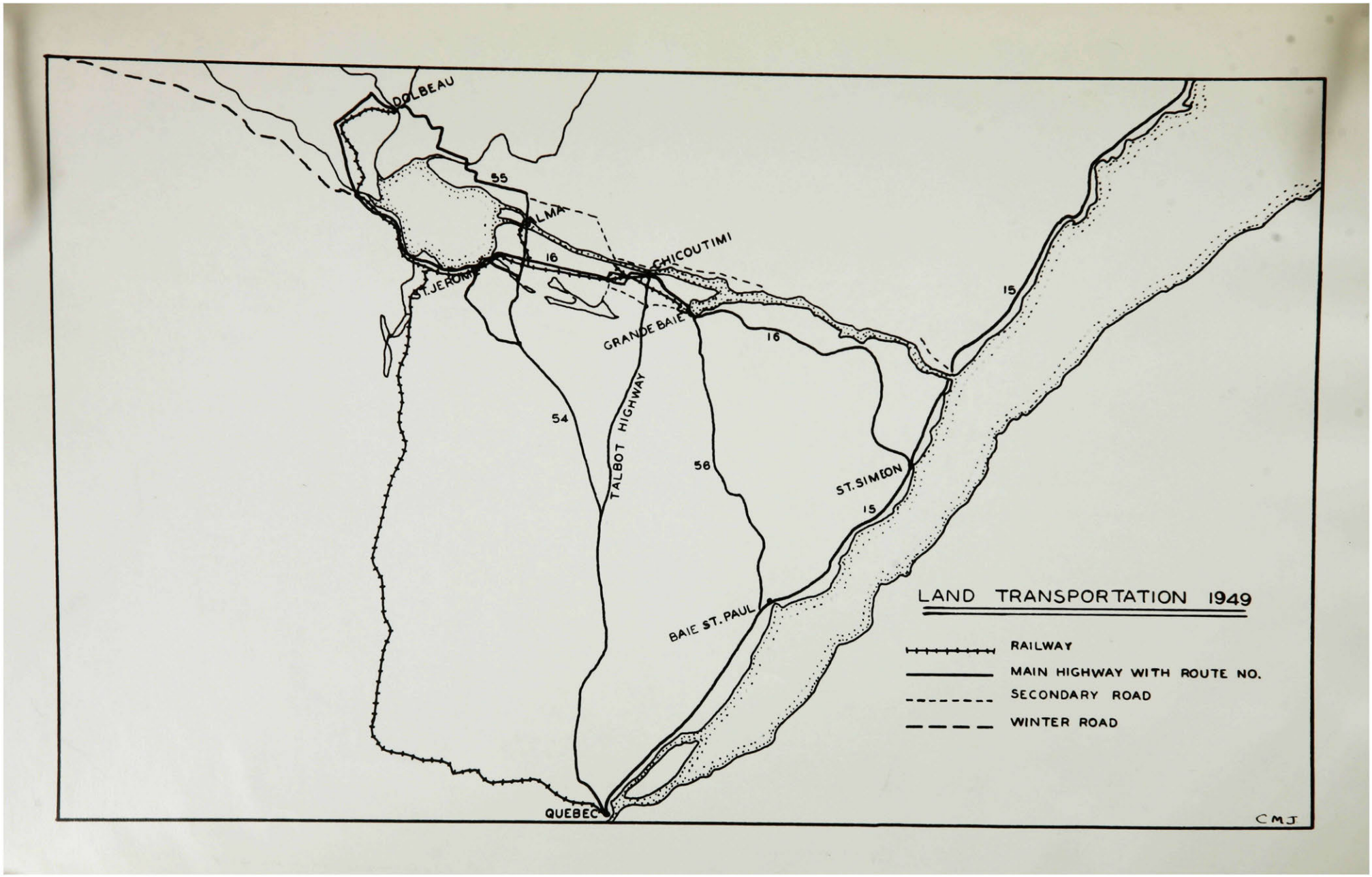
DOLBEAU
55
ALMA
CHICOUTIMI
16
ST. JEROME
GRANDE BAIE
15
16
54
TALBOT HIGHWAY
56
ST. SIMEON
15
BAIE ST. PAUL
QUEBEC
LAND TRANSPORTATION 1949
RAILWAY
MAIN HIGHWAY WITH ROUTE NO.
SECONDARY ROAD
WINTER ROAD
CMJ

TABLE XV. THE RAILWAY SYSTEM OF THE SAGUENAY REGION.

Construction Undertaken by	Date	Mileage	Line	Present Owner
Quebec & Lake St. John, Ry.	1888	176	Quebec-Chambord	C.N.R.
"	1893	15	Chambord-Roberval	"
"	1893	51.2	Chambord-Chicoutimi	"
Quebec & James Bay Ry	1910	17.6	Roberval-St.Felicien	"
Roberval & Saguenay "	1908	18	Arvida-Bagotville	Alum.Co.
"	1912	3.4	Labrosse-Chicoutimi	C.N.R.
"	1912	8	Laterrière Jct.-Laterrière	Abandoned
"	1926	5	Arvida-Shipshaw	Alum.Co.
Alma & Jonquière Ry	1923	11.5	Sag.Power Jct. - Isle Maligne	" "
Canadian National Railways	1927	28	St.Felicien-Dolbeau	C.N.R.

The 227 mile trip from Quebec to Chicoutimi averages over 8 hours, or about 25 miles per hour, due to the long detour to the west, and the single track line, which has steep grades and is in need of repair. There are two passenger trains daily over this line.

The highway system connecting the region to Quebec is as follows:

Routes 15-56	Quebec-Baie St.Paul-Grande Baie	137 m.
Routes 15-16	Quebec-St.Siméon-Grande Baie-St.Bruno	175 "
Route 54	Quebec-Hebertville-St.Jerome	140 "
Route 55	Encircles Lake St. John from St.Bruno	150 "
Talbot Highway	Quebec-Chicoutimi, 1st. half via Route 54	120 "

These routes are not completely paved. Route 16 is the most in need of paving between Grande Baie and St.Simeon, but is the most scenic of the routes to Quebec. The Talbot Highway is an excellent paved highway, constructed with difficulty over very rough terrain.

Within the region are 1140 miles of road, of which 325 miles are sections of the above highways.[94] Most are closed to traffic December-April, except between Ha Ha Bay and Isle Maligne. The north shore of the Saguenay is now reached by the Chicoutimi-Ste.Anne bridge built 1934, and an all-aluminum bridge connecting Arvida and Shipshaw will be completed in 1950. The winter road from St. Felicien to Chibougamau will be opened for year-round traffic in 1950, and a road has been planned between from Chambord to La Tuque.

Several bus companies serve the region, and there is no centre on a highway which is not served by bus. The largest is La Compagnie d'Autobus et Taxis Ltée. of Chicoutimi, the second largest bus company in the province. The company owns 96 buses, employs 250 men, and transports an average of 4½ million people a year, chiefly workers from house to plant.[95] It provides the larger centres with intra-urban service and inter-city service from Chicoutimi as far west as Isle Maligne, and has a 3-hour service with Quebec. There are numerous trucking companies, there being 7 in Chicoutimi alone. Bus service and trucking offer heavy competition to the long railway route to Quebec.

The creation of Bagotville airport as a civilian airport in 1945 put the Ha Ha Bay region, Chicoutimi, and Arvida, within a few miles of a regular one-hour service with Quebec, and two-hour with Montreal. Roberval is the centre of irregular

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94 Brouillette and Dagenais, op.cit. p. 483.

95 Article in Le Regional, Chicoutimi, Feb. 8, 1949.

flights to the Chibougamau mining area, mostly by seaplane in summer.

The navigation season is May 1 - December 1, during which time the major industrial and commercial imports of the region are received, and exports shipped, at Chicoutimi and Port Alfred, both of which are primarily import ports. Improvement of the facilities over the period was striking.

The port of Chicoutimi, enlarged by the National Harbours Board 1928-30, now has 2,500 feet of wharf frontage, and a turning basin with a 30 foot depth. Adjoining the docks is a large area available for leasing, where there are wholesale warehouses, oil storage tanks, and coal and lumber yards. The mechanized loading apparatus can service 4 large ships at once.[96] The wharf and port facilities can be seen in Figure 55, where the inadequate old wharf can be seen to the east of the present one. The Canada Steamship Lines tourist steamer S.S.Richelieu calls weekly in the summer, carrying over 6,000 passengers in 1948.[97]

The greatest number of ships received by the port was 248 in 1940, with a cargo tonnage of 205,459. Activity dropped during the war, and by 1948 had mounted to 181 ships with an inward cargo tonnage of 224,108, or 95% of the total, and an outward cargo tonnage of 1762.[98]

The chief exports were - lumber and lumber products,

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96 National Harbours Board, Annual Report. 1948, p. 28

97 Ibid., p. 30.

98 Ibid., p. 29

which totalled 1429 of the total exports of 1762 in 1948. The remaining exports were chiefly re-exports of fuel to points along the Saguenay. The chief imports were fuels from the United States, with coal, gasoline, and petroleum oil totalling 212,478 of the 224,108 tons imported in 1948. This included 185,000 tons of coal, 120,000 of which was destined for the paper mills of Kenogami, Riverbend, Dolbeau and Desbiens, the remainder being for the C.N.R. and coal wholesalers at Chicoutimi. The second largest import was sulphur, 5,099 tons of which were destined for the above paper mills. Next came over 1,000 tons of molasses, and 500 tons each of cement and lumber. Among the other imports were potatoes, vegetables, iron and steel, concrete pipes and Javex - each over 200 tons - glass and liquor, each over 100 tons. These tonnages show clearly the lack of self sufficiency of the region in some products which could be produced locally, and also the role of Chicoutimi as commercial port for its region. Its activity is dwarfed by that of Port Alfred, which handles over 10 times the cargo tonnage of Chicoutimi in industrial exports and raw materials.

Port Alfred, the port of the aluminum and pulp and paper industry, at the head of Ha Ha Bay, is the largest port of the region, and the 6th in Canada in tonnage handled in 1947.[99] It is a natural harbour with a 30 foot depth at low tide, and is owned by Saguenay Terminals Ltd., a subsidiary of Alcan. The port facilities include 3 large wharves, the most recent of which,

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99 Aluminum Co. of Canada Ltd., "Port Alfred on the Saguenay", The Alcan Ingot, 7:5, August, 1948.

constructed 1948, cost $4 million. The enlargement of bauxite storage facilities in that year gave a storage capacity of 250,000 tons of bauxite. Equipment is highly mechanized, coal and ore can be unloaded at a speed of 750 tons an hour, with belt conveyors carrying them to the warehouses, and paper is also loaded by conveyor belt. Oil is unloaded by pipeline, and stored in large tanks. The port can be seen in Figure 51, before the construction of the new wharf. Consolidated Paper also constructed a new wharf in 1948 to unload pulpwood schooners, of which they receive over 800 a year.

The annual cargo tonnage handled at Port Alfred before the war was about 700,000 tons, but due to the increased production of the aluminum plant at Arvida the tonnage, which has increased steadily since the outbreak of war, was 2,665,000 tons in 1948, with over 400 ships received. Imports total over 90% of the tonnage. The imports and exports in 1948 were as follows:[100]

IMPORTS		EXPORTS	
Bauxite	1,800,000 tons	Aluminum	80,000 tons
Coal	420,000 "	Newsprint	88,000 "
Oil	110,000 "	Ore concentrates	35,000 "
Sulphur	33,000 "	Other	5,000 "
Fluorspar	30,000 "		
Other	55,000 "		
	2,448,000 tons		208,000 tons

100 Figures courtesy Mr. Thomassen, Manager, Saguenay Terminals, Ltd., 1949.

Bagotville, administered by the federal Department of Public Works, has two small wharves, with a 35 foot channel at low tide, and 2 small warehouses. Lumber and agricultural produce are exported. The Canada Steamship Lines tourist steamers call daily in summer, carrying an estimated 50,000 passengers a season, and also freight.[101]

CHAPTER VII

SUMMARY and CONCLUSIONS

SUMMARY:

In the short space of 112 years the Saguenay Valley has been transformed from an almost uninhabited, forest covered region, which supported only the fur trade and the native Indians, to an area of large-scale industry and hydro-electric power developments, with almost one million acres of land in farms supporting a dairy and livestock economy, and with a population of about 165,000 people, of whom over one half live in urban centres. This development of the region has been traced period by period with the existing landscape at the end of each period and its development from the previous landscape explained and described. These were the primeval or purely physical landscape at the eve of historical times, which has permitted the subsequent development that at the end of the fur era, which was almost unchanged although now known to man, that at the end of the settlement and lumbering period, that at the end of the first phase of the pulp, paper and power era, before the development of large-scale power projects and the aluminum industry, and that of the present day.

The development was made possible by the physical characteristics of the region. Consisting of a depression in the Laurentian Plateau, it was covered with fertile marine deposits and has a slightly more favorable climate than the plateau surrounding. These two factors permitted a heavy mixed forest cover, and provided a rich agricultural potential. The plateau, with a heavy coniferous

forest cover, provided ideal conditions for water power development, with developable sites along the edge of the depression, and on the Saguenay River.

The forests sheltered the fur-bearing animals which were the basis of the first industry of the region - the fur trade. The mixed forest, especially pine and cedar, supported the lumbering industry which opened the area to colonization in 1838 and was the major industry in the 19th century. During this period agriculture was also developed, and the agricultural and lumbering centres were becoming established as the chief population centres of the region. Agricultural settlement spread during the century throughout the upper Saguenay lowland and south of Lake St. John, and also, more sparsely, west and north of that lake. In 1888 the region was connected to outside centres by rail. By the end of the century the pine and cedar resources were depleted and the lumbering industry declined.

In 1897 the first pulp mill ushered in an era of pulp and paper production, based on the coniferous forest resources of the plateau and the development of hydro-electric power for its needs. Population growth was accelerated; the population more than doubled from about 28,000 in 1891 to 73,000 in 1921. New pulp and paper towns were created, and older centres, benefitting from increased employment and prosperity, increased in size. Agricultural settlement continued to spread to the peripheries of the lowland.

In 1926 an aluminum plant was established in the region, attracted by the large hydro-electric potential, and by the facility of water transportation. To provide power for this plant, the large scale Shipshaw power developments were completed, so that the region now has an installed capacity of over two million horse power. The depression years of the 1930's were inactive, but the recent war and postwar period brought expansion and prosperity to both the pulp and paper and aluminum industries. Improvement in agricultural methods is receiving attention. The region is connected by highway, air, and rail to outside centres, and has two modern ports. Population more than doubled again to 165,000 in 1945.

The different physical characteristics of the two divisions of the region have led to differences in their development. The upper Saguenay area, where the most economical sites for large-scale hydro-electric power developments were available, and with tide-water ports, has developed as an industrial and primarily urban region, with the raw materials for the pulp and paper and aluminum industries being carried to its mills. The Lake St. John basin, in contrast, is a fertile agricultural area and is primarily rural in character.

Not only, then, did the potentialities of the physical landscape affect subsequent development, but this development has also greatly modified the landscape. The industrial and power plants, the large and small urban centres, including several "model" towns, the rural settlement lining the roads, the agricultural pattern

with its long narrow fields of pasture and crops, the modern highways, railways, airports, and tide-water ports, all created by man since 1838, present a great contrast to the heavily forested region, inhabited only by Indians and a few furtraders and missionaries, which had existed until that time.

CONCLUSIONS:

Further development of the resources of the region is possible. The possibilities for small and medium industry are not fully developed. Such industry producing wood products and processing agricultural produce could be successfully established, as could chemical and metallurgical industries using products or by-products of the aluminum and pulp and paper industries, Local titaniferous iron ore could be developed and the region may become the refining area for Chibougamau gold-copper ores in the future. Improvement in agricultural methods and yields would make the region more self-sufficient in agricultural produce. Further development of hydro-electric power is possible, and one large project is at present in the planning stage to supply the aluminum industry. This will be absorbed by present plant capacity, however, and further expansion of this industry is unlikely although the existing high level of production and employment will continue as long as demand remains high. Without additional forest limits, and it is improbable that any further limits will be granted, expansion of pulp and paper production is also improbable as the present annual cut supplying the high level of production is higher than the annual rate of increase of the pulpwood supplies. As with the aluminum

industry, production and employment will remain at a high level as long as economic conditions maintain the present high level of demand. In the event of a depression both industries, dependent on export markets, would suffer severely.

The present high rate of natural increase of the population, 35 per 1000, (double that of the province of Quebec) is due to the comparative newness of the region and the high proportion of young married people especially in the industrial towns. At this rate, the population can be expected to increase at the rate of almost 60,000 every ten years. If this rate is maintained, with no further expansion of large-scale industry, it can only be absorbed in the region if the present high level of employment is maintained, secondary industry is developed, and agricultural methods are intensified.

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