THE LAND USE AND SETTLEMENT OF THE QUEBEC CLAY BELTS.

a pilot study in the Historical Geography of Quebec, with particular reference to man's role in changing the face of the earth.

by

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A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfilment of the requirements for the degree of Master of Arts.

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FRONTISPIECE

THE QUEBEC CLAY BELTS ARE AREAS OF ACTIVE

PRESENT DAY LAND SETTLEMENT

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T A B L E O F C O N T E N T S.

M A P S A N D D I A G R A M S.

MAPS AND DIAGRAMS CONTINUED.

TABLES.

P R E F A C E

This study was only made possible through the generous help and support of many. Mention cannot be made of all but the author would like to convey his thanks to some publicly here. Firstly thanks are due to those who provided the financial backing for a Scot to come to Canada and to visit the Clay Belts, namely the Deans Committee of the University of Glasgow who appointed the author to the Glasgow-McGill Exchange Scholarship for the year 1957-58, and secondly to the Director of the Provincial Geographical Service for a generous grant for field work. Further thanks are more than due to Professors Hare and Hills of the McGill Geography Department, and indeed to those in the graduate school while this work was being undertaken.

A further point that might be mentioned here is that the spelling of Timiskaming adopted throughout is of the usual English form except where it is used as part of a quotation where the original form is retained.

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CHAPTER I

INTRODUCTION

> "God governs the world; the actual working of His government - the carrying out of His plan - is the History of the World. This plan philosophy strives to comprehend; for only that which has been developed as the result of it, possesses bona fide reality. That which does not accord with it, is negative, worthless existence".[1]
>
> (Hegel)

These words of Hegel may be taken to express the basic outlook of the "possibilist" geographer of to-day as he seeks to understand the nature of the relationship of man to earth. Only as men, as individuals or groups have been possessed with an idealistic philosophy associated with a concept of God, the State, or just the urge to enter new lands, to "conquer" nature, do they become truly geographically efficacious.[2] As Professor Crowe[3] has said "effective" man is the concern of geography not the total number.

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1 Hegel, G.W.F. "The Philosophy of History" trans. by Sibree, J.; 1900 Edition. Willey. Page 30.

2 Hegel, G.W.F. Ibid. P. 178-181, and page 179 where there is a most interesting discussion of the work of Eduard Meyer in relation to his idea of the historicity of events depending on their being "efficacious" (Wirksam) i.e. on their having produced consequences.

3 Crowe, P. "On Progress in Geography", Scot. Geog. Mag. Volume 54, No. 1. 1938.

Hence from Abraham and Moses to Hitler, from Genghis Khan to the Pilgrim Fathers the great movements of men in space have been inspired by an ideal which has led to a readiness to endure hardship and privation to attain its end, and amongst the recent unknown homesteaders there were those who were of the same way of thinking. Sometimes the price Nature demanded was too high and failure resulted, sometimes it was quickly paid; but whichever way it was, a price was required.

In agricultural settlement in particular this price element is especially apparent.

> "Far from dominating the forces that work for it, agriculture is subject to their yoke and knows them but by their effects....it can but prepare conditions favourable to their action. Agricultural methods must therefore leave room for the unknown factor of the forces of nature".[1]

This being so, although as time goes on the unknown is continuously reduced, agriculture would appear to be the critical sphere where man and nature are most evenly matched. This thesis is a commentary on the course of this struggle on one small area of recent engagement.

Such a contact point between man and nature is called a "Frontier",[2] and any study of the type this thesis purports to be

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1 Henry, A. "General Problems of Agriculture" from "World Trade" Oct. 1930; page 324.

2 Frontiers...see Biblography of some useful references included with annotated bibliography at the end of thesis.

must be concerned with this concept. There is, however, a very full literature on the subject with various uses of the term "Frontier" associated with different approaches, and it is therefore not intended to employ the term in this thesis as it is now somewhat lacking in precise meaning. It is necessary though to point out that essentially this is a study of the "Frontier" or "Pioneer Fringe" and that many of the concepts and features associated with other studies in this field will be discussed herein.

The particular area dealt with here is that of the Clay Belt of Quebec in Eastern Canada south of James Bay, one of the most recently settled areas in North America and an active "Frontier" today. Perhaps this, implying as it does, new technology and modern ideas on land settlement in action, makes the example a poor one from which to generalize, but on the other hand the old methods were still in use during the primary settlement of this region and it is this early phase that is dealt with most fully here.

Perhaps also the method of settlement being unusual makes this a poor example; but then many unusual methods were used in primary land settlement throughout the New World and elsewhere. Whatever the typicality of the example it can be said that like other geometrically planned schemes the method of settlement was not of the best, for Venn has said that

"in creating small units of production in agriculture the

> nation is proceeding contrary to the long recognized principle followed in all other branches of industry, and only in a very few specialized forms can such types of farm compete on anything approaching equality with larger lay-outs. Even then the latter have always certain inherent advantages. If the establishment of small holdings is allowed to proceed on its own lines, with the aid of permissive rather than creative state support, then it should not outrun its economic possibilities, but danger lies ahead in the event of widespread and artificial stimulus being applied".[1]

In Quebec and Ontario in the Clay Belt there has been this dangerous "widespread and artificial stimulus" and hence the possibility of the Clay Belt small holdings outrunning their economic possibilities is real and has to be examined.

Perhaps, again, the Prime Minister of Canada[2] had the Clay Belt in mind as one of the areas he referred to when he said

> "I am convinced that some of the land in Eastern Canada that hard working Canadians are trying to use as farms should go back to forest and water conservation uses and those attempting to live on them resettled in more rewarding surroundings".

Should the area then, have been laid out in farms at all or left to

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1 Venn, J.A. "Foundations of Agricultural Economics" Cambridge University Press 1923. Page 94.

2 St. Laurent, Prime Minister's speech at Toronto, Nov. 20th, 1956 quoted in "The Economic Annalist" Feb. 1957, page 21.

be worked as a vast timber reserve? Are the present forms of land occupance the "best" for this area at this stage of North American cultural skill and history? The propositions here defended are that the present framework of settlement is too rigid, that the land use is often mistaken and that the fact that this state of affairs is reached is some proof of the underlying proposition that man has a completely free will in determining where and how he is going to use Nature's resources, his free will being guided by his ideas and aspirations. Thus for a true understanding of the settlement and land use of an area these ideas, and the knowledge they are based on, must be understood to account for the resulting effects on the landscape.

Unfortunately such an approach throws the argument back to the historical process of men's action in time, and therefore involves some understanding of historical methodology and in particular its shortcomings and limitations when applied to thoughts in the past as well as landscapes in the past. Hence a brief discussion of idealistic history and its historico-geographic counterpart may not be out of place.

If history "refers to present needs and present situations"[1] to meet "practical requirements"[2] be they moral, economic, aesthetic,

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1 Croce, G.: "History as the Story of Liberty", Trans. by Sprigge. Meridian Books, 1955. Page 17.

2 Idem. Chapter 1. "What Makes a History Book".

or intellectual, or if it deals with reliving the thoughts of the historian and thus enacting past situations;[1] then historical geography is the spatially orientated study of the same phenomena. Hence historical geography should be concerned with examining the impact of the physical environment or fundament on man and his inherited culture. Correspondingly to treat it from the more positive angle it is a study of the responses men make at different times to the space in which they live aimed at understanding the processes by which these responses are expressed in tangible landscape features, and an assessment of their success in terms of physical and cultural conditions prevailing. In each case, positive or negative, the study is to the end that the historical geographer may understand his own reactions to the environment of the same area as he personally finds it; and hence to gain some idea of mankind's abilities and limitations morally, economically, aesthetically and intellectually.[2]

Thus historical geography demands an accurate means of reconstructing past landscapes, so that the historical geographer can clearly appreciate the impact that the landscape would make

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1 Collingwood, R.G. "The Idea of History" Galaxy Book Edition, New York, 1956.

2 Clark, A.H. "Three Centuries and the Island". Univ. of Toronto Press, 1959. Page 223.

on the minds of the men who were living in it. Moreover, it demands a reading of the literature expressing man's responses to this landscape as reconstructed, an appreciation of the cultural tools that were available for man to use in accommodating the environment to his occupance, and a reliving of this process by the historical geographer. This latter difficult stage is based on field-work and gives him an intimate knowledge of the environment as it is today. Further to this the student should, if possible, expose himself to a similar environment to that which he is studying only in a comparably early stage of development to that found in his own region at the period of interest.

Hence for a thorough historical geography of an area to be written certain basic requirements must be met. Namely, there must be maps available for the area over the period to be studied, or the means available to reconstruct such maps;[1] there must be source material available expressing the peoples' responses at different periods to the changing environment, whether this be got directly from literary evidence or indirectly via archeological means and inductive thinking. Further there should be an understanding of the cultural evolution of the people of the area studied with emphasis on their ideas and technology and

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1 e.g. Darby, H.C., "Doomsday Geographies".
Hoskins, W.G., "The Making of the English Landscape"
Hodder and Stoughton, London, 1957. etc.

there should be the readiness on the part of the historical geographer to aid his reliving of their experiences by his doing field-work as suggested above.

Presuming the general truth of the above statements, then a start in studying this field of knowledge could well be undertaken in as simple a way as possible. Hence an area should be chosen where there is accurate map documentation of the settlement history, where there is an abundance of written reflections on the impact of the environment on man, and man on the environment, preferably over a short length of time to make the study easier to handle, and where the cultural and mental equipment of the settlers or inhabitants is open to investigation.

One such area is found in North West Quebec in the Clay Belts, and indeed would be duplicated in any area of recent settlement. Settlement societies and others have left written material on the environment. The Provincial land sales records provide detailed mappable evidence of the process and length of settlement, and a few early maps do exist. In the Ontario Clay Belt there is a region for comparison which is not so fully developed and where other land uses can be compared with that of settling the land in farms, and, moreover, the whole Clay Belt area is one which is causing widespread government concern. Thus this study was undertaken, though with some hesitation due to the fact that the writer

is of a different cultural and language background from those he is studying, as a pilot study, which it is hoped to enlarge and whose hypothesis it is hoped will be further tested at a later date.

C H A P T E R II

THE REGIONAL SETTING, PRESENT LAND USE AND OCCUPANCE

The Canadian Clay Belt is an area defined roughly by the supposed limits of an enclave of clays within the Canadian Shield lands. To date no precise limit has been set on this area of some seventy thousand square miles, though recent maps have defined the boundaries more precisely than formerly, the information being largely based on air photographic interpretation.

The map opposite is redrawn from the Atlas of Canada[1] and is similar to other recent maps[2] apart from indicating the densely shaded area as being ground moraine rather than deposits of the Lake Barlow-Ojibway complex of late post glacial waters.

> "Probably different parts were covered by the proglacial lake and subsequent smaller lakes at different periods and for different lengths of time".[3]

As it is, the varved clays, after which the area is named, are not continuous and vary in depth from thin layers to up to 250 ft. in

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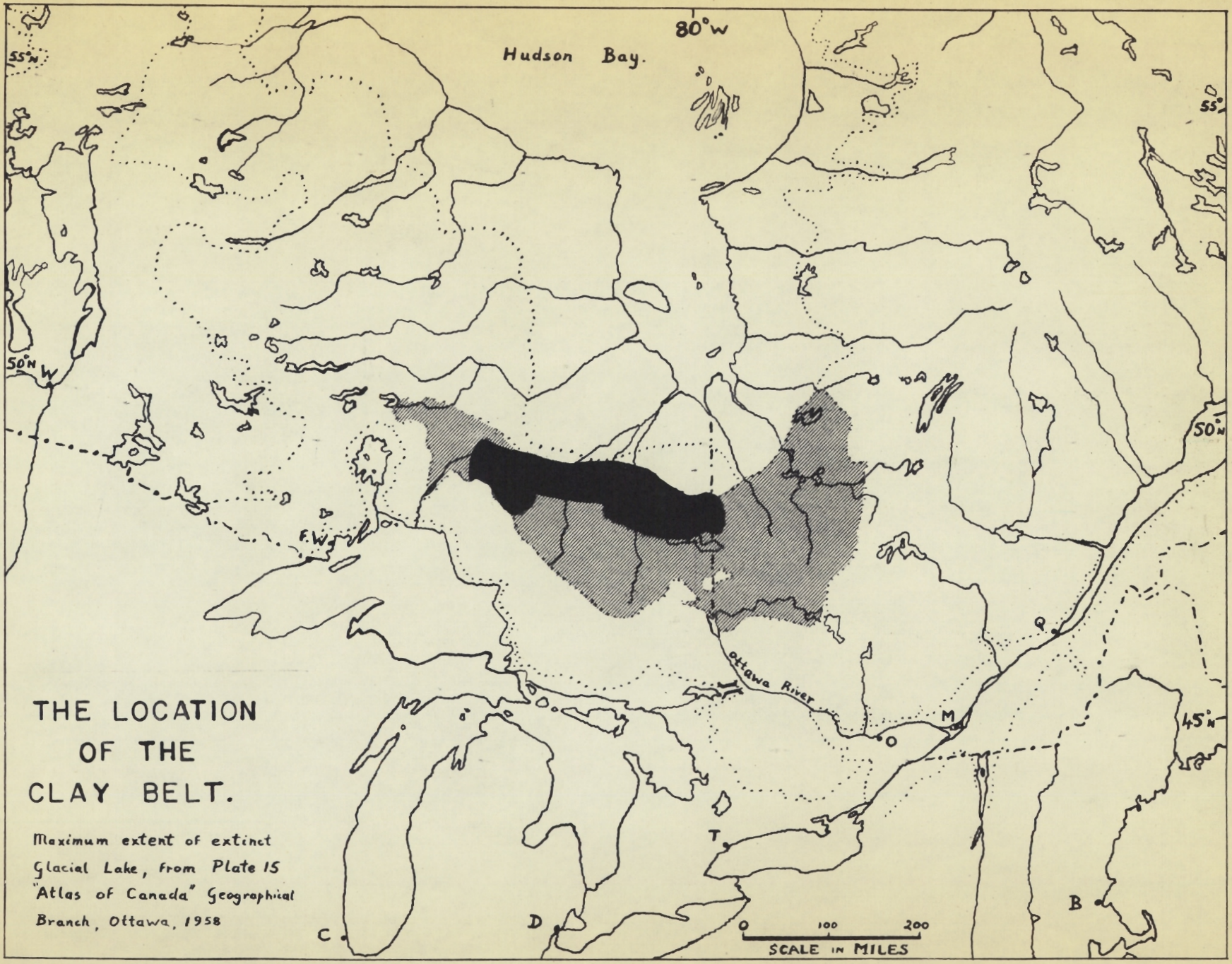
1 "Atlas of Canada" Plate 15. Glacial Geology (1:10,000,000) Department of Mines and Technical Surveys. Geog. Branch. Ottawa. 1957.

2 "Glacial Map of Canada". The Geological Association of Canada 1958. 1":60 miles.

3 Baldwin, W.K.W. "Plants of the Clay Belt of Northern Ontario and Quebec" Nat. Mus. of Can. Bull. No. 156. 1958. P.7.



THE LOCATION OF THE CLAY BELT.

Maximum extent of extinct Glacial Lake, from Plate 15 "Atlas of Canada" Geographical Branch, Ottawa, 1958

the Little Clay Belt. The drainage is mainly northward to James Bay and the whole is tapered to the west being some 600 miles long and at its widest in the east some 260 miles north to south. Elevations are nowhere great reaching 1,800 ft. in Plamondon Hill north of Taschereau, and being 860 ft. at Lake Abitibi and 575 ft. at Lake Timiskaming. The central position of the area in northeastern North America is indicated on the map also and its strategic location is apparent. Yet the area is neither heavily settled nor well endowed and so is rather negative in the general economy, and acts as a separation, albeit of land, between east and west in Canada just as effectively as the Great Lakes do to the south. Indeed as land transportation is more expensive than that by water, particularly when the terrain is difficult, the Clay Belt may be referred to as the "dead heart" of Canada.

The further maps showing the amounts of land utilized actively by cropping in the Quebec Clay Belts today, do however, indicate that the region is not entirely waste. That for Timiskaming shows the longer settled southerly area beside the lake while the Abitibi West area is some ninety miles further north. Between the two there runs the "height of land" or water parting between the Arctic drainage and that of the St. Lawrence-Ottawa system as indicated on the further map of the drainage pattern in the Quebec Clay Belts.

Blanchard (1949)[1] has already pointed out the difference

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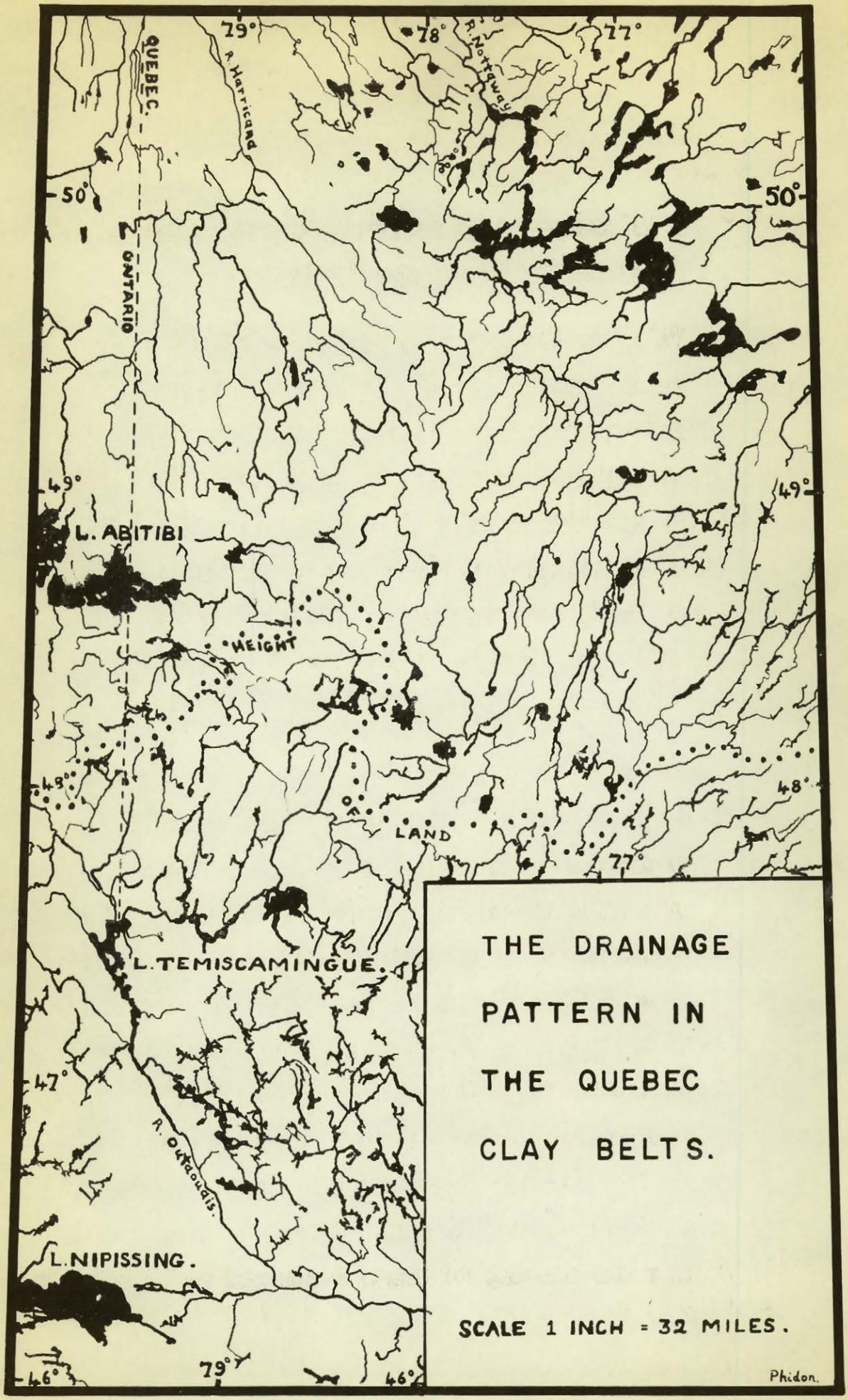
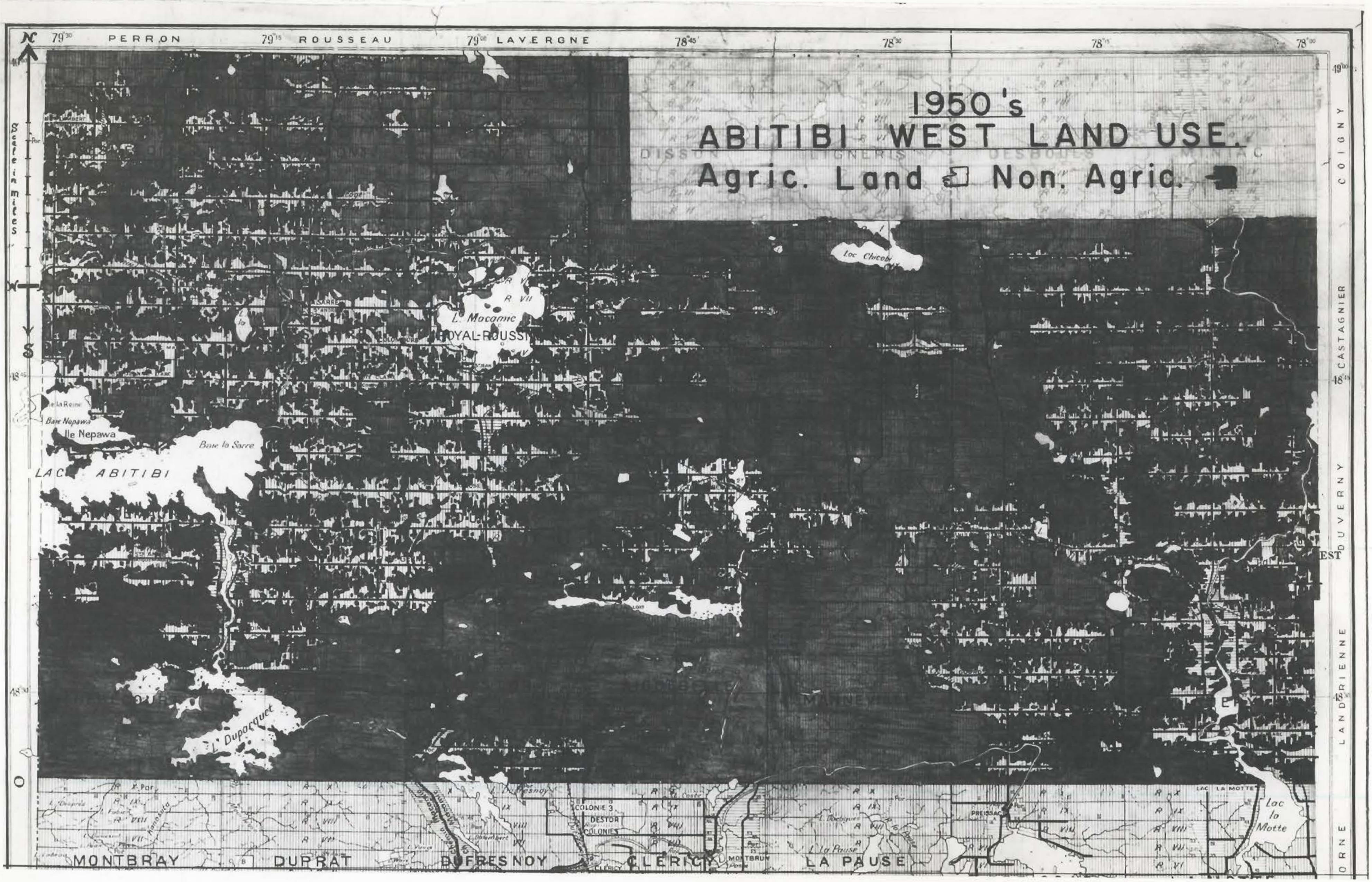
1 Blanchard, R. "L'Abitibi-Temiscamingue" Etudes Canadiennes, Revue de Géographie Alpine, Volume 37. 1949. Page 49.


79°
78°
77°
QUEBEC.
ONTARIO
R. Harricana
R. Nottaway
50°
50°
49°
49°
L. ABITIBI
HEIGHT
LAND
49°
48°
77°
L. TEMISCAMINGUE.
47°
R. Ottawa
L. NIPISSING.
46°
79°
46°
THE DRAINAGE PATTERN IN THE QUEBEC CLAY BELTS.
SCALE 1 INCH = 32 MILES.
Phidon.


1950's
ABITIBI WEST LAND USE.
Agric. Land
Non. Agric.
PERRON
ROUSSEAU
LAVERGNE
COIGNY
CASTAGNIER
DUVERNY
LANDRIENNE
MONTBRAY
DUPRAT
DUFRESNOY
CLERICY
LA PAUSE
LAC ABITIBI
Baie la Sarre
Ile Nepawa
Baie Nepawa
L. Macamic
Lac Chicobi
L. Duparquet
Lac la Motte
Scale in miles
N
S
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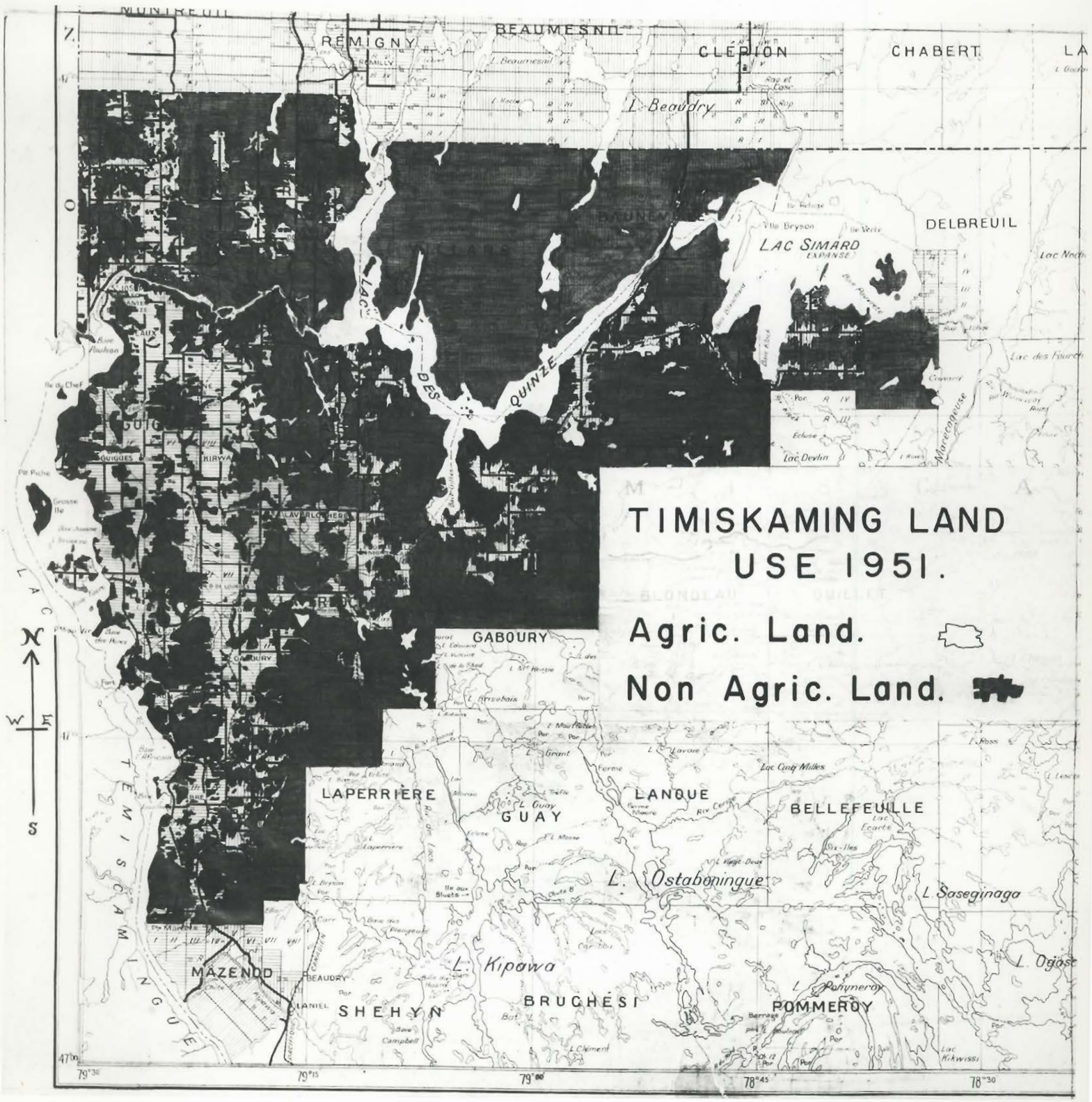
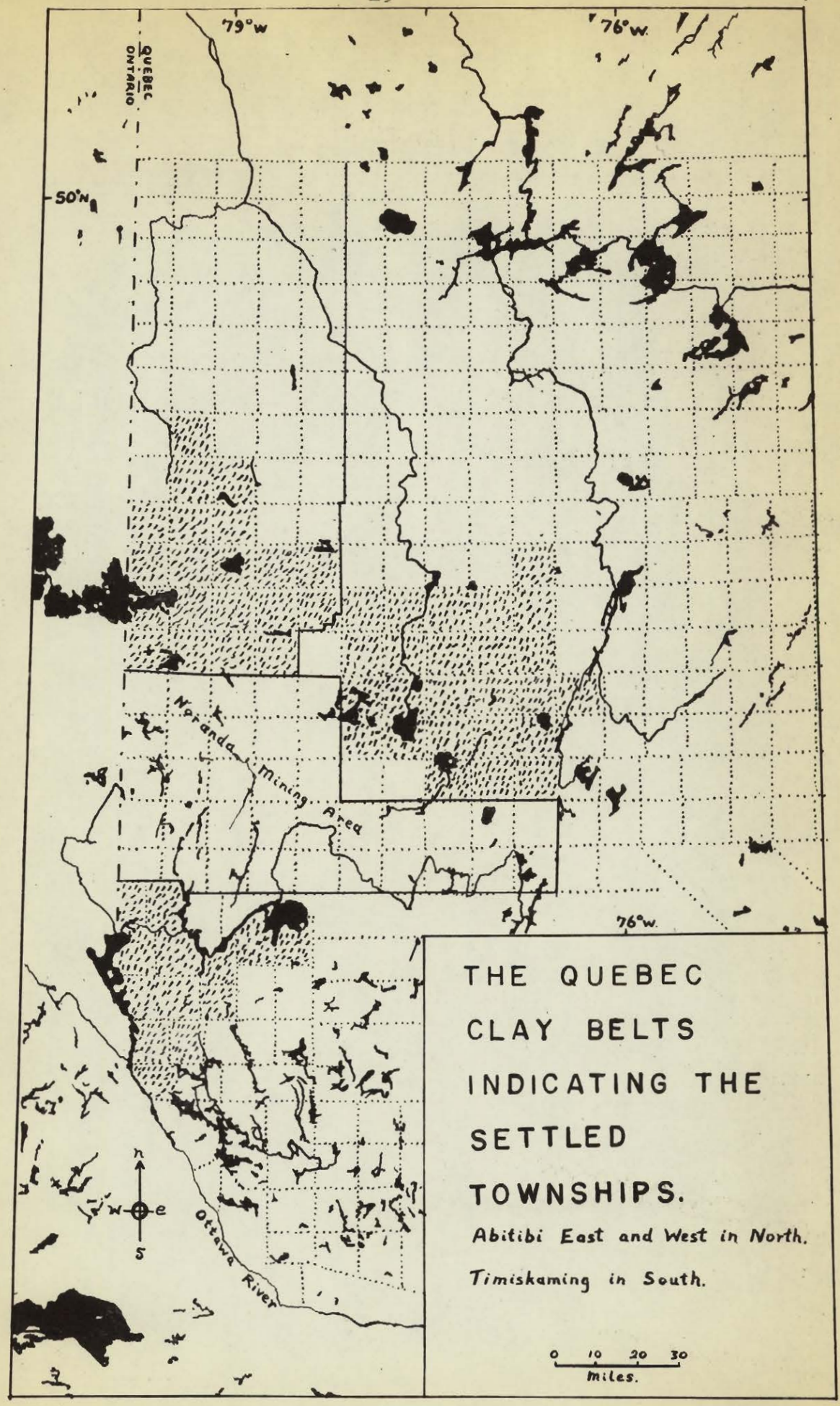

TIMISKAMING LAND
USE 1951.
Agric. Land.
Non Agric. Land.
REMIGNY
BEAUMESNIL
CLÉRION
CHABERT
L. Beaudry
LAC SIMARD
EXPANSE
DELBREUIL
LAC DES QUINZE
GABOURY
LAPERRIERE
GUAY
LANQUE
BELLEFEUILLE
L. Ostaboningue
L. Saseginaga
L. Kipawa
MAZENOD
SHEHYN
BRUCHESI
POMMEROY
L. Ogoss
TEWISCAWINGUE
N
S
W
E
79°30
79°15
79°00
78°45
78°30

in the drainage pattern between the structurally controlled angular lake systems and streams of the south of the area and the more normal pattern of the north developed on superficial deposits of recent origin giving more rounded and shallower lakes. The "height of land" is along a series of rock knobs between 1,000 and 1,500 feet high from Cheminis 1,662 feet on the Ontario border to Manneville, whence it swings north to Launay and then far to the south west of the Harricanaw River.

Thus the Quebec Northwest can be divided into three main areas, the two agricultural regions of Abitibi and Timiskaming shown on the maps of land use, and the intervening area of rocky outcrops, lakes, and small areas of superficial deposits from Virginiatown to Arntfield, Noranda, and Cadillac to Val d'Or astride the watershed where mining is the leading form of exploitation and where settlement on the ranges is subordinated to daily labour in the mining centres.

These mining towns though alien to the basic agricultural nature of the first exploitation, provide urban facilities, and in Noranda-Rouyn, 24,305 inhabitants, the regional centre, for the whole of the Quebec Northwest. Such settlements are subject, as all settlements based on an extractive economy must be, to market fluctuations and world economic conditions much more than are the agricultural settlements to north and south, though in so far as this populous


79°W
76°W
QUEBEC
ONTARIO
50°N
Noranda Mining Area
76°W
n
w
e
s
Ottawa River
THE QUEBEC
CLAY BELTS
INDICATING THE
SETTLED
TOWNSHIPS.
Abitibi East and West in North.
Timiskaming in South.
0 10 20 30
Miles.

mining area is a market for agricultural produce it is vital to the economy of the 54,048 people classified as rural in Abitibi-Timiskaming. The problem here is to diversify the economy of these towns and so to make them healthier urban growths, and more stable markets. This is summed up by Philipponneau thus,

> "Le long de l'Outaouais, la décadence des activités agricoles est frappante. Est-il possible d'implanter d'autres industries que celles du bois le long de cet ancien axe de circulation? Le même problème se pose en Abitibi Témiscamingue. Les industries minières dépendent trop de la conjoncture internationale; cependant seul un développement urbain stable peut, en assurant un débouché local aux produits agricoles, sauver une colonisation réalisée à grands frais et qui risque fort de disparaître."[1]

The despondent note here is of special interest as it is not usual in the published literature on the area.

Nevertheless it is the range dwellers who are the object of study in this thesis and their effect on the landscape is judged at first glance from the amount of land they have cleared as indicated on the two land use maps. These were constructed from an

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1 Philipponneau, M. "Problèmes de planification régionale dans la province de Québec." Revue canadienne de Géographie. Société de Géographie de Montréal et de l'Institut de Géographie de l'Université de Montréal. Vol. 12. No. 3-4, Juillet-décembre 1958. Page 126.

T A B L E I

LAND USE IN THE CLAY BELTS.

TYPE OF USE	PERCENTAGE OF AREA	AREA IN MILLIONS OF ACRES
Total Area	100%	30.0
Productive Forest Land	72.5%	21.75
Non-productive Forested Land, Muskeg, Brush, Scrub, Barrens, Rock Outcrops and Flooded Land	17.0%	5.10
Non-forested land (Divided as under)	10.5%	3.15
Water	5.0%	1.50
FARMLAND EXCLUDING WOODLOTS	5.0%	1.50
Miscellaneous; townsites, mills, roads and railways	0.5%	0.15

From table 12, Page 46 of M.A. Thesis by
Joan R. Sunderland; University of California. 1955.

interpretation of air photographs flown in the 1950's and all land that has been cleared or improved for agricultural use has been plotted as accurately as possible taking account of the fact that the base maps were found to be inaccurate in places and the fact that the only photographs available of the area were flown at 33,000 feet. The two outstanding features that emerge are the comparatively small area so utilized and the curious pattern of this agricultural land.

The table opposite indicates quantitatively under four main headings the amounts for the whole Clay Belt including the Ontario part. The 1941 census gives the acreage in all field crops for Abitibi as 155,944 acres and for Timiskaming as 78,364 acres. Thus the real extent of agricultural land is not impressive when expressed as a percentage of the total area of the region, but does reflect something of the general suitability of the terrain conditions for agricultural use as will be outlined hereinafter.

The patterns of agricultural use are very largely out of sympathy with the nature of the terrain, though it is significant that the same range line control is not so apparent in the longer settled Timiskaming area where presumably more adjustment has been made to the site conditions than in Abitibi. It has been said that,

"a survey may encourage dispersed or nucleated settlement

> and it may or may not prove a suitable land division for settling a region. The nature of the economy , the type of farming, tradition, and the stage of agricultural technology are all important factors in determining the extent to which settlers conform to a prescribed survey".[1]

and in Quebec the survey system is sacrosanct. Dr. Pierre Deffontaines has studied the system in French Canada and has come to the conclusion that:

> "Le paysan canadien-français a un attachement atavique à son lot en longueur, taillé à sa mesure de travail et d'ambition; il en connait le maniement, en utilise bien les avantages, et sait obvier à ses inconvénients. La propriété ne lui semble possible que sous cette forme; dans ce cadre du rang, il se sent solide et entouré".[2]

Thus the canton or township of ten ranges of approximately sixty-two 100 acre lots is a part of French Canada. Yet the usefulness of this strict adherence to an easy form of geometric land division over the great variations of terrain condition found in the province is questionable.

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1 Warkentin, J.H. "Some Comments on the Land Division and Settlement Patterns in the Canadian West". Abstract of paper given at Canadian Assoc. of Geog. meeting. Saskatoon. 1959.

2 Deffontaines, Pierre, "Le Rang; Type de peuplement rural du Canada français" Proc. 8th Gen. Ass. and 17th International Congress I.G.U. Washington. 1952. Page 723.

Originally each lot had its "ponton"[1] or "débarcadère"[1] on the waterfront of the St. Lawrence River along which the settlement took place. These "strassendorf" type villages utilised the natural routeway for communications and roads were not at first used. Similar patterns of settlement also developed in Europe, especially along colonization roads built on newly reclaimed marsh or forest land. These conditions are, however, not so important today and variation might be expected. Thus it has been suggested that Jean Baudon, the first surveyor-general of New France, who started the habit of making the lots ten times as long as wide (three arpents by thirty or forty) came to the country as a governor's valet,[2] and had never had any training in land survey. However,

"it is not possible to blame him for what happened later"[3]

and certainly not for the perpetuation of the system in the Clay Belts where it was married to that of the Anglo-American square township. It suffices to say that here is a true example of human imposition on land that has been carried out regardless, or almost completely so, of the natural conditions, and for which the French Canadian has had to pay.

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1 Deffontaines, Pierre, "Le Rang; Type de peuplement rural du Canada français". Cahiers de Géog.; Les Presses Universitaires, Laval, Québec. 1953. Page 30.

2 Booth, J.F., "Economic Organization of Canadian Agriculture", Canada Council International Conference of Agricultural Economists, 1947. Page 41.

3 Booth, J.F., idem, Page 42.

Thus in the Clay Belt as elsewhere in Quebec the hundred-acre farm is predominant, though through the combination of two or more units the average size of farm is larger. Hence in Abitibi in 1956 there were 6,436 farms, a decrease of 523 from 1951 with an area of 800,203 acres included within their bounds, a decrease of 46,090 acres on 1951.[1] This shows a stagnation in the amount of farm expansion and a tendency for farm size to remain fairly constant. This is to be expected from the rigidity of the survey system and also the holding regulations whereby further land can be acquired. These regulations say that only "B" quality lots will be supplied as second lots and then only if the applicant has four or more children under sixteen years of age, or has already patented a lot and has fifty acres or more of it under the plough. Even then the second lot must be available and be within twenty miles of that already held. Hence an increase in farm size by progressive farmers is difficult to accomplish legally even though modern farming methods and capital outlay all tend towards more extensive practices.

Yet in Quebec the family farm is the only traditional method of working the land. In the west of Canada, Baker maintains that this sort of exploitation is doomed,

"...a victim of modern technological forces. Its place

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1 Census of Canada 1956. "Number and Area of Farms" Dominion Bureau of Statistics, Census Division. Queen's Printer. Ottawa. 8/3/57. Page 15.

> is being taken by the larger, highly mechanized, and commercialized operation. Farming as a way of life is giving way to farming as a business....the resulting higher incomes permit living standards comparable to or above those of the average urban dweller,"[1]

and this is a truism for eastern Canada and the western world as is indicated by the British Minister of Agriculture, J. Hare, expressing similar thoughts in the debate on the second reading of the Agriculture (Small Farmers) Bill in November, 1958.[2]

> "What could be done to help the large numbers of small farmers who were finding it difficult to make a decent living?" he asked. "First, they must somehow identify individually the small farms which ought to get special help; and secondly they must aim to improve permanently the profitability of those small farms so that they could provide a decent living without continued special assistance....they ought not to pay out large sums of public money where, because of the soil, size, or climate, the farm could never provide a decent living."

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1 Baker, W.B. "Changing Community Patterns in Saskatchewan", Canadian Geographical Journal, Vol. 56, No. 2, Feb. 1958.

2 Hare, J., Debate on the Second Reading of the "Agriculture (Small Farmers) Bill, House of Commons, Reported in "The Times" Tues. Nov. 11th,1958. Page 3.

This problem of rural populations being maintained at public expense on an insufficient economic base is one of the big problems of public policy today, and in Canada the Clay Belt areas, if not altogether a case in point, have all the potentiality of becoming such. The only efforts to solve this problem of subsidy of small uneconomic farms to prove generally successful are those along the lines of co-operatives and these are on a limited scale already being introduced in the Clay Belts. Much more still needs, however, to be done along this line to rule out the possibility of the Provincial Government having to indefinitely continue the present high rate of subsidy of production.

Haviland[1] in a recent article discusses these problems from an intimate knowledge of the Provincial data and concludes quite firmly that however highly the immaterial advantages of the Quebec farmer are rated, and they mean much to him, he will have to be permitted to move more freely with the times to increase his acreage and correspondingly increase his efficiency and his income.

Indeed in the Abitibi district there is a growing interest in the possibilities of meat production from more extensive beef cattle farming. It seems that the settlers in the area, largely used to dairy farming in other areas of the Province, almost

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1 Haviland, W.E., "The Family Farm in Quebec - an Economic or Sociological Unit", Can. Journal of Agric. Economics, Volume 5, No. 2. 1957.

unthinkingly went into the same type of farming in the new region to the north. Today this is only possible because of the subsidy system especially that on transportation, and it would appear that this new move to produce an end product not so directly in competition with the farmers of the St. Lawrence lowlands is a sign of more thoughtful counsels prevailing. However, a guaranteed price system would still be required even for beef production .

> "If 100,000 lbs. of milk a year are taken as sufficient to support a farmer he will need approximately fifteen cows and four to six acres of land for each, giving an acreage of sixty to ninety acres plus a woodlot in a hundred acre farm, while for beef he will need much more land and capital, but would then, if given a guaranteed price of say 18¢ a lb. for baby beef make a much more reasonable living".[1]

Herefords are being experimented with on the farm depicted opposite in the northern township of Perron, the capital being derived from part-time work at the Normetal mine.

Hence another phase in experimentation in farming is starting for this northern area, a diagnostic feature of pioneering,[2] but such trial and error processes should not be restricted

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1 Paradis, A. Agronome, La Sarre, private communication.

2 Bowman, I., "The Pioneering Process", Science, Volume 75, May 20th, 1932, Page 532.

PHOTOS 3 and 4.

Herefords on Lot 52, Range 1
Perron Township Abitibi West.

An experiment based on capital
earned in the nearby Normetal Mine.

by the ties of a legal system of landholding developed in another area. Abitibi-Timiskaming should be allowed to develop along other lines more suited to local conditions.

The results of the man-made restrictions together with the natural difficulties of the region due to its isolation and marginal nature have made it an area where some have accepted defeat. Indeed as long ago as 1936 Randall wrote,

> "Occupance in the Clay Belt has been an attempt to develop agriculturally part of a much larger region which, through repeated effort and failure has proved itself generally unsuited to farming."[1]

Hence the Clay Belts today are standing at a cross roads between developing into areas of decline such as that found in the Western Highlands in Scotland, depending more and more on subsidies to support an aging population, or of freedom from man-imposed restrictions to adjust in new and vigorous ways to the environmental challenges and the changing opportunities of the national economy.

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1 Randall, J.R., "Settlement of the Great Clay Belt of Northern Ontario and Quebec". Geographical Society of Philadelphia. Bulletins No. 38, 1936. Page 54.

C H A P T E R III

THE CONTINUING WORK ON THE AREA

For adjustment and expansion, knowledge of the precise nature of the area in both human and physical terms is required, and work must increase in tempo to this end and provide detailed studies of the region. A start has been made along these lines by the "Service des Études Economiques" of Quebec[1] which has produced several excellent studies since 1950.

In Ontario work has also begun on detailed planning for the Clay Belt region and the "Glackmeyer Township" Report[2] shortly to be published by the Ontario government is a model of land use surveys and inventories of resources geared to planned development. The main recommendations made are as follows:

a) To establish an area of primary agricultural development and to confine development to this area until it is fully developed.

b) To reserve suitable area for secondary and tertiary agricultural development.

c) To provide the settler with an adequate acreage for farming, a farm unit to be defined as an area of 300 acres of which at

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1 See Appendix A for a presentation of one of these studies and a brief discussion of them.

2 "Summary of the Glackmeyer Subcommittee Report". Mimeographed, Department of Lands and Forests Research Division, Maple, Ontario, 1958. Page 2 et seq.

least 100 acres are of the best and second best land and not more than 75 acres of the poorest land.

d) To reserve land for recreational and wildlife land uses and to investigate these potentials as required."

The Glackmeyer report is a pilot scheme for the development of all the Northern Ontario area and could find application more widely still in northern marginal lands. It is suggested that it is of great interest to geographers in general particularly in its use of cartographic analysis, and to this thesis in particular, in that the factor of "Effort Classes" is mapped, (Report Map No. 5) to indicate the efficiency of the individual farmer in his response to the challenge of nature. The tables included here give firstly the rather subjective criteria used for the effort classes, an attempt to pioneer an important aspect in human geography, and secondly the resulting correlations of effort with, 1) the total area farmed in the sample used, 2) the proportion of land cleared, 3) the acreage and proportion of improved land by farming effort classes, 4) the size of farm units classified according to farming effort classes and 5) the time spent on the farm by farming effort classes.

This kind of approach and technique is excellent and highly recommended, but needs a team of experienced workers such as Ontario was fortunate to have, and a fairly large budget to make the operation thorough enough to be fully effective.

It is sufficient to say then that the need of the area is known and action is being taken to arrive at a comprehension of the

Clay Belts for planning purposes. There is, however, also a need for understanding the causes of the problem from an historical angle to appreciate what has already been put into the region and relating these with the possible solutions pointed out in such planning reports, and so the more historical aspect will now be pursued here.

TABLE II. FARMING EFFORT CLASSES

1. LAND WELL FARMED

   Farm with outstanding crops, yields above average, improved pasture, livestock in good condition with a production above average. Good and well kept buildings.

2. LAND FAIRLY WELL FARMED

   Farm with average crops, average yield, unimproved pasture. Livestock in fair condition with an average production. Good buildings.

3. LAND POORLY FARMED

   Farm with below average crops, below average yield, unimproved pasture. Livestock in fair condition but with production below average. Fair buildings.

4. LAND VERY POORLY FARMED

   Farm with below average crops, poor yield, old and unimproved pasture, bush pasture. Livestock in poor condition with production below average.

5. LAND NOT FARMED

   Farm with resident - Abandoned settlement land, lot used mainly as a place of residence. Improvements, if made, have been neglected.

   Farm without resident - Abandoned settlement land owned by non-resident. Improvements, if made, have been neglected.

T A B L E III. PROPORTION OF FARMING EFFORT CLASSES

FARM CLASSES	NUMBER OF LOTS	TOTAL ACREAGE	PERCENTAGE OF LOTS FARMED	PERCENTAGE OF SETTLE-MENT AREA
I	8	1,060	2%	1.3%
II	35½	5,355	10%	6.7%
III	49	7,335	14%	9.1%
IV	91	12,350	24%	15.4%
V	223	26,054	50%	32.5%
TOTAL LOTS FARMED:	406½	52,154	100%	65.0%

-28-

TABLES IV AND V

PROPORTION OF LAND CLEARED BY FARM CLASSES, AND IMPROVED LAND BY FARMING EFFORT CLASSES

FARM CLASSES	TOTAL HOLDINGS	LAND CLEARED AVERAGE PER UNIT IN ACRES	LAND CLEARED TOTAL ACRES	PERCENTAGE OF TOTAL
I	1,060	113	563	53
II	5,355	139	2,655	50
III	7,335	79	3,056	42
IV	12,350	94	4,163	34
V	26,054	29	5,057	13

FARM CLASSES	IMPROVED. ACRES	IMPROVED. %	SOMEWHAT IMPROVED. ACRES	SOMEWHAT IMPROVED. %	NOT IMPROVED. ACRES	NOT IMPROVED. %
I	563	4%	-	-	-	-
II	2,655	17%	-	-	-	-
III	3,056	20%	-	-	-	-
IV	2,609	17%	1,234	8%	320	2%
V	-	-	1,589	10%	3,468	22%
TOTAL	8,883	58%	2,823	18%	3,788	24%

TABLES VI AND VII

SIZE OF PRESENT FARM UNITS BY FARMING EFFORT CLASSES,
AND TIME SPENT ON FARM BY FARMING EFFORT CLASSES

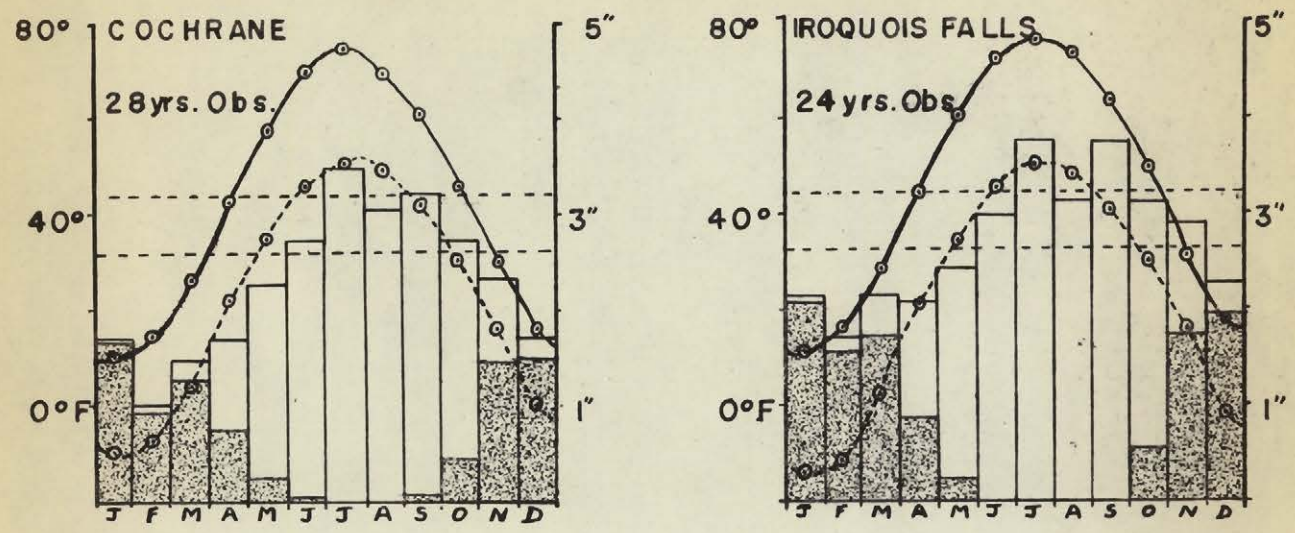
FARMING EFFORT CLASSES	SIZE IN TERMS OF NUMBER OF 75 ACRE, ONTARIO, LOTS ½ Lot	1-1½ Lots	2 or More Lots	Total	Number of Lots	Average Number Lots per Unit
I	0	0	5	5	21	2.4
II	0	7	12	19	33	2.1
III	2	27	10	39	50	1.2
IV	1	40	3	44	46½	1.0
V	68	90	13	171	172½	1.0
TOTALS	71	164	43	278	223	7.7

FARMING CLASSES	NUMBER OF FARMERS IN EACH CASE Full Time	Part Time	Non-Resident	Total
I	5	0	0	5
II	19	0	0	19
III	30	9	0	39
IV	13	25	6	44
V	13	14	145	172
TOTALS	80	48	151	279

Tables II to VII are from pages 12 to 16 of the Summary of the Glackmeyer Subcommittee Report, Department of Lands and Forests, Ontario.

-30-

MEAN MONTHLY MAX. AND MIN. TEMPERATURES AND PRECIPITATION FOR SELECTED STATIONS.



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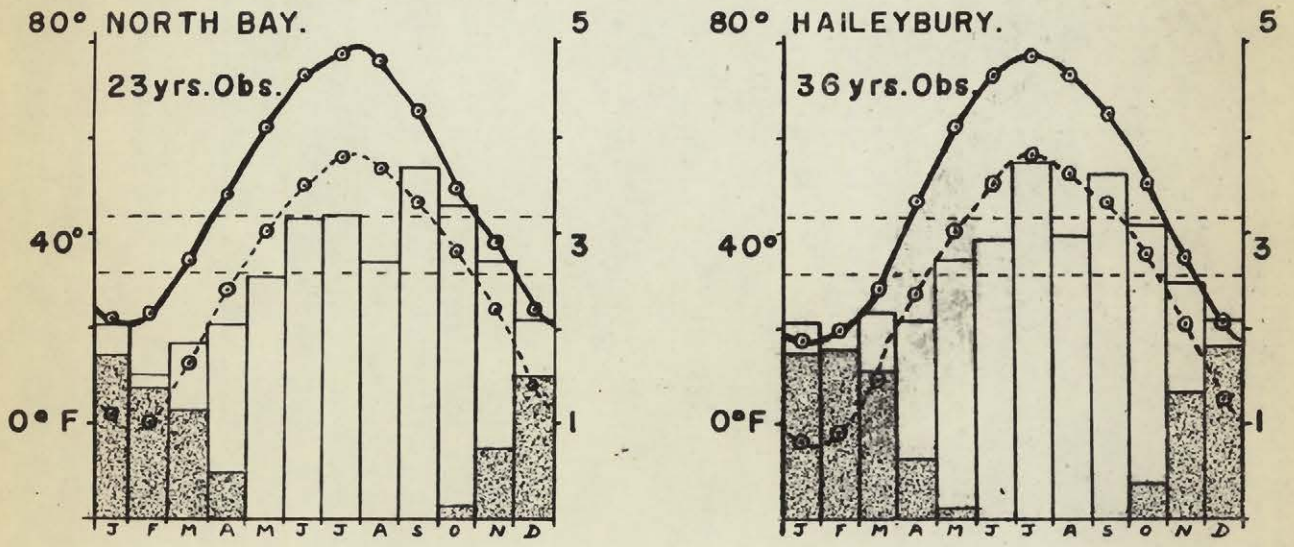
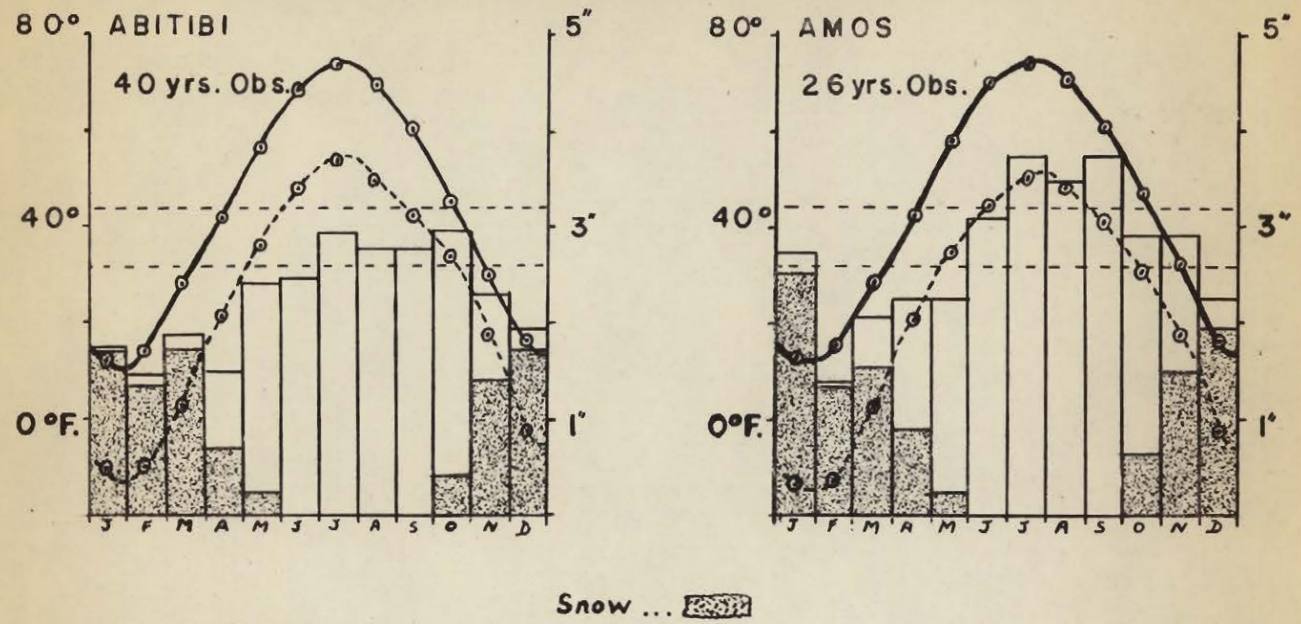


Data from Volume I of the Meteorological Division's "Climatic Summaries" Department of Transport, Toronto. N.D.

MEAN MONTHLY MAX. AND MIN. TEMPERATURES AND PRECIPITATION FOR SELECTED STATIONS.



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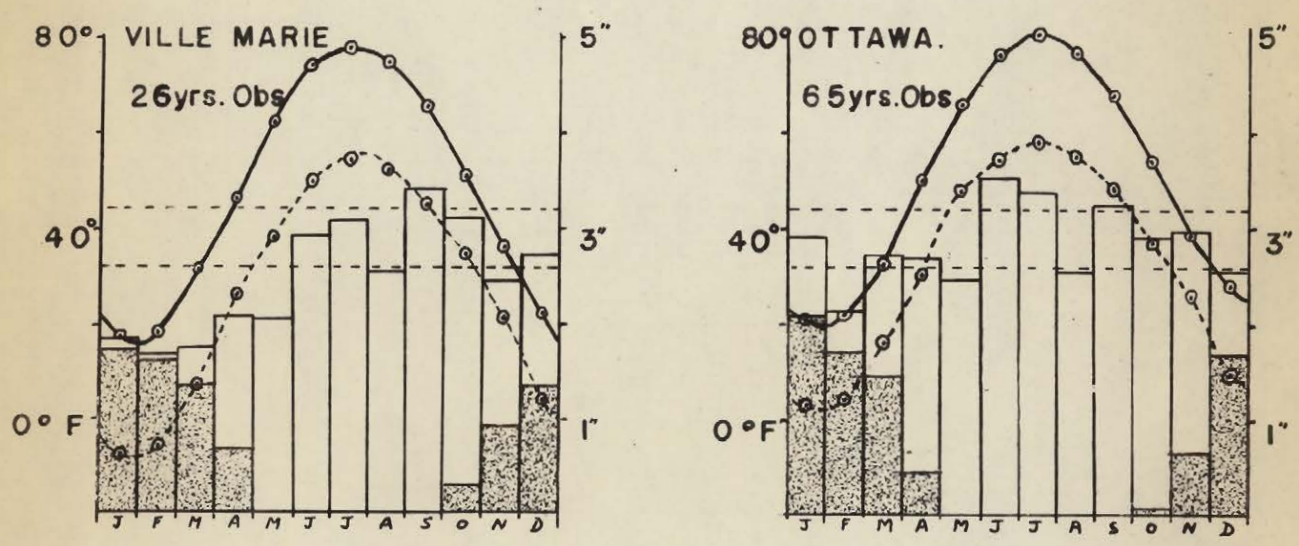

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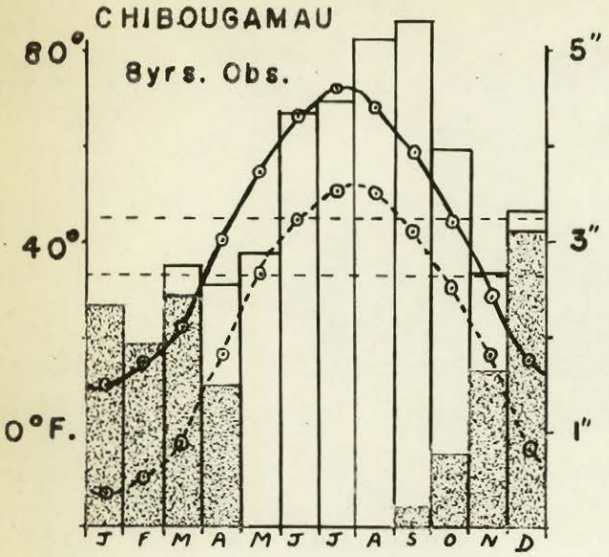

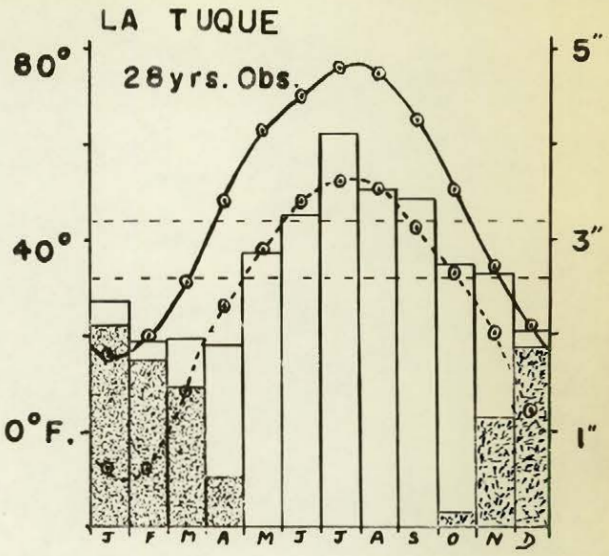

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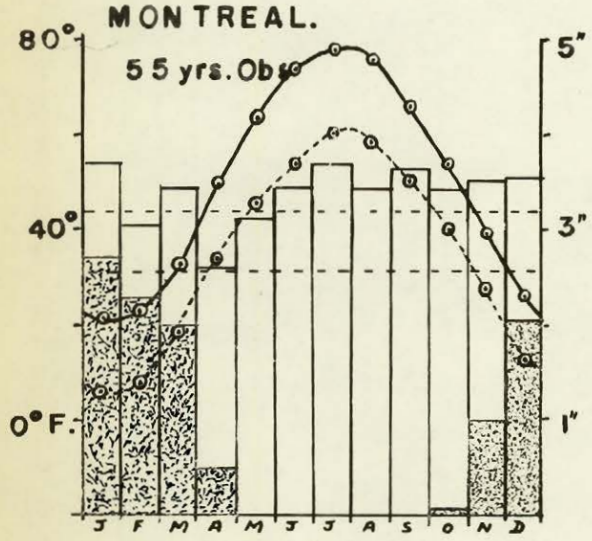
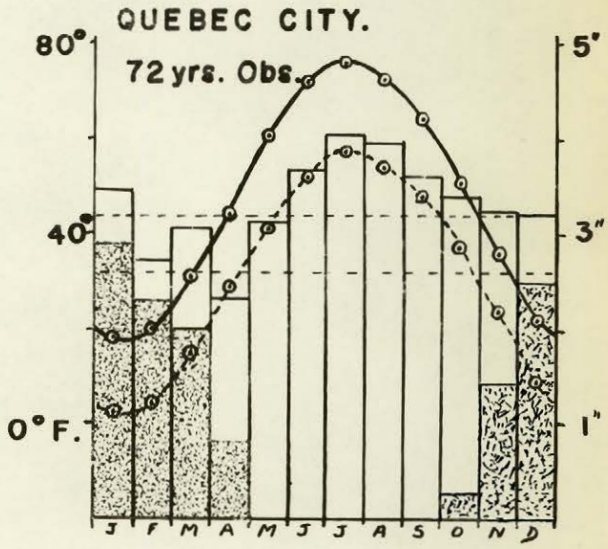
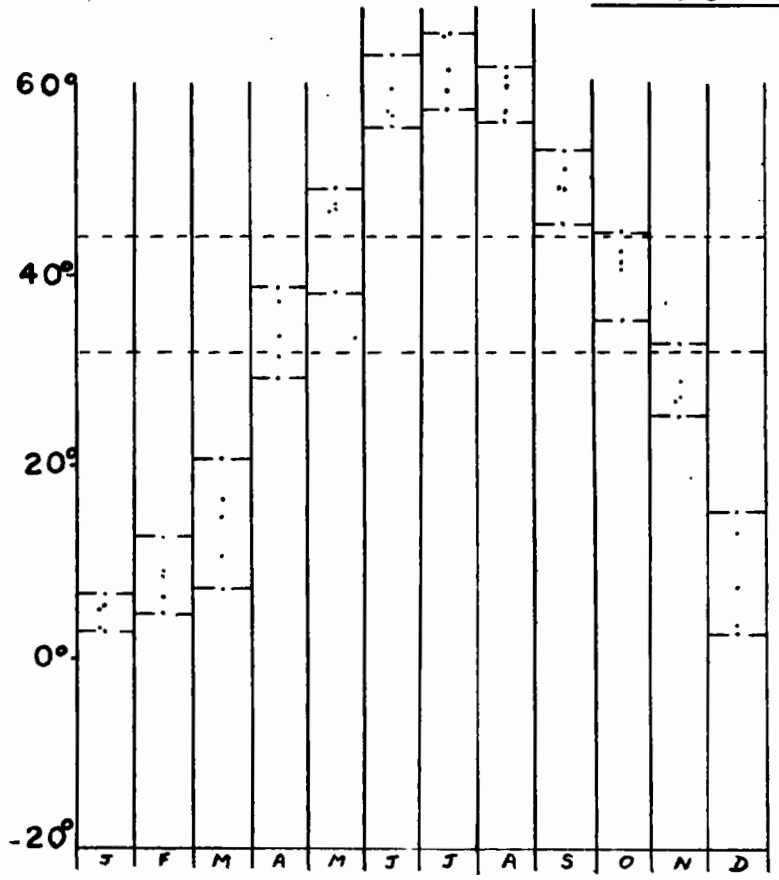


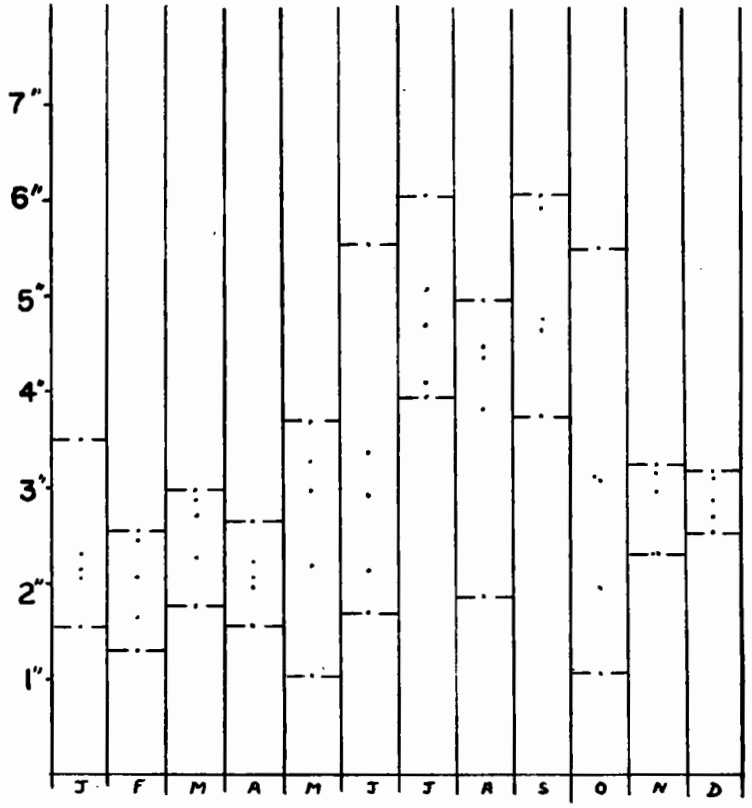


Data from Volume I of the Meteorological Division's "Climatic Summaries" Department of Transport, Toronto. N.D.

AMOS ABITIBI



TEMPERATURE DISPERSION
GRAPH OF MONTHLY VALUES
BASED ON FIVE RECENT YEARS.



PRECIPITION DISPERSION
GRAPH OF MONTHLY VALUES
BASED ON FIVE RECENT YEARS.

Data from Inventaire Economique et Industrial, Amos Report.
Ministry of Industry and Commerce. Quebec.

-34-

CHAPTER IV

THE CLIMATIC ELEMENTS

In a consideration of this aspect of the environment it is obviously necessary to relate it with the climate of surrounding areas to give the regional setting. Hence the information discussed is supplemented by a series of diagrams which include the processing of material from stations outside the main region to provide the needed comparative data.[1] In a work of this nature no thorough treatment can be provided and hence only that more strictly relevant to a consideration of the area as being suitable for settlement and agriculture is discussed.

Moreover, the climate of the Quebec Clay Belts has never been the subject of an exhaustive work though each of the main sources on the area does make mention of the climatic element. This is not surprising as the Abitibi recording station was operative as early as 1897 and the coverage has been greatly increased since then so that presently four Clay Belt stations in each of the Ontario and Quebec parts of the area are reported in the Department of Transport's volume "Climatic Summaries".[1]

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[1] ____ "Climatic Summaries for Selected Meteorological Stations in the Dominion of Canada". Meteorological Division, Department of Transport, Vol. 1, pages 12 and 16. Toronto n.d.

These are:

ONTARIO	QUEBEC
Cochrane with 28 years of records	Abitibi with 40 years of records
Haileybury....36 years.....	Amos.....26 years.....
Iroquois Falls....24 years.....	Ville Marie..26 years.....
Kapuskasing.....19 years.....	Quinze Dam...18 years.....

Thus M.E. Wilson[1] is able to tabulate thirteen year means for the readings at Abitibi and Haileybury in his geological memoir of the region published in 1918. Blanchard[2] mentions some further stations at Kakabonga, Timiskaming, Chute Pin Rouge, and Doucet and devotes some ten pages to a discussion of the climate, whilst it is also dealt with in the "Soil Survey of New Liskeard-Englehart area"[3] and briefly in the Ministry of Colonisation's publications on the area.[4] Chapman's work though unfortunately confined to Northern Ontario is the fullest treatment and he sums up the climate of the Clay Belt area as follows:

> "Northern Ontario, lying between the upper Great Lakes and Hudson Bay, has a modified continental climate..... In summer, July, the settled sections have temperatures of 61°F. to

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[1] Wilson, M.E., "Timiskaming County, Quebec". Memoir 10 Number 86. Geological Survey of Canada, 1918. Page 6.

[2] Blanchard, R., "Études Canadiennes, IV l'Abitibi-Témiscamingue". 3rd Series. Allier, Grenoble, 1949. Pages 34-44.

[3] Hoffman, D.W., Wickland, R.E., and Richards, N.R., "Soil Survey of New Liskeard-Englehart Area, Timiskaming District Ontario". Report No. 12 of Ontario Soil Survey, Guelph, 1952. Pages 18-20.

[4] E. G. Ministère de la Colonisation. "Un Royaume vous Attend: L'Abitibi". Quebec 1952. Page 16 et al.

> 67°F. In January the isotherm of 0°F runs through the northern Clay Belts. In the spring the curve of average temperatures reaches 42°F about April 24th, in the warmest sections, and May 5th in the Cochrane-Kapuskasing district, but the average date of the last killing frost is a month or more later. In the fall, the northern settlements cannot expect frost-free weather after the first week in September, while a comparable date at North Bay, Sudbury and Fort Francis is September 20th. The average precipitation varies from 20.5" to 42.6" and fortunately it is heavier in summer than in winter. Serious deficiencies of soil moisture are not frequent. The surplus water is about 6" less on the Manitoba than on the Quebec boundary".[1]

The rest of this chapter is concerned, therefore, with the more subtle elements of climate considered in more detail; such as the length of frost-free period, the changes in climate in the area over the last fifty or so years and the aspects that would impress themselves on people travelling into the area from the south and east as they came north and then westwards into the Clay Belt country.

The length of frost-free period during which the land can be worked and becomes agriculturally important is obviously vital to the general theme of this study. The graphs of climatic data for the stations in the area indicate this to be from about the end of April to the middle of October or even

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[1] Chapman, L.J., Abstract from "The Climate of Northern Ontario", Canadian Journal of Agricultural Science, Volume 33, 1953. Page 41.

November, where the mean minimum rises above 32°F. This, however, is not precise as the inherent rounding in monthly averages tends to obscure the individual cases that the farmers have to deal with. In this connection it is unfortunate that the more accurate phenological records[1] which were published with the climatic data up to 1910 were not included thereafter with the climatic tables. In the last two years of their publication 1909 and 1910 these indicate when the frost left the ground by recording the dates when earthworm casts were first seen in the springs of those years. The dates were 24th of May and 22nd of April respectively at Abitibi, and in each case ploughing commenced immediately thereafter.

The main source of data for frosts is that of the records kept at the experimental farm at Kapuskasing from 1918-1951, though as this area is far to the west of the Clay Belt and identified by Chapman as being in a more extreme area, the figures can be treated as outside limits for most of the Clay Belt.

The latest spring frost recorded was a temperature of 31°F on July 20th, in 1918 and again on July 20th, 1921, whilst in 1921 the earliest fall frost occurred being 30°F on August 1st. Thus in 1921 the frost-free period was the extraordinarily low number of eleven days. On the other hand the latest spring killing frost (28°F or lower) ever recorded occurred about a month earlier, 24th June, 1922, and the earliest fall killing frost occurred about a fortnight later, August 11th 1921.

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[1] ----Phenological Phenomena Tables, Vol. 1 of Reports of the Meteorological Service of Canada, Central Office, Toronto. Department of Marine and Fisheries, R.F. Stupart, F.R.S.C., Director. King's Printer, Ottawa, page 15, 1909 and page 17, 1910.

Thus the Clay Belt farmer at least in the west of the region in Ontario can expect from time to time to lose his crops by having their vegetative period reduced to barely two months. In the east in Quebec it seems reasonable to assume a slightly longer vegetative period due to more varied atmospheric conditions and the local warming effect of Lakes Abitibi and Timiskaming on the windward side of the cultivated areas, though the effect of Lake Abitibi is not likely to be great owing to its extreme shallowness.

Tha Kapuskasing figures[1] show a longest crop season of 104 days in 1933, the last frost in spring being 30°F on 24th of May and the earliest in fall being 32°F on September 5th. Killing frost figures for the same year indicate the last killing frost to be on 13th May of 28°F and the first fall one on October 23rd of 24°F giving 163 days between killing frosts. May 8th, 1940 was, however, the earliest cessation of such frosts known for the whole period 1918-51.

The figures for the more recent years of 1941-51 were used to construct the diagram opposite and more average conditions can be judged from it. It still shows, nevertheless, that twice in that period, that is on 20% of the occasions, the frost-free period was less than 70 days, and moreover, that in 1941 and again in 1951 there were only 100 days between killing frosts.

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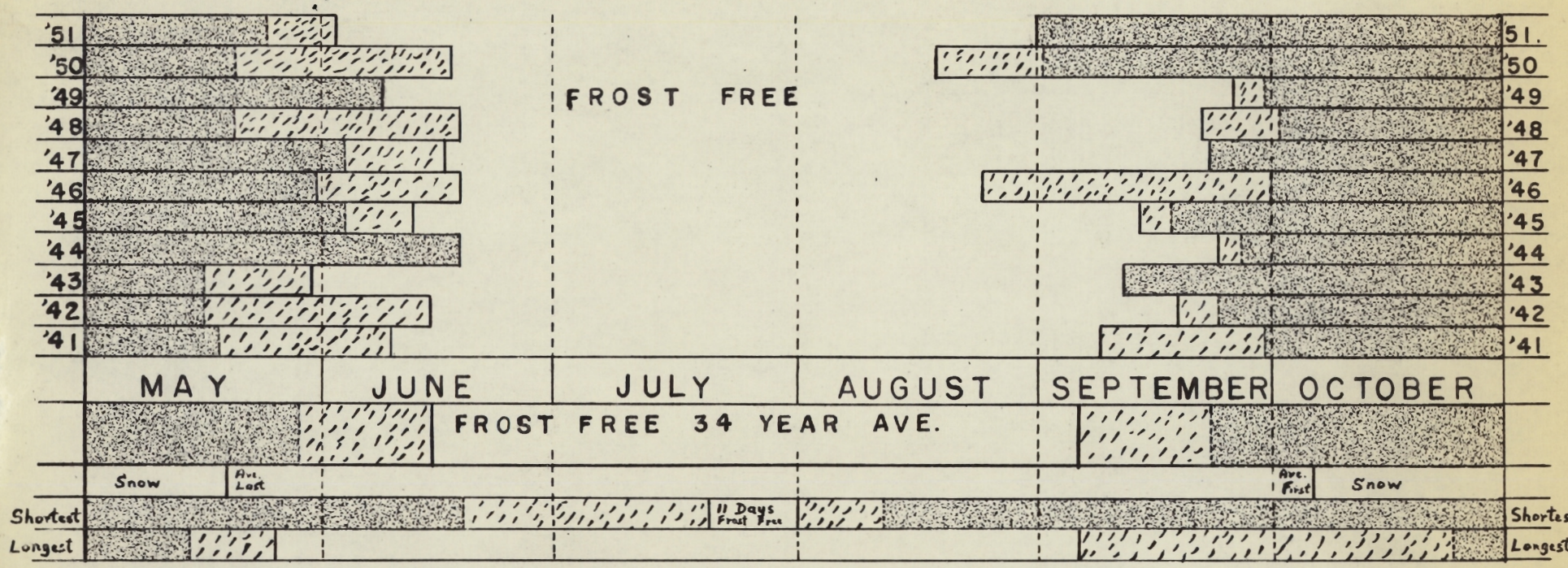
[1] ----Frost Records 1941-51 and 34 year average 1918-51, Table 2. "Progress Report No. 1. Land Use Planning and Resources Development in the Northern Region", by the Land Use Committee, Cochrane, Ontario. Ontario Department of Lands and Forests. Mimeo. March 20th, 1956. Page 13.

FROST DATA FOR KAPUSKASING 1941-51.



Data from Table 2. p.13. Progress Report No 1. "Land Use Planning and Resources Development in the Northern Region" by the Land Use Commitee, Cochrane, Ontario; March 20th 1956

Chapman[1] provides a map suggesting that throughout the Quebec Clay Belt 50% of the last spring frosts occur after June 12th, whilst he also shows that 50% of the first fall frosts occur before September 3rd around Lakes Abitibi and Timiskaming and so shows that between the medians 80 days can be expected to be frost free.

Hence the temperature régime in the Clay Belts is seen to be detrimental to crop growth on an average of about one year in two and to be destructive of full production in about one year in five. This, however, has to be considered in the light of the fact that very few crops are grown to mature, most being used green for fodder. Further the main crop is grass and apart from reducing the quantity available and thence increasing the demand for the importation of hay to the region in the late winter, little direct control is exercised by the temperature régime on the cool temperate type of exploitation practised in the area.

An interesting aspect of climate, though with mainly academic importance, but one that has been stressed in the literature on the area, is the theme of climatic change. This is discussed under two heads, that of the general trend supposed to be common to the northern hemisphere, and that resulting from the cutting down of the forest in the region.

The general trend supposed to be of warming is illustrated by the accompanying diagram. Here the differences in the mean monthly

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[1] Chapman, L.J., op. cit., page 41 et seq.

temperatures based on the two periods 1897-1910 and 1910-1950 are plotted. If the more recent period has led to the calculation of a warmer monthly mean it has been plotted above the datum line, and if a colder it has been plotted below the datum line. Thus at a glance it can be seen that in this area there has been no marked trend unless it has been towards more extreme temperatures in Abitibi in the summer, an apparently local feature as it is not reflected at all in the lower figure for Haileybury only some ninety miles to the south. The figures used are those provided by Stupart for Wilson for the earlier period and those for the same stations calculated by the Meteorological Service.

But, "cultivateurs et agronomes sont unanimes à affirmer que le defrichment ameliore le climat d'été" says Blanchard.[1] Thus we have the suggestion of another factor in changing the climate, man himself. As evidence of this Blanchard cites the fact that Doucet and Kakabonga climatic stations have frosts even in June, July and August whilst the stations in cleared agricultural country such as Amos do not. It would seem, however, that this persistent idea has little basis in fact, as is evidenced by the already noted tendency for greater extremes in the more recently based mean monthly values.

Geiger[2] indicates from experimental work done by himself and others that small forest clearings, such as individual lots carved out

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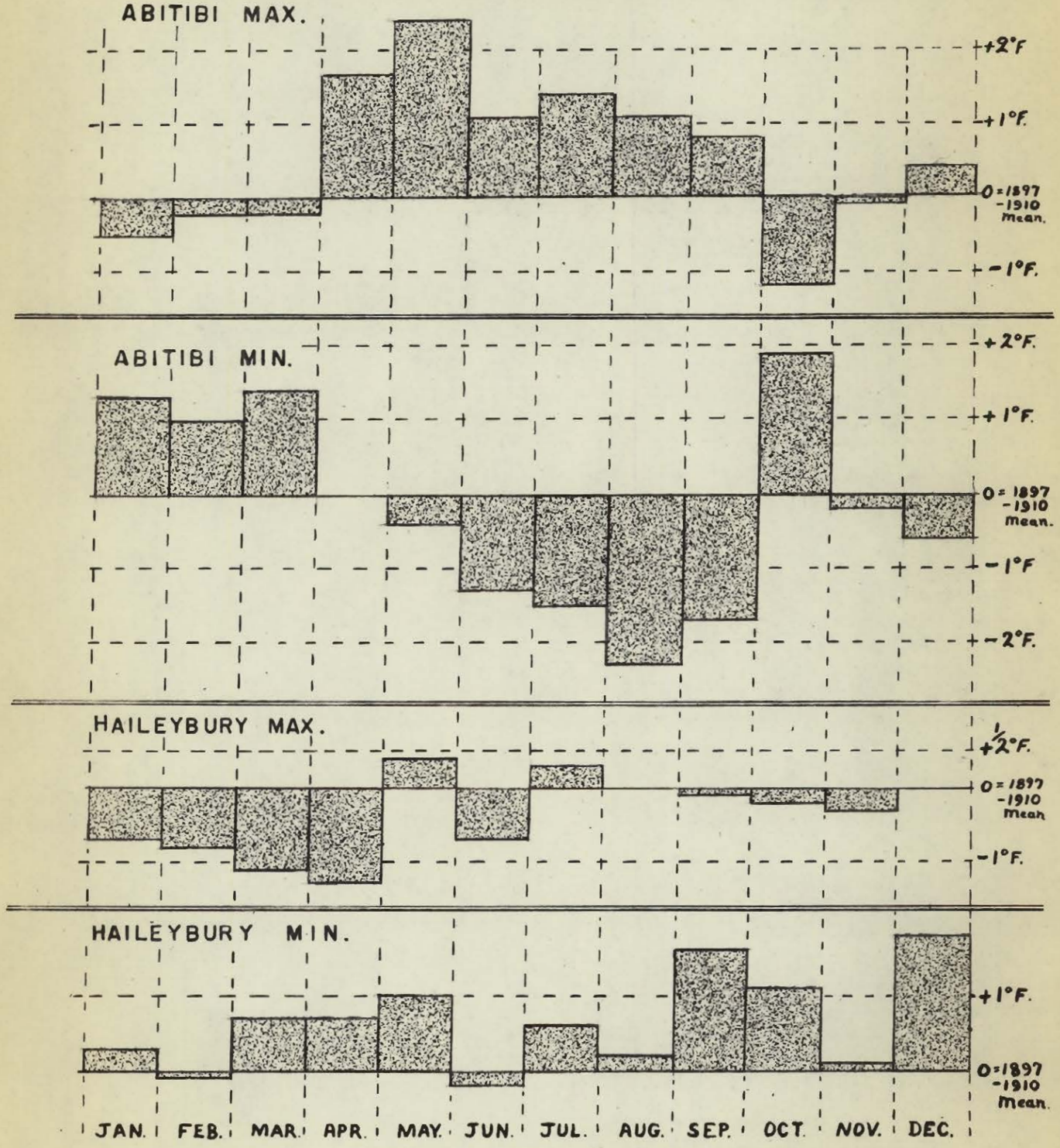
[1] Blanchard, R., op. cit., page 41.

[2] Geiger, R., "The Climate near the Ground" trans. by M.N. Stewart and others. Harvard University Press. 2nd Printing revised 1957. Pages 350-366.

VARIATION BETWEEN MONTHLY MEANS BASED ON THE PERIOD 1910-1950 & THAT OF 1897-1910.



of the forest, are protected from frost dangers, but that there is a limiting value of about 47 meters on the diameter of the clearing after which the percentage of outward radiation approximates that of open country. It is also true that land bordering a forest loses less heat by radiation than land in open areas, but conversely to both these cases

> "the larger forest clearings.....are very much in danger of frost, which is a real hindrance to their practical usefulness in certain macroclimatic areas."[1]

Thus it appears that the larger clearings in the Clay Belt would be frost pockets, unless they are so open to wind that turbulence effects reduce the danger, or are situated close to open water, as is often the case. Hence general statements on the warming effect of forest clearing are found to be meaningless and further study of sites and individual areas with due regard to topography, drainage, and vegetational variations is required, though the mean monthly temperatures plotted yearly on a dispersion graph for the period of forest clearance in Abitibi 1909-1915 do indicate an interesting tendency to rise in September and October.

The settlers moving from the south northwards, from Timiskaming and the St. Lawrence valley to Abitibi encountered more severe climatic conditions. The first frosts were a month earlier

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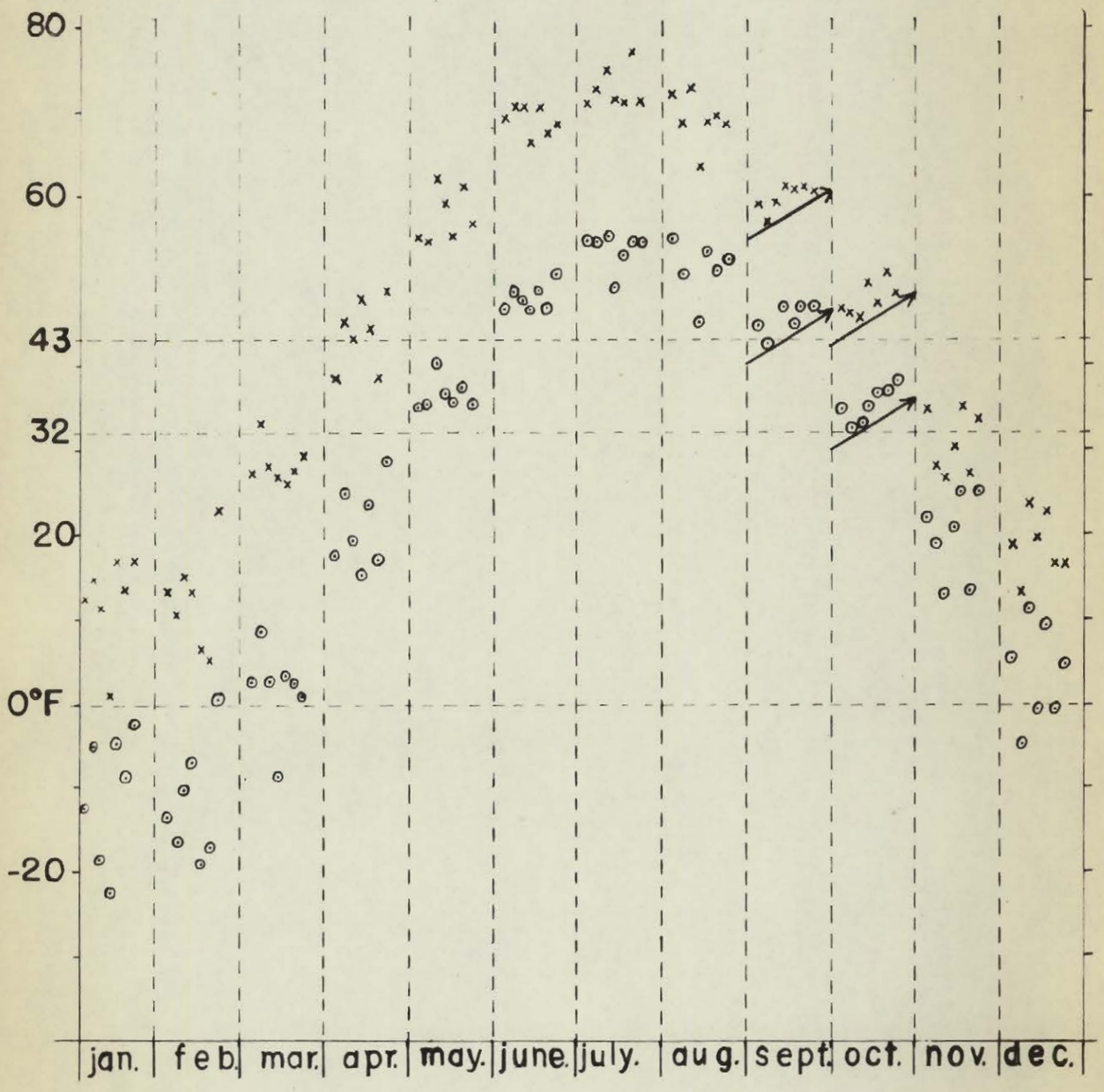
[1] Geiger, R., idem. Page 350.

ABITIBI MONTHLY MEAN MAX. AND MIN. TEMPERATURES 1909-15



Data from Volumes of Department of Marine and Fisheries Reports of the Meteorological Service of Canada - Toronto

than the 'habitants' had been used to and the growing season some twenty days shorter on the average than for most of the St. Lawrence Lowlands.[1] Moreover, the winter weather in particular was more severe, the January daily mean temperature being of the order of 15°F lower than in the hearthlands of French Canada.

The subsequent movement westward along the Clay Belt did not, however, encounter any markedly new climatic circumstances save possibly that of a greater dryness. Chapman illustrates this showing that annual water deficiencies do not occur anywhere along the Quebec Ontario border and hence presumably eastwards into Quebec, whilst they do in Northern Ontario where one year in every three or four there is a deficiency of two inches or more in July and August.[2] The immediate effects on the settler of this would be slight, though the yields of hay in the west may be correspondingly lighter on such dry years if no irrigation is practised.

Almost all of this climatic information has been acquired since the original settlement of the area, and it is of interest to note that apart from expressions of surprise that the summers were almost as warm as those in the south and similar qualitative

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1 ——"Atlas of Canada". Department of Mines and Technical Surveys, Geographical Branch, Ottawa, Ontario, 1957. Plates 22, 23 and 24.

2 Chapman, L.J., op. cit., page 41 et seq.

statements the colonists who first moved in had little to go on. They did have, though, the series of dates, listed in the table opposite,[1] of the ice finally leaving Lake Timiskaming kept by Rev. Père M. Prevost O.M.S., the Superieur at the Timiskaming mission post (listed in the table opposite) and these dates will only vary by a day or two from that of the first possible day for ploughing.[2] And they also did have the series of monthly means for 1845-46[3] kept by the Factor of the Hudson Bay Company's post at Lake Timiskaming. This series is also tabulated opposite as given in an 1887 publication on the area designed for intending settlers.

The first impression given by these two series of records would be of definite agricultural possibilities, and of special note is the fact that the comparative table in the 1887 publication's figures suggests the superiority of the Timiskaming area to that around Quebec City. This, however, is largely illusory as the greater diurnal fluctuations of the more continental inland station more than mar this seemingly favourable advantage.

Hence the colonists set off with very little clear idea

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1 ——"Au Lac Témiskaming", Société de Colonisation du Lac Témiskaming. Printed à la vallée d'Ottawa, 1885. Page 7.

2 cf. Phenological and other data already cited.

3 ——"Notre Nord-Ouest Provinçial, Étude sur la vallée de l'Ottawa". Accompagnie de cartes géographiques. Montréal, 1887.

TABLE 8. Prevost's Climatic Statistics for the dates on which ice finally left Lake Timiskaming; 1865-1884.

Year	Date	Year	Date
1865	6th May	1875	15th May
1866	15th May	1876	8th May
1867	16th May	1877	12th May
1868	17th May	1878	10th May
1869	12th May	1879	18th May
1870	25th April	1880	15th May
1871	8th May	1881	9th May
1872	15th May	1882	13th May
1873	12th May	1883	8th May
1874	26th May	1884	7th May

Data from "Au Lac Temiskaming" 1885.

TABLE 9. The Factor's Observations 1845-46.

Month	Temperature	Month	Temperature
Jan.	9°23	July	67°28
Feb.	18°44	Aug.	65°58
Mar.	24°41	Sept.	53°39
Ap.	39°04	Oct.	40°83
May	49°35	Nov.	25°97
June	62°75	Dec.	17°68

Year Mean ..... 38°58
Winter three months .... 15°02
Spring three months .... 38°58
Summer three months .... 65°25
Autumn three months .... 40°07

Comparison Table of Mean Temperatures for Quebec 1870-71 and Montreal 1870-71.

Year Mean	Quebec	40°	....	Montreal	45°.
Winter 3 months	--	14°	....	--	17°.
Spring 3 months	--	38°	....	--	45°.
Summer 3 months	--	63°	....	--	69°.
Autumn 3 months	--	44°	....	--	51°.

Data from "Notre Nord-Ouest Provincial, Etude sur la vallee de l'Ottawa". 1887.

of what the climate of the land in the northwest would be like. Thus it is not surprising to find that some found the winters harder to endure than they had imagined, and so left. Moreover, knowledge acquired since by experience in the Clay Belts and by the setting up of stations to gather data has shown that they were moving into an area of more uncertainties than they thought in this climatic respect. Only as further detailed investigations of local site variations are undertaken will the marginal climatic possibilities of the area be fully understood and utilised. Meanwhile pasture and hay production with the growth of oats such as is presently predominant is a wise adjustment to the general climatic conditions.

CHAPTER V

THE SOILS OF THE CLAY BELT

The Clay Belt, as has already been mentioned, though an area defined in terms of superficial deposits, has not yet been accurately delimited. Neither has any detailed geomorphological work been done on the area, that done from the 33,000 foot air-photo coverage for the "Glacial Map of Canada"[1] probably being the most complete, though certain forestry inventories by the Ontario Department of Lands and Forests and private companies[2] have been undertaken and Spartan airways of Ottawa are presently engaged on terrain studies of the area.

More detailed field studies have been undertaken for local areas, notably by Mr. Angus Hills of the Ontario Department of Lands and Forests,[3] by Karlstrom[4] on the dating of superficial deposits

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1 ----"Glacial Map of Canada", Geological Association of Canada, 1958.

2 E. G. Kimberley Clark Paper Company at Kapuskasing, Ontario.

3 Hills, G.A., "An Approach to Land Settlement Problems in Northern Ontario", Scientific Agriculture, Volume 23, 1942.

4 Karlstrom, T.N.V., "The Problem of the Cochrane in late Pleistocene Chronology". U.S. Geol. Survey Bull. 1021 J. 1956.

PHOTO 5

Pockets of varved clays in the Clay Belts give the main parent material for soil formation.

PHOTO 6

Areas of sands and gravels are widespread. Kame between Belcourt and Barraute.

following on Antevs, 1925[1] and 1953[2] work, and by members of Government departments in the course of their duties.

Of primary importance is the fact that though the area as shown on the location map, included at the beginning of Chapter III, is large, the conditions are far from uniform throughout, unless it be the repeating pattern of diversity. Nowhere is there unlimited lowland of uniform clays awaiting the farmer's attention, though some remarkably large pockets of varved clays do exist within the Clay Belts.

The whole area is underlain by the Precambrian Shield, though in isolated districts such as northwest of Lake Timiskaming and over the area to the north towards James Bay, Ordovician and Silurian sediments do cover the basement. The other surface features are developed on superficial deposits of eskers, moraines and pro-glacial lakes associated with the Quaternary glaciation. Hence, the surface features are varied. Shattered and faulted basement rocks forming knob hills alternate with seas of sands and gravels and poorly drained former lake bottom areas of peats and clays.

Karlstrom has noted that in the sequence of superficial deposits the moraines are often "largely underlain by extensive deposits of varved and laminated lacustrine clay and silt deposits,

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[1] Antevs, E., "Retreat of the Quaternary Ice-Sheet in Eastern Canada." Geol. Survey of Canada, Memoir 146. Ottawa, 1925.

[2] Antevs, E., "Geochronology of the Deglacial and Neothermal Ages." Journ. of Geol. No. 61, 1953. Pages 195-230.

PHOTO 7. Drainage is a problem in the Clay Belts. Area on east of Belcombe Township is depicted.

PHOTO 8. Better soils and drainage conditions are found along the banks of incised streams such as this in Timiskaming. If the sod is broken gullying may occur.

locally containing ice-rafted pebbles, cobbles and a few boulders",[1] and associates these with an extensive proglacial lake, Barlow-Ojibwa, though Hills doubts the existence of this. These problems, however, are hardly relevant to the theme of this work, and it is regarded as sufficient to say that the area on the latest carbon dating available was last subject to ice movements in post Valders maximum times between 9,000 and 4,500 B.C.

Within the area, then, soil and drainage conditions vary considerably with depth of surface deposits and the stage of integration of the drainage. This has led Hills to work profitably with soil and site associations in the Ontario part of the region, and one of his diagram sections[2] is appended to illustrate a typical suite of Clay Belt soil conditions.

Other work has been done by the soil surveyors of the Ontario government in the area northwest of Lake Timiskaming and two maps from their report[3] are included. Reconnaissance work by Lajoie[4] in Abitibi Timiskaming suggests that conditions there are similar, grey-wooded soils often of peaty or glei variety owing to poor drainage, predominating; muskeg, muck and peat being found in ill-drained

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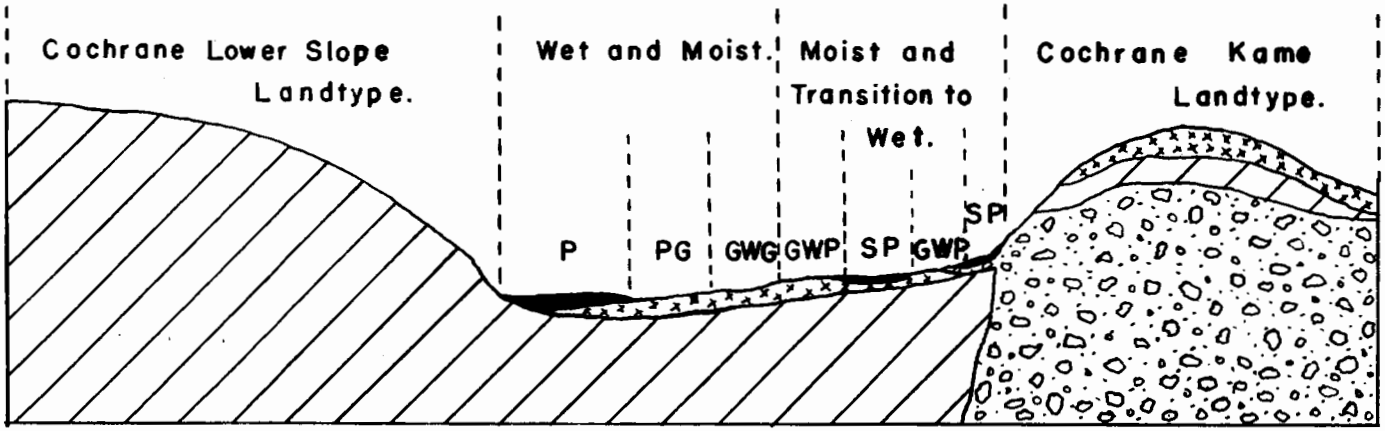
[1] Karlstrom, T.N.V., op. cit.

[2] Hills, G.A., Manuscript. Site Section Division of Research, Department of Lands and Forests, Ontario. July, 1958.

[3] Hoffman, D.W., Wicklund, R.E., and Richards, N.R., op. cit.

[4] Lajoie, P.G., "Major Soil Groups of Quebec", Manuscript mimeo.

A TYPICAL SUITE OF SOIL TYPES DEVELOPED ON CLAY BELT LAND.



GREAT SOIL GROUP PROFILE.

GWG Grey Wooded Glei
GWP Grey Wooded Peat Glei
S P Shallow Peat
P Deep Peat

VARIATIONS IN COCHRANE CLAYS.

Impermeable Basal Clay Till.
More Permeable Silty Ablation Till.

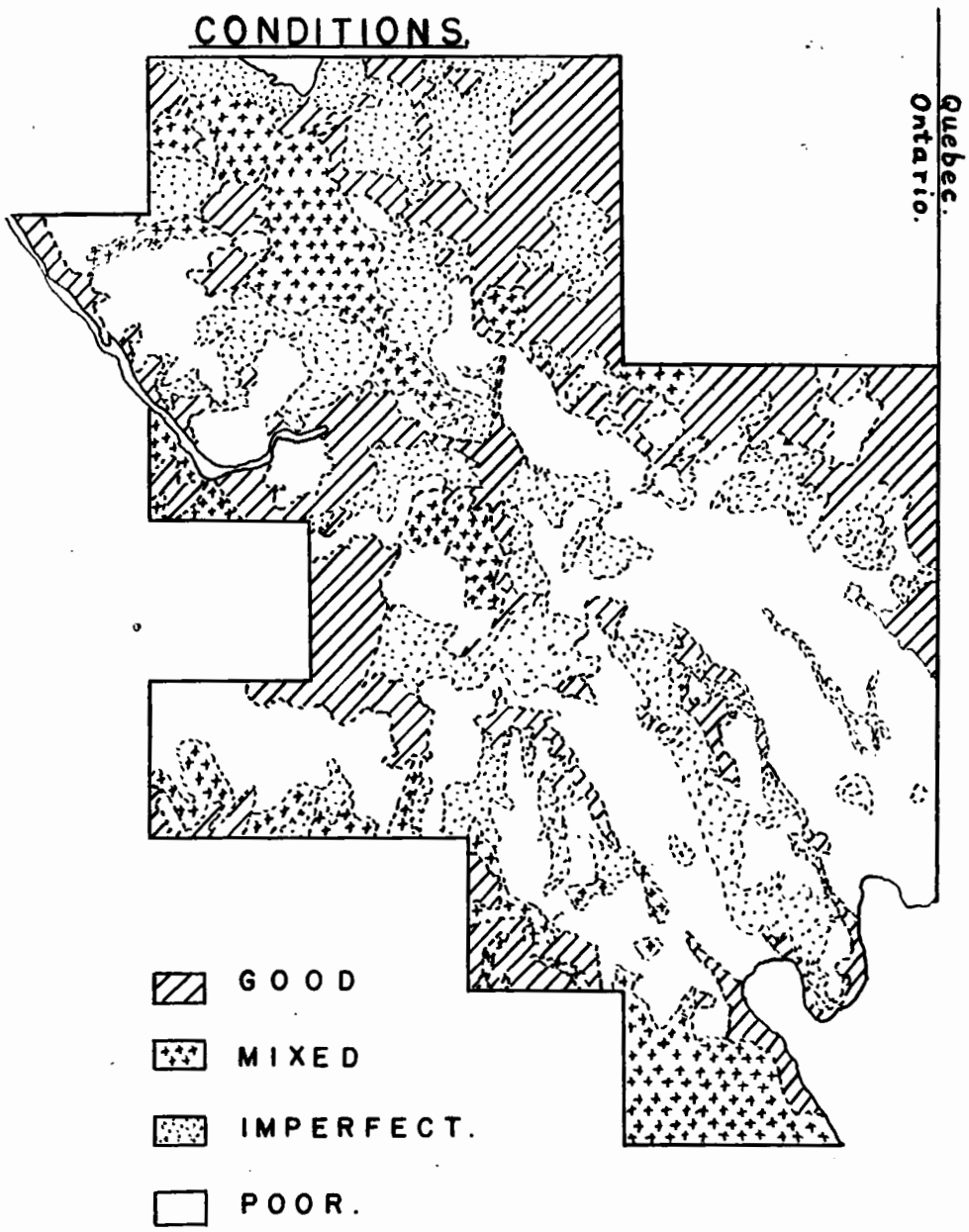
OTHER MATERIALS.

Acid Jessop Peat.
Sand and Gravel.

Data from Ms. Diagram of Site Section Division of Research, Dept. of Lands and Forests, Ontario, July 1958.

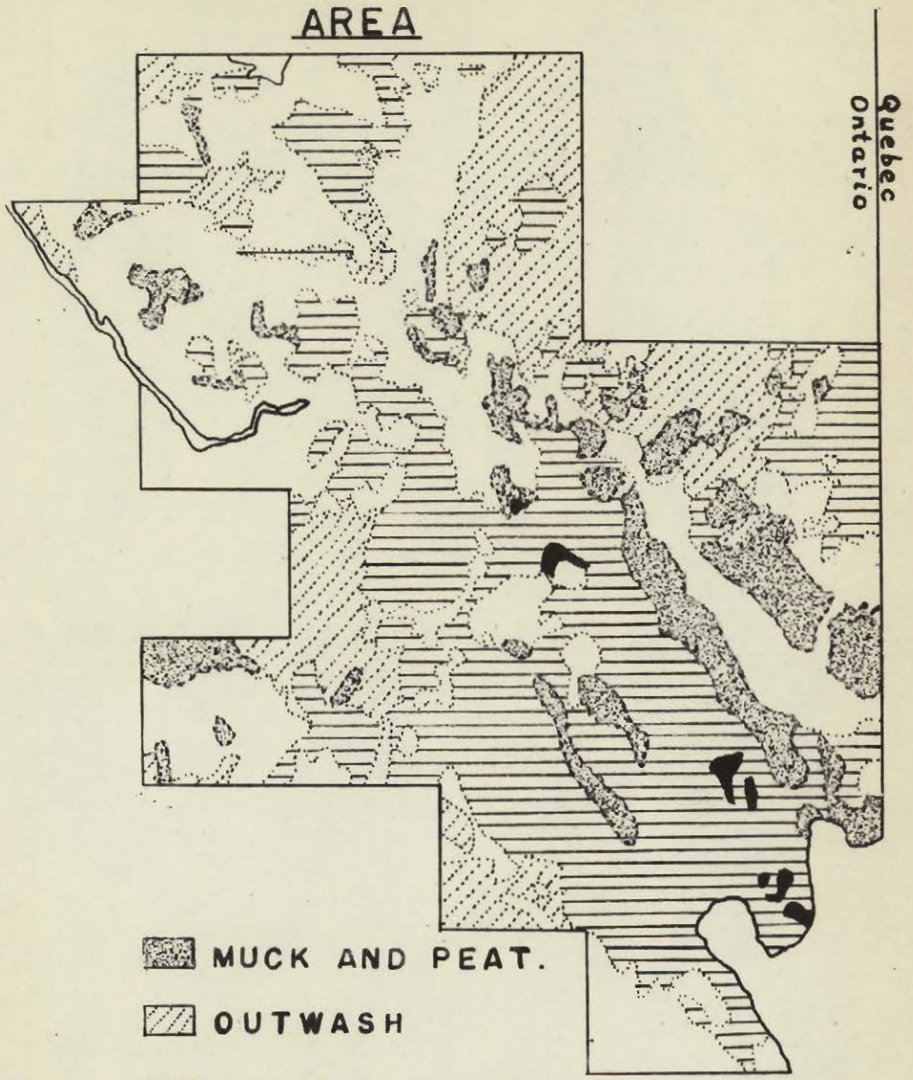
-51-

TYPICAL NATURAL DRAINAGE CONDITIONS.



Redrawn from Map p. 73 in "Soil Survey of New Liskeard - Englehart Area" Report 21 of the Ontario Soil Survey. Guelph 1952.

SOIL PARENT MATERIALS FOR THE NEW LISKEARD ENGLEHART AREA



Redrawn from Map p. 17. in "Soil Survey of New Liskeard - Englehart Area" Report 21 of the Ontario Soil Survey. Guelph. 1952

hollows, and the better soils being sited on outwash spreads or along the banks of incised streams, though in this latter position they are liable to gullying.

Generally then, the area is one of podsols except where the varved clays by their heavy nature have impeded the downward leaching of organic material. Where this has occurred the soil is richer but tends to be very acid, ill aerated and sticky in the extreme, especially in late spring at the thaw. Locally sands and gravels, associated with eskers and moraines which run north and south in Abitibi give lighter soils which demand feeding with nutrients, though these soils particularly in Launay and Barraute districts were slow to be utilised by the settlers. Today they are the areas of the most successful root cultivation in the area.

Land classification and soil surveying is not fully and systematically developed as yet in the area though work is underway and future planning will have to await the results. The Quebec Government do classify all lots on an elementary basis of A, for those immediately suitable for settlement, B, for those requiring drainage or stoning and C for those unsuitable for settlement, but this general division is inadequate and has not been rigidly applied.

When the areas were first opened up naturally knowledge was scanty and the impressions made by vegetation and soil type together with the availability of a surface water supply were used for deciding the best location for settlement.

Thus Rev. P.E. Gendreau, President of the Society of Colonisation of Lake Timiskaming, in his annual report of 1885[1] talks of how he with Mr. Dumais, the Society's surveyor, "took note of all the lots good for farming" tracing on the map the form of small hills which were only a mass of rocks impossible to cultivate. But he was only there because of the reports earlier made by the lumbermen and others, notably Rev. Paradis who had earlier been in the area. Rev. Paradis describes the soil thus:

> "Le sol du Témiscamingue est d'une richesse égale dans toute la vallée de l'Outaouais. Terre grise, noire et jaune; pas une seule pierre sur des étendues de vingt à trente mille carres. D'autres étendues aussi considérables ne sont que des prairies faciles à égoutter, ou bien encore de vastes 'brûlés', où les arbres sont déracinés et jetes à renverse. Chose remarquable, en très peu d'endroits la terre paraît avoir souffert des ardeurs de l'incendie, l'humus y est parfaitement intact et d'une profondeur dépassant partout six à huit pouces; cette riche couche de terre noire repose toujours sur une terre grise très friable et douée elle-même d'une grande fertilité".[2]

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[1] Rev. Gendreau, P.E., "Au Lac Témiscamingue", Société de Colonisation du Lac Témiscamingue, Presidential Address 17th, July, 1885. Collège d'Ottawa, 1885.

[2] Rev. Paradis, P., Report on Timiskaming presented to the Bishop of Ottawa, 22 March 1884, quoted in Buies, A., "L'Outaouais Superieur", Quebec, Darveau, 1889. Pages 124-125.

Though Rev. Gendreau does report one of the new colonists as,

> "pour me prouver l'excellence de sa terre, en prit une poignée qu'il serva dans sa main en disant 'voyez mon Père, terre qui pelote rend du blé qui minote..... conserve facilement l'empreinte de la main comme du mastic amolli'" [1]

indicating its heavy clay nature.

Thus as with climatic knowledge, knowledge of the terrain was available, albeit scantily in the latter part of last century and did provide a basic idea of the area for the colonist, though neither climatic conditions, nor the availability of soil for agriculture would in themselves have led to utilisation of the area at that time.

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[1] Rev. Gendreau, P.E., op. cit., page 29.

C H A P T E R V I

T H E V E G E T A T I O N

It is only when the vegetation covering the virgin Clay Belts is considered that the motivation for early penetration is found. True, various expeditions for missionary and fur-trading purposes from that of Pierre de Troyes in 1686 onwards, had gone into the area, but it was not until the demand for white pine (Pinus strobus) led the 'chantiers' into the area in the middle of last century that the area became economically integrated with the settled domain.

The Clay Belt is in the Boreal Forest area of Canada except for a small area around Lake Timiskaming which is in the richer Great Lakes - St. Lawrence forest zone.[1] As such it is dominated by stands of black spruce (Picea mariana), Tamarack (Larix laricina) and white cedar (Thuja occidentalis) with balsams (Populus balsamifera and Abies balsamea). Along the banks of the rivers and lakes, however, poplars (Populus tremuloides and Populus grandidentata) and birch (Betula papyrifera) are commonly found in belts several hundred feet wide, and they also reoccur widely as secondary growth or in sandy places where jack pine (Pinus banksiana) predominates.

Thus in its natural state the area was a vast stand of

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[1] ——"Atlas of Canada", op. cit., Plate 39.

PHOTO 9 A stand, mainly of black spruce, in Courville township, Abitibi.

PHOTO 10 Low forest and muskeg east of Lake Macamic.

softwoods, the black spruce constituting some 59% of the forest in Abitibi owing to its liking for a moist habitat. An almost endless canopy of various shades of green would be the impression when the area was

> "viewed from the air. The major pattern of vegetation in our region reflects drainage conditions. The hills, slopes, higher banks of rivers and lakes, and better-drained sites generally, are covered by the mixed deciduous-evergreen forest. The porous soils of sandy areas support jack pine forests. The characteristic poorly drained clay plain, such as the area shown in the map in chapter 5, is covered with the predominant black spruce forest... The latter black spruce forest gives way to low muskeg forest and finally open bog in the most poorly drained depressions. ....Air views also retell the story of settlement along the waterways in the days of the fur trade and the first farming, then stretching out by trails, railways and roads to logging, mining, and pulpwood operations". [1]

To tap this resource, transportation was essential and so the naturally accessible areas were tapped first. Thus the lower Ottawa valley and the Laurentian forest was cut over first; in 1878, 20,054,825 Dollars' worth of timber were exported and this gigantic industry is said to have cut 22,274,284 trees in 1881 in Quebec Province which, at 50 trees to the arpent, represents 445,428 arpents cleared in one year.[2] Hence it is not surprising that movement up

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[1] Baldwin, W.K.W., op. cit., page 36.

[2] Buies, A., "L'Outaouais Superieur", Quebec, Darveau, 1889, pp. 68 and 79.

PHOTO 11 Cut-over forest along the Transcontinental, Northern Ontario.

PHOTO 12 The Kimberley-Clark Corporation Mill at Kapuskasing, Northern Ontario.

PHOTO 13 Lumberman at work on company limits in Northern Ontario. Much of this labour is recruited in Northern Quebec.

PHOTO 14 'Yarder' at work in highly mechanised company exploitation of the Clay Belt Forests.

the transportation route of the Ottawa River quickly led back to the resources of Timiskaming. Thus as early as the 1850's lumbermen were in the area and Chenier indicates that small clearings had been made in 1868 at point Quinn in Fabre Canton, in 1870 near point Mac-Martin and at the head of the lake in the 1870's. In the winter of 1884-85, some 1,608,000 billots of white pine and 91,000 billots of spruce were cut in the region.[1]

Timiskaming was opened up. By 1870 mail travel was extended up the Ottawa to the lake and to lake Nipissing,[2] and by the end of a further decade, 1881,"the lower limits" were reported to "have been pretty much stripped of the bulk of the most valuable timber", and it was added that, "supplies have largely to be drawn from the remote forests at the headwaters of Temiscamingue and Kippawa regions".[2]

Lumbering then was the main feature of the area up to the 1880's, and indeed is still important today throughout the Clay Belts. There is, however, a marked difference in exploitation between the lands of Northern Ontario, where the woodland is leased on a long term basis to gigantic pulp and paper interests, and the dominant use in the Quebec part of the area. In this latter a more diverse use is made of this resource based on the idea of the colonist or settler's needs as

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[1] Chenier, A., "Notes historiques sur le Témiscamingue", Ville Marie. 1937. Pages 65-70.

[2] Innis, H.A. and Lower, A.R.M., "Select Documents in Canadian Economic History 1783-1885", University of Toronto Press, 1933. Page 499 and page 506.

TABLE X

1957-58 ABITIBI WOOD EXPLOITATION

GROUP	SAWMILL WOOD in foot boards	PULP AND PLANK in cubic feet	FIREWOOD in cords	PULP in cords	POLES by feet
Forestry Concessions	11,424,362	10,230,172	-	60,283	-
Special Permits	60,612,616	64,780	-	8,770	992
Settlers Permits	629,757	-	5,379	364	1,486
From Canton Reserves	1,157,397	2,304	2,877	31	1,205
From Patented Lots	6,500,000	-	-	15,000	-
TOTALS	80,324,132	10,297,257	8,256	84,450	3,683

Data from Lands and Forests Office, Amos.

paramount, as indicated in the appended table. Hence large areas of land have not been alienated from settlement as they have been in Northern Ontario as is shown on the air photograph of the La Reine area included in Chapter VII ; the contrast in land use between the two sides of the provincial border being outstanding.

Forestry and lumbering are even more closely linked to agricultural settlement in Quebec than is the mining in the region.[1] The first settlers, some of whom were first acquainted with Timiskaming as 'chantier' encouraged others to come and clear land for farming. The timber on their lots was their first cash crop and set them up with the additional capital they required for getting their farm started, and hence badly cut over lots were, and still are, difficult to sell to potential farmers. Generally the timber on the lot was wisely used and the income put back into the land, though some took lots to make a quick profit from wood sales and then abandoned them. Others again used the capital from their wood to build over-solid houses of stone, or over-ornate dwellings rather than the more usual wooden cabin, and then having spent their capital on themselves rather than their land, had to abandon their lots.

Again from the start the woodland provided the very necessary winter fuel for space heating as well as the means of cooking. Today this is still a major use and families cut wood generally in the fall or late

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[1] Blanchard, R., op. cit., pages 84-90.

"Houses of stone, or over-ornate dwellings rather than the more usual wooden cabin..."

winter for domestic use, often travelling considerable distances to do so if the local canton reserve of woodland cannot meet their need. Most cantons do have sufficient wood for this purpose though some are depleted like La Sarre for instance, where 36 cutters had to cut in Paradis township some thirty miles to the north in the 1957-58 season. In 1957-58 most of the wood cut for heating was taken from Dubuisson, 759 cords by 142 cutters, and from Louvicourt, 748½ cords by 139 cutters.[1]

A sawmilling industry is firmly based on the vast local timber supplies and employs several hundred people at its main centres such as La Sarre and provides casual employment for others. More important by far, however, is the capital made available for farming, and the market for farm produce, provided by the big companies exploiting the woods for paper production. These operations are mainly to the north and east of the Abitibi region by the Eddy Company, the Howard Smith group and the Canadian International Paper Company, though the Abitibi Power and Paper Company exploits the area north of Lake Abitibi in Ontario. This latter exploitation based on Iroquois Falls employs men from northern Quebec who bring back roughly 1½ million Dollars a year from their work there are spend it in the Amos, La Sarre, La Reine area, this amount being equivalent to the Quebec government's annual expenditure in the same area for colonisation purposes.

Two difficulties are now hindering this side of the economy.

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[1] From the records of the Department of Lands and Forests, Amos.

One is the tendency for the pulp and paper companies to work now in the forest throughout the year rather than just in the winter, creating a clash in the labour market with the requirements for manpower on the farms, and the second is the growing shortage of horses.[1] Various mechanical devices have been used for forest work but farm horses are still relied on widely and many claim them to be still very superior for this type of work to anything else yet available.

The photographs included in this chapter show that whilst some fairly good stands of black spruce do occur even in the settled areas, much of the forest has suffered from being cut-over or burned. Future good management and a careful placing of processing plants using the wealth of the forest should mean a healthy industry for many years to come. Such an exploitation can only in the long run have beneficial effects on the agricultural development of the area.

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[1] Portelance, R., in "Progress Report No. 1, Land Use Planning and Resources Development in the Northern Region". Land Use Committee, Cochrane. Department of Lands and Forests, Ontario, 1956. Page 46.

CHAPTER VII

THE PROCESS AND DEVELOPMENT OF SETTLEMENT

Today the Quebec Clay Belts are areas of farmland, in spite of the impression gained from the maps of the sample areas in Timiskaming and Abitibi West included in Chapter II to show the present land use. All this farmland is, however, like everything else in the cultural landscape less than 100 years old, indeed in Abitibi it is less than 50 years old.

The motives for this recent settlement are varied and in some cases obtuse, but of great interest in evaluating the stage of development reached today. Outstandingly, and behind all other motives, is the fact that this is an area of French North America. 'Les Canadiennes' ever since 1763 have felt themselves to be very much circumscribed as a minority in a land that could have been their own. Moreover, they have felt that the arising North American culture around them was not only alien to their own outlook, but also hostile to it, and so they reacted against it. This reaction is seen by the outsider to be a conservatism that jealously guards their own religion, language and culture. The more positive side of this reaction is seen in the desire to keep the French Canadian proportion in Canada as high as

possible by what has been termed the "revenge of the cradle" and to occupy as effectively as possible the land of Quebec by members of their own race, taking every opportunity at the same time to spread across the provincial borders into the neighbouring provinces.

> Moreover, "during the 1830's there was an agricultural revolution in Lower Canada. Production of wheat, which had been the foremost grain crop throughout the history of the colony, collapsed and the farmer was compelled to turn to oats, barley and to a lesser extent to rye".[1]

Thus there was instability in the rural life of the area. This was heightened by the extraordinarily high birth rate on the ranges of French Canada all through the last century, and hence there was rural under-employment.

Part of this employment problem was solving itself in that the cities of Quebec and Montreal were growing apace and offering great opportunities for young people, but this urban way of life was frowned upon by the church, for as late as 1915 Abbé Caron writes,[2]

> "Franquet makes a remark which is still applicable; 'an educated young girl', says he, 'acts the lady, is affected and aspires to have a home in the town; she wants a merchant, and looks down

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[1] Parker, W.H., "A Revolution in the Agricultural Geography of Lower Canada, 1833-38". Revue Canadienne de Géographie, Vol. 11, No. 4, Oct.-Dec. 1957. Page 192.

[2] Caron, Abbé I., "Colonisation in the Province of Quebec Under French Domination 1608-1760." Q.S.Y.B.

> upon the class to which she belongs. My opinion is that it would be better to oblige the children to be satisfied with the religious instruction given them by their parish priests and to harbor no principles which direct them from the work of their fathers. By this means, the settlements would increase instead of decreasing and the tillage of the land would be vigorously stimulated".

Moreover, there was a much more serious migration of rural people out of the Province to the United States. The New England industrialisation required cheap labour, and many French Canadians emigrated there, so that even today the United States Census can enumerate 908,386 French Canadians in the United States.[1]

Clearly from what has already been said the Quebec Government and the Catholic Church had to react to this situation, and they did. Believing that men could tame the forest and establish new parishes of long-lot farms if led by the church militant an immense expansion was encouraged in Gaspé, in the Lake St. John area, into the Eastern Townships and into Timiskaming, and later Abitibi. The priest is

> "the first, not only in the way of faith, but also in the question of agricultural colonisation. The work of colonisation only recruits apostles, that is to say men with religious and patriotic ideas strong enough to make all possible sacrifices that the cause may succeed. The peasant does not fear to follow them, even though he is timid and distrustful of nature. Thus everywhere where the

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[1] ----United States Census; Special Report. 1940.

priest precedes them colonisation succeeds, parishes are formed, churches are built and the forest recedes".[1]

This attitude caught the imagination of the 'habitants' and others including Elisee Reclus in far-off Paris who wrote Labelle, one of the coloniser priests, thus:

"Send your colonists towards the north, far from the American frontiers, send them where the winters are long and the climate rigorous, where families are numerous and the race is strong".[2]

Hence, when reports of thirty square miles of stone-free land in Timiskaming[3] were circulated the area was actively investigated for colonisation by the church authorities under the bishop of Ottawa, who had been stimulated by Père Paradis, one of the priests whose duties had been to visit the woodsmen and the Hudson Bay forts in this Northland. Paradis issued an enthusiastic report in 1884.

There were some people in this region already as Blanchard[4] notes from the evidence of the federal census of 1871. In Kipawa and Timiskaming districts 351 inhabitants are listed, 269 being Indians, 82 being whites and of these 46 were French Canadians. Furthermore, 1870 is the date of the first recorded land sale in the area;[5] Robert Leckie, a Scot, buying

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[1] Royal, J., "Colonisation in 1866", Revue Canadien, Vol. III, 1866, pp. 618-628.

[2] Reclus, E., Letter to Labelle quoted by Siegfried, A., in "Canada an International Power". Trans. by Doris Hemming. London, Jonathan Cape, 1949, page 121.

[3] See Chapter V .

[4] Blanchard, R., op. cit., page 56.

[5] ----Terriers, Land Sales Records, Ministry of Colonisation, Quebec City. Manuscript.

some 200 acres in Guigues and Duhamel townships. Thereafter sales were slow until October 1885 when the Oblate Fathers bought 654 acres in Duhamel township. Then, as was suggested by Royal,[1] settlement really started.

Actually this greatly increased tempo in land sales was largely the result of the efforts of the "Société de Colonisation du Lac Temiskaming"[2] under the auspices of the bishop of Ottawa and the presidency of Rev. P.E. Gendreau, O.M.I., a man who had already been associated with land settlement work in the Eastern Townships. Gendreau himself visited the area in June 1885 and found the difficult water routeway involving four portages made even more trying by the fly season then at its height. Once there he met the surveyor Dumais who had just completed the survey of Duhamel township and together they took note of all the lots good for farming and found "38,000 acres of first quality land, without a single rock or bluff, where a horse could not carry 1,500 - 2,000 lbs. weight".[3] In 1875 there were three families in residence having 15 acres cultivated and five acres in pasture on three lots which carried two buildings apiece. By 1885 there were 850 acres cultivated, 247 acres in pasture, 67 buildings up on 70 lots and 37 families in residence.[4]

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[1] Royal, J., op. cit.

[2] The Constitution and Rules of this Society are to be found as an Appendix at the end of this volume.

[3] Gendreau, Rev. P.E., "Report of the President of the Society of Colonisation of Lake Timiskaming". 17th July 1885. Collège d'Ottawa in, "Au Lac Témiskaming". Ottawa, 1885.

[4] Gendreau, Rev. P.E., Ibid.

Settlers travelled by rail at this time to Mattawa whence at a cost of 3 Dollars each they entered Timiskaming on a Tuesday with the mail, the trip in total costing 5 Dollars and 50 Cents from Ottawa, whilst their land cost 30 Dollars for 100 acres payable in five yearly instalments starting in 1888.

> "Timiscamingue was almost empty of colonists in 1887. It had not more than 3,080 people in 1906; but in 1911 there were 8,500, in 1931, 13,000; in 1940, 40,500 and in 1949 46,300. Some of the colonists of Timiscamingue had followed the woodsmen, others had been recruited by a colonisation society operating in the Ottawa region, others yet had come from parishes as far away as Terrebonne, St. Lin, Sorel, St. Paul and St. Didace".[1]

The accompanying maps show the gradual settlement of Timiskaming over its first forty years to 1917. This latter closing date for the historical treatment herein dealt with being chosen as the year before post-World War I settlement schemes were started. From then onwards various schemes have operated in Timiskaming and Abitibi and yet these have not markedly changed the distribution of settlement in either area. In all cases the numbers settling under these schemes are deceptive as many later left and others merely took over lots previously abandoned.

The maps show that in Timiskaming settlement was from the lake onto the lacustrine terraces to the north and east and gradually penetrated inland. In the period 1877-1887 some 198 lots of approximately

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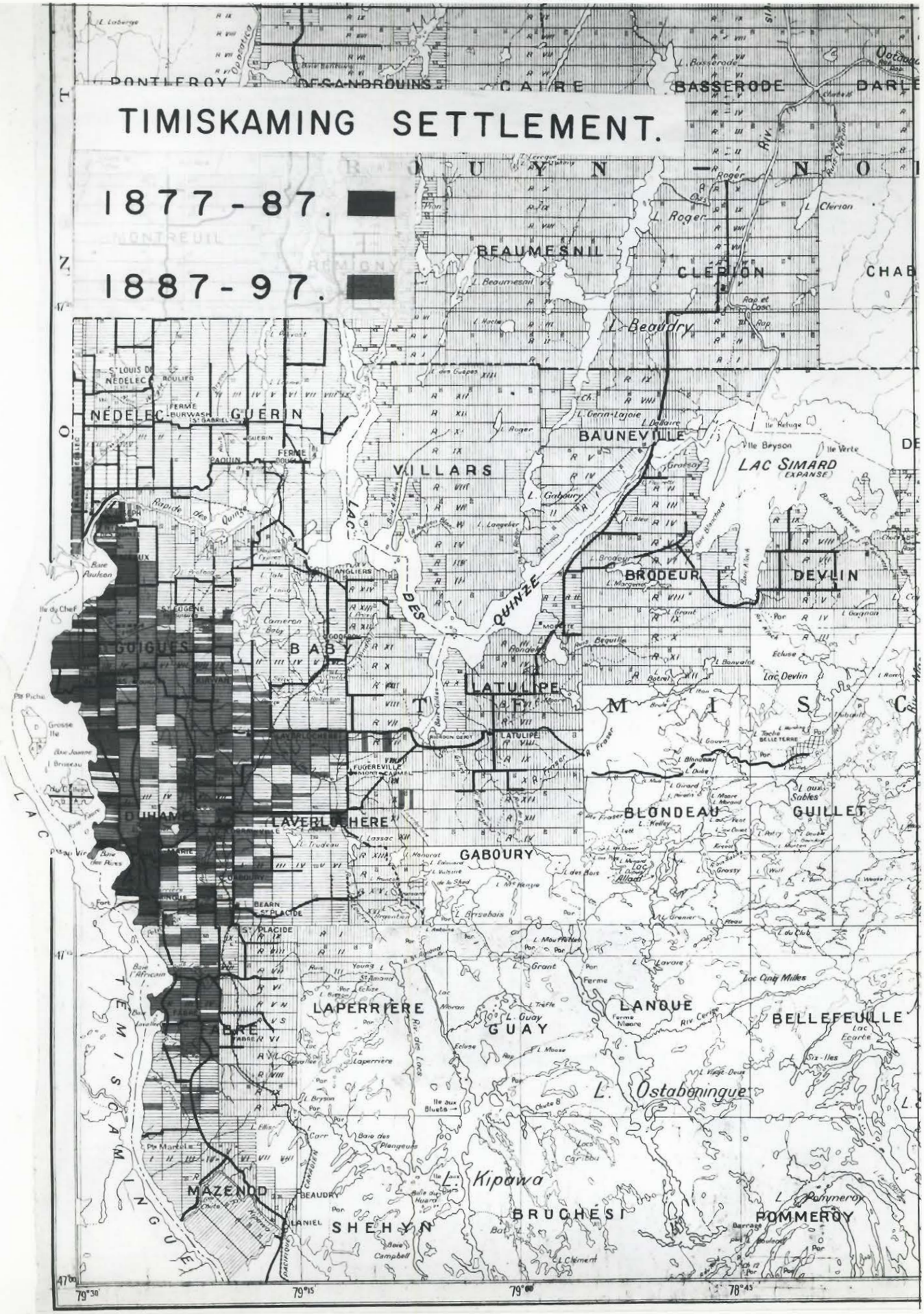
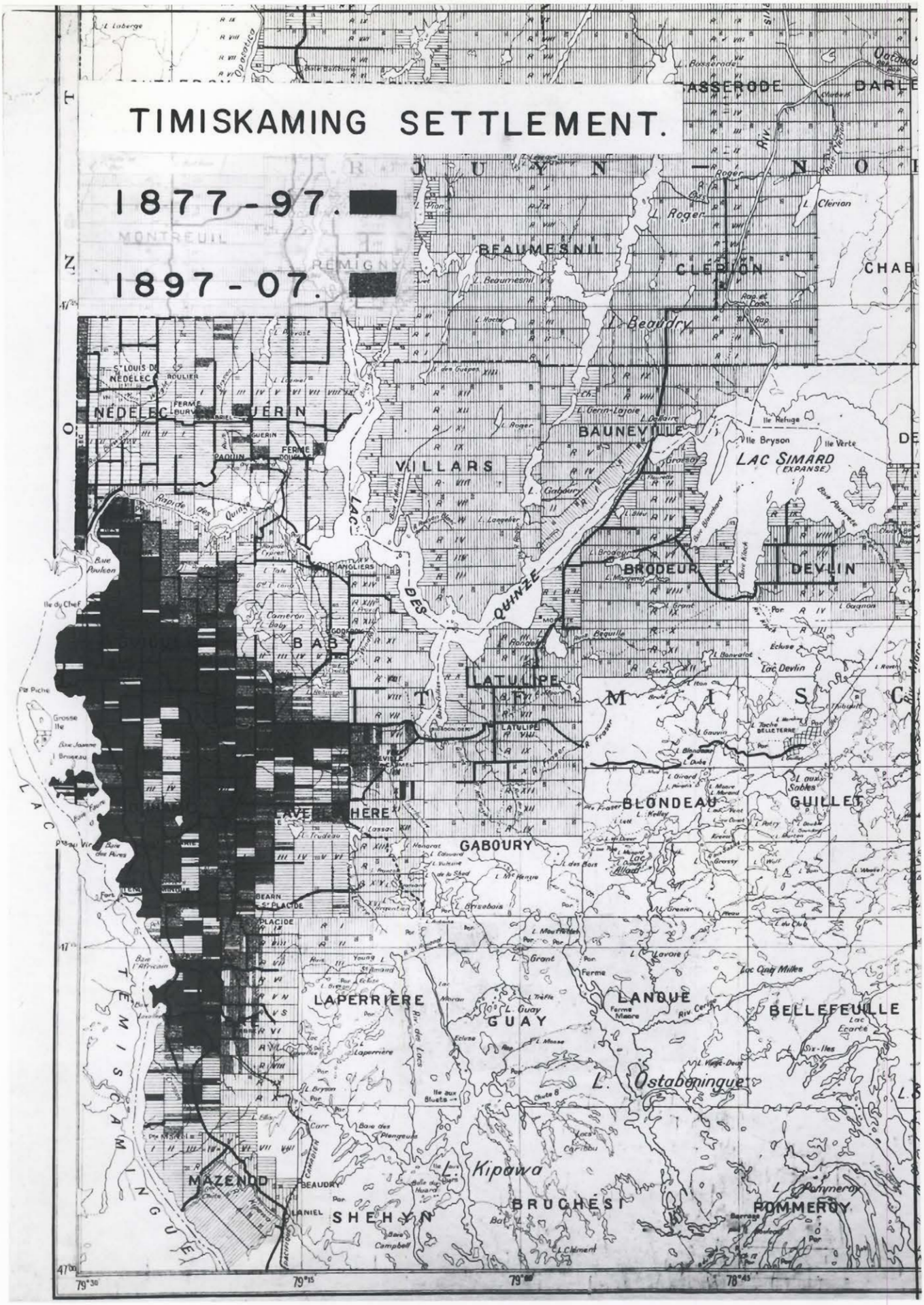
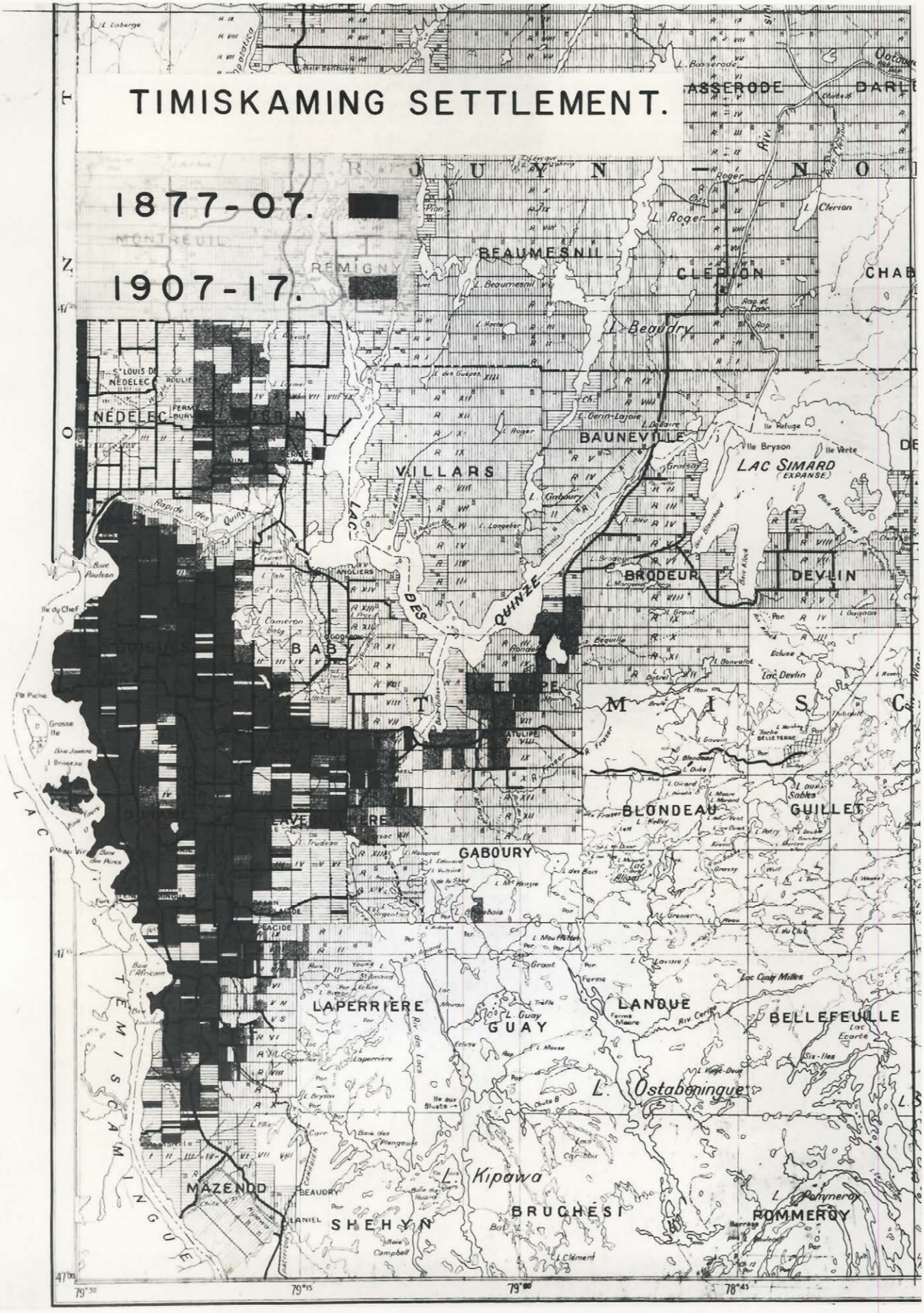
[1] Groulx, L., "Histoire du Canada Français, 2nd Part, De L'Autonomie à l'Independence 1848-1931". Montreal. Pages 179-180.


TIMISKAMING SETTLEMENT.
1877-87.
1887-97.
PONTLEROY
DESANDROUINS
CAIRE
BASSERODE
DARLE
BEAUMESNIL
CLERION
CHAB
L. Beaudry
NEDELEC
GUERIN
BAUNEVILLE
VILLARS
LAC SIMARD
EXPANSE
BRODEUR
DEVLIN
LATULIPE
GUIGUES
BABY
DUHAMEL
LAVERLOCHERE
GABOURY
BLONDEAU
GUILLET
LAPERRIERE
GUAY
LANGUE
BELLEFEUILLE
L. Ostaboningue
L. Kipawa
MAZENOD
SHEHYN
BRUCHESI
POMMEROY
TEMISCAMINGUE
79°30'
79°15'
79°00'
78°45'
47°00'


TIMISKAMING SETTLEMENT.
1877-97.
1897-07.
BEAUMESNIL
CLERION
BAUNEVILLE
VILLARS
BRODEUR
DEVLIN
LATULIPE
GABOURY
BLONDEAU
GUILLET
LAPERRIERE
GUAY
LANGUE
BELLEFEUILLE
MAZENOD
SHEHYN
BRUCHESI
POMMEROY
L. Ostabeningue
L. Kipawa
LAC SIMARD (EXPANSE)
LAC DES QUINZE
TEMISCAMINGUE
79°30
79°15
79°00
78°45
47°00


TIMISKAMING SETTLEMENT.
1877-07.
1907-17.
ASSERODE
BEAUMESNIL
CLERION
L. Beaudry
NEDELEC
BAUNEVILLE
VILLARS
LAC SIMARD
(EXPANSE)
BRODEUR
DEVLIN
BABY
GABOURY
BLONDEAU
GUILLET
LAPERRIERE
GUAY
LANDUE
BELLEFEUILLE
L. Ostaboningue
L. Kipawa
MAZENOD
SHEHYN
BRUCHESI
POMMEROY
LAC DES QUINZE
LAC TEMISCAMINGUE

PHOTOS 15 and 16 Farmland in Timiskaming; the photograph above illustrates the use of the old beach levels shown on the air photograph of the area.

PHOTO 17 A range line in Timiskaming, looking south in Duhamel Township.

PHOTO 18 Hay being cut on the sides of one of the incised streams in Timiskaming. End of August, 1958.

PHOTO 19

Part of Airphotograph A. 13126 No. 130, National Air Photo Library, Ottawa, showing Duhamel township and lots subject to repeated early settlement.

The photographs on pages 72 A and 72 B illustrate the farm landscape of this area today; one of scattered woodland and fenced fields. In general the area, being longer settled and nearer the hearthlands of Canadian settlement as well as being linked, albeit poorly by road to the mining region to the north, is one with a more mature cultural landscape than has Abitibi. Except on the east there is little present day land clearing and the farms are actually worked with a rotation system. This is usually one year of grain, with underseeded hay mixture, followed by two years of hay and one or more years of pasture. Most farms have about thirteen dairy cattle, Holstein being preferred, but few as yet are pure bred animals. About 60% of the people in the area live off their farms, though even milk production is very seasonal. Ten silos in the area point to plans for increasing winter feed and steadying the production throughout the year.[1]

The better farmers enter for a competition each year for planned production and the plan of one of these farms is appended indicating the changes that it is hoped to make in the future. Neither this nor the main features of the abridged economic analysis tabulated can be duplicated elsewhere in the Clay Belts. The fourth rated farm in Bearn township in particular is outstanding, though the mean figures indicate that the general position is rather different from the samples given, and the whole 25 farms on which the figures are

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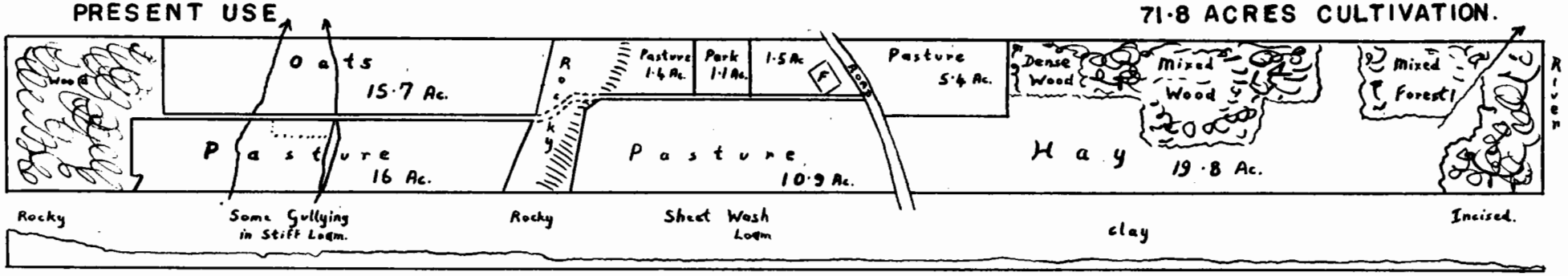
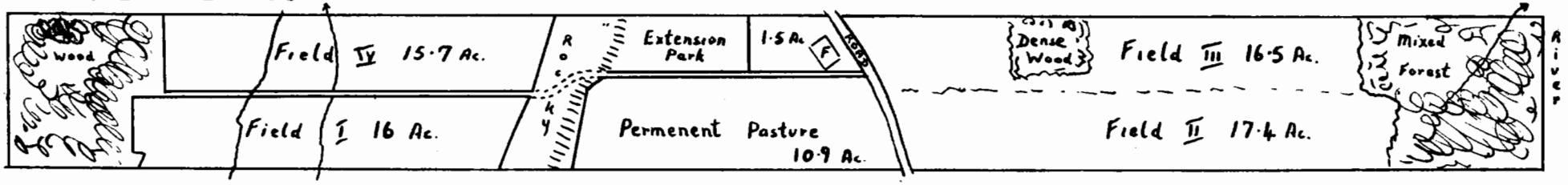
[1] Desjardins, M.P., Agronome, Ville Marie. 1958. Private Communication.

DIAGRAM OF A TIMISKAMING FARM

First Settled 11th July 1893.





Data From Ms. Map etc. M.P. Desjardins, Agronome, Ville Marie. Sept. 1958.

based for the mean are doubtless among the best farms in the area.

This area then, once the difficulty of access was solved by the provision of tramways round the rapids on the Ottawa, and then in 1896 by the building of the railway to Kipawa, quickly expanded and can be said to be fairly established. The great need left to be met is that of a good road south on the Quebec side of the lake to Timiskaming Station.

In Abitibi the background was similar to that at Timiskaming, but the immediate cause of the settlement was rather different. This was the building of the National Transcontinental railway from 1908 onwards. Thus communications here preceded settlement. The stations on the railway have become the main points of location for agglomerated settlement. Thus exactly as the 'Cumberland' or 'National' road following the flank of the height of land across Ohio and Indiana had led to the location of Zanesville, Columbus, Springfield, Indianapolis and Terre Haute where it crossed the north-flowing drainage, so the National Transcontinental where it crosses the La Sarre, Harricana, Laflamme and Bell Rivers has spawned the settlements of La Sarre, Amos, Barraute and Senneterre. This pattern and the development in depth of the agricultural settlement from these bridging points is well illustrated on the maps of land settlement in Abitibi prior to 1918.

To some extent the importance of the towns so located is directly related to the size of the river crossed. This must be associated not only with the navigability of the streams with particular reference to their use for floating timber, but also with the extent of riverine

TABLE XI

ABREGE D'ANALYSE ECONOMIQUE. FACTEURS DE SUCCES.

		Unites	1	2	3	4	Moyenne 25 Fermes
1.	Acres en récolte	Ac.	52	69	49	79	66
2.	Valeur récolte à l'âcre	$	16	44	35	47	37
3.	Livres de lait vendues par vache	lbs.	5,877	5,421	6,172	5,285	-
4.	Augmentation nette dans la valeur animale par $100 d'aliments consommés	$	196	156	247	237	157
5.	% des reçus-argent ne provenant pas du lait	%	30	32	50	50	37
6.	Indice du travail productif	%	79	63	96	132	-
7.	Roulement du Capital	an.	4.2	3.	2.5	2.9	3.1
8.	Profit total de l'exploitant	$	-79	1,226	1,275	1,685	777
9.	Unité animale par âcre		3.5	3.2	2.1	2.9	3.1
10.	Capital productif devra égaler 30% du capital total	%	13.6	16.7	21.9	18.7	16.7
11.	Le Capital en machinerie ne devra pas excéder $35 par âcre en culture (pâturages exclus)	$	63	64	28	40	57
12.	Capital moyen engagé dans l'exploitation	$	10,905	15,046	8,905	17,202	13,303
13.	Superficie totale	Ac.	200	112	213	200	-
14.	" en culture	Ac.	73	89	64	106	
15.	Nombre de vaches		10	16	11	15	13

Data from M. Désjardins, Agronome, Ville Marie.

flats and terraces available along the banks for agricultural use. These indeed, rather than the general spread of clay in the Clay Belt of Abitibi acted as the original nuclei of settlement. Perhaps the incision of the Abitibi river and the location of Cochrane off its course are pointers to the slower agricultural development of the region around that Company Town, whose location was thereby different.

The townships were laid out in the usual manner before the settlers came. Then they arrived and lived in the camps recently vacated by the railroad workers. Those settling in the La Reine area came from St-Charles-de-Mandeville, from St-Gabriel-de-Brandon and Portneuf whilst those settling Launay and Privat came from l'Islet and Wolf. La Sarre received its first settlers from St-Stanislas (Champlain), Landrienne its from Ste-Thecle and Barraute its from St-Basile (Portneuf).[1]

The recruitment of these people again appealed to the French Canadians to stick together and to continue the traditional way of life on the ranges. A further emphasis was placed on the strategic importance of the northwest of the Province.

> "It is a matter in fact of blazing a way for the church, of building it a solid bridge between Quebec and Manitoba by North Ontario along the Transcontinental from La Tuque and Lake St. John to Lake Nipigon, with Catholic parishes linking in with those of Timiskaming".[2]

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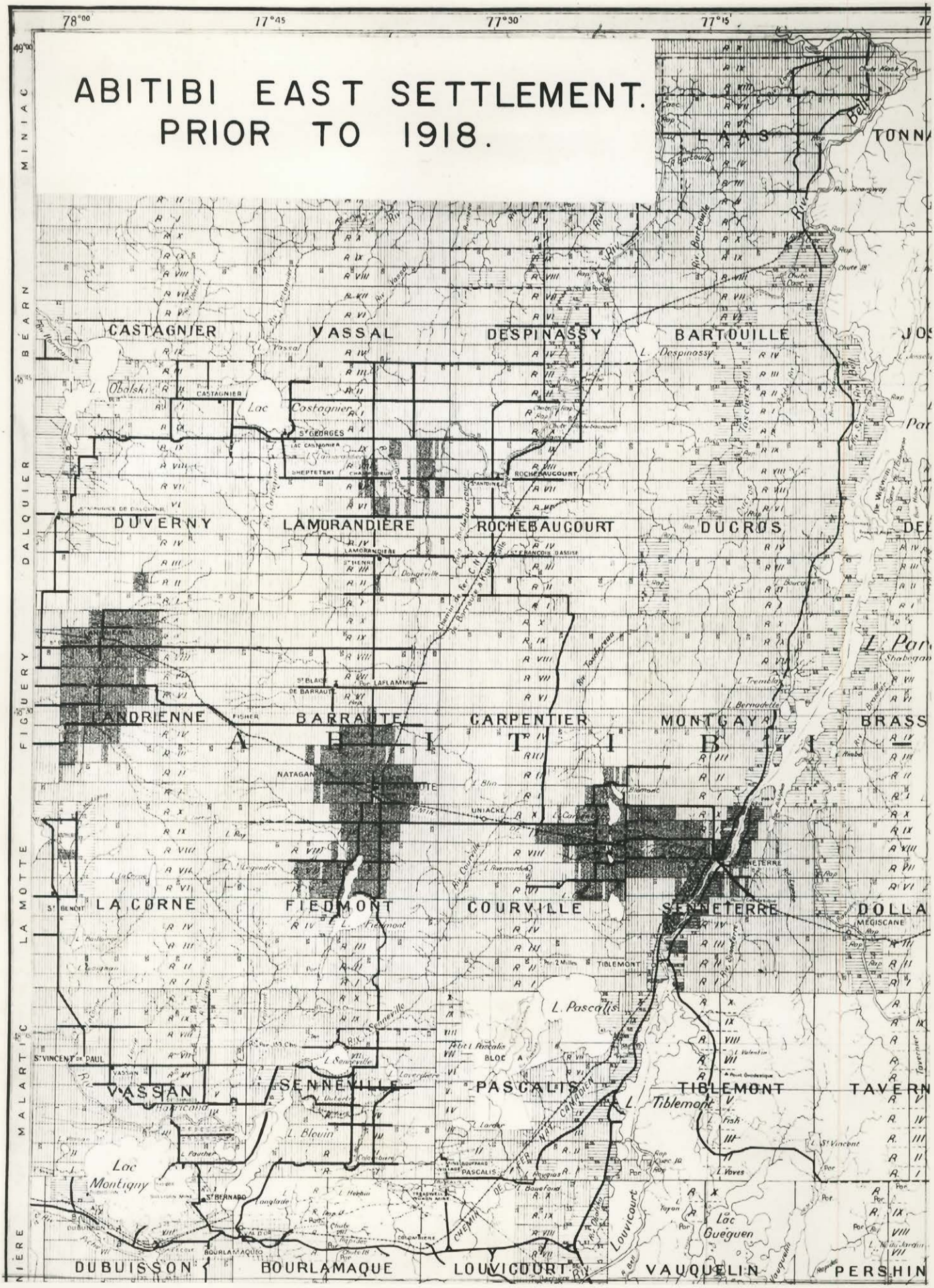
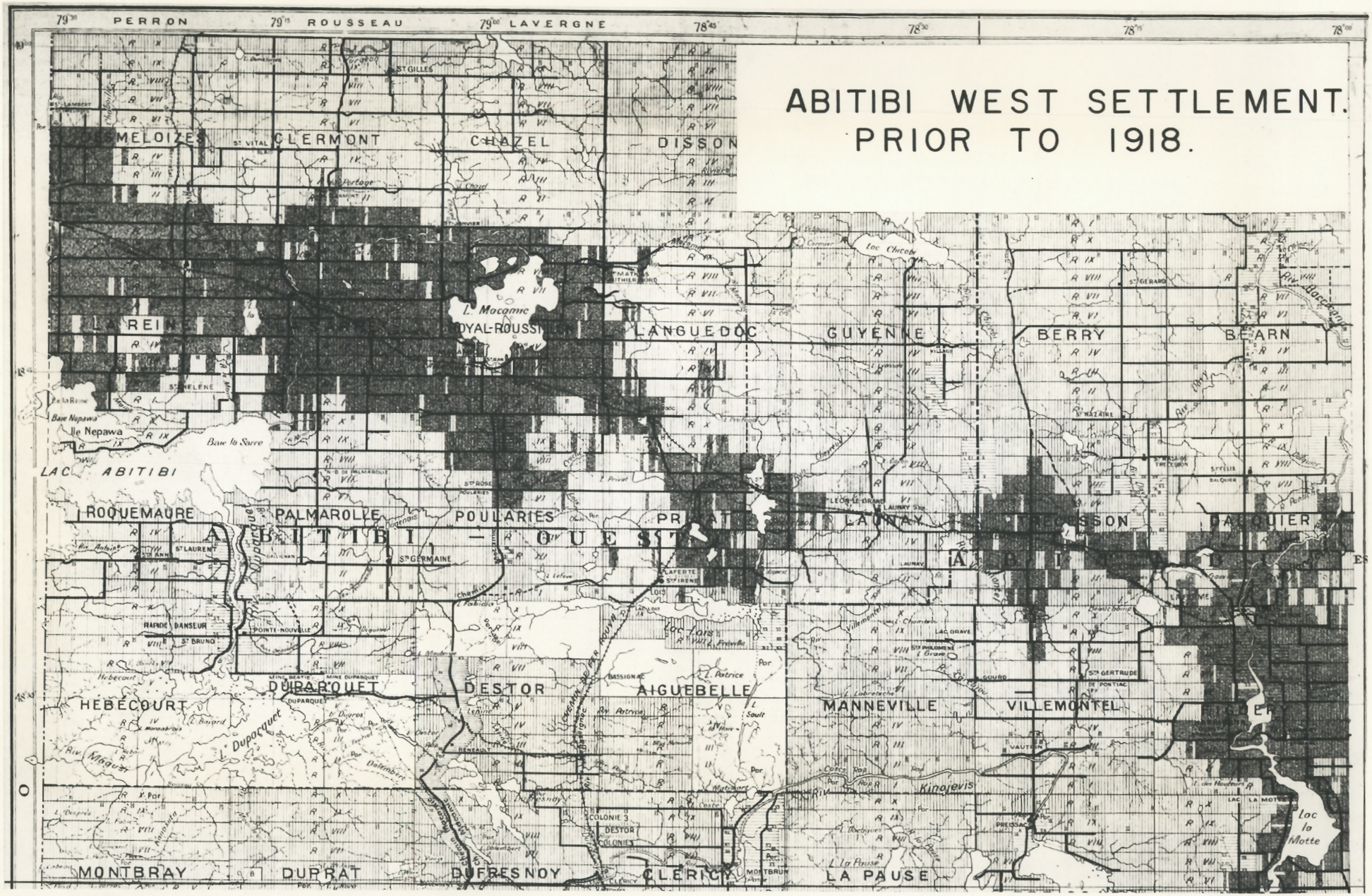
[1] Garon, J.E., "Historique de la Colonisation dans la Province de Quebec de 1825-1940". Ministere de la Colonisation, Quebec, 1940.

[2] Dugré, Rev. A., Montréal, 1917.

ABITIBI EAST SETTLEMENT. PRIOR TO 1918.




ABITIBI WEST SETTLEMENT.
PRIOR TO 1918.
PERRON
ROUSSEAU
LAVERGNE
MELOIZES
CLERMONT
CHAZEL
DISSON
LA REI
LANGUEDOC
GUYENNE
BERRY
BEARN
LAC ABITIBI
ROQUEMAURE
PALMAROLLE
POULARIES
LAUNAY
ABITIBI — OUEST
HEBECOURT
DUPARQUET
DESTOR
AIGUEBELLE
MANNEVILLE
VILLEMONTEL
MONTBRAY
DURRAT
DUFRESNOY
CLERICY
LA PAUSE
Kinojevis
lac la Motte

Abbé Caron was the leading missionary coloniser and personally recruited and accompanied trainloads of settlers into the area, the approach at first having to be via Cochrane in Ontario as the railroad was not completed beyond Amos to the east for some years. In 1913 Abitibi had 329 inhabitants and in May 1914 the Abbé added a train-load of 230 more, and in June a further 214.[1] These came mainly from Berthier and Champlain counties and the maps show the way in which the land was settled around the main stations situated on the northward flowing streams where they were crossed by the railroad. Here as is indicated once again by plotting the lots where difficulty in settlement was encountered, this time near La Reine, there was no improvement in the land division or in the choice of lots.

Population increased more rapidly in this northern area than to the south. In 1913 Abitibi had 37 families, in 1914, 107; in 1915, 145; in 1916, 255; and in 1917 there were 635 families with 4,067 persons.[2] By the 1921 census 13,000 people were in the area and in the succeeding decades there were 22,000; 52,000; and in 1949, 79,000 people. In 1958 the 'Annaire Ecclesiastique' for the diocese of Amos lists 79,910 people, 76,182 of whom were Catholics,[3] and gives the population for each parish from which a density map has been

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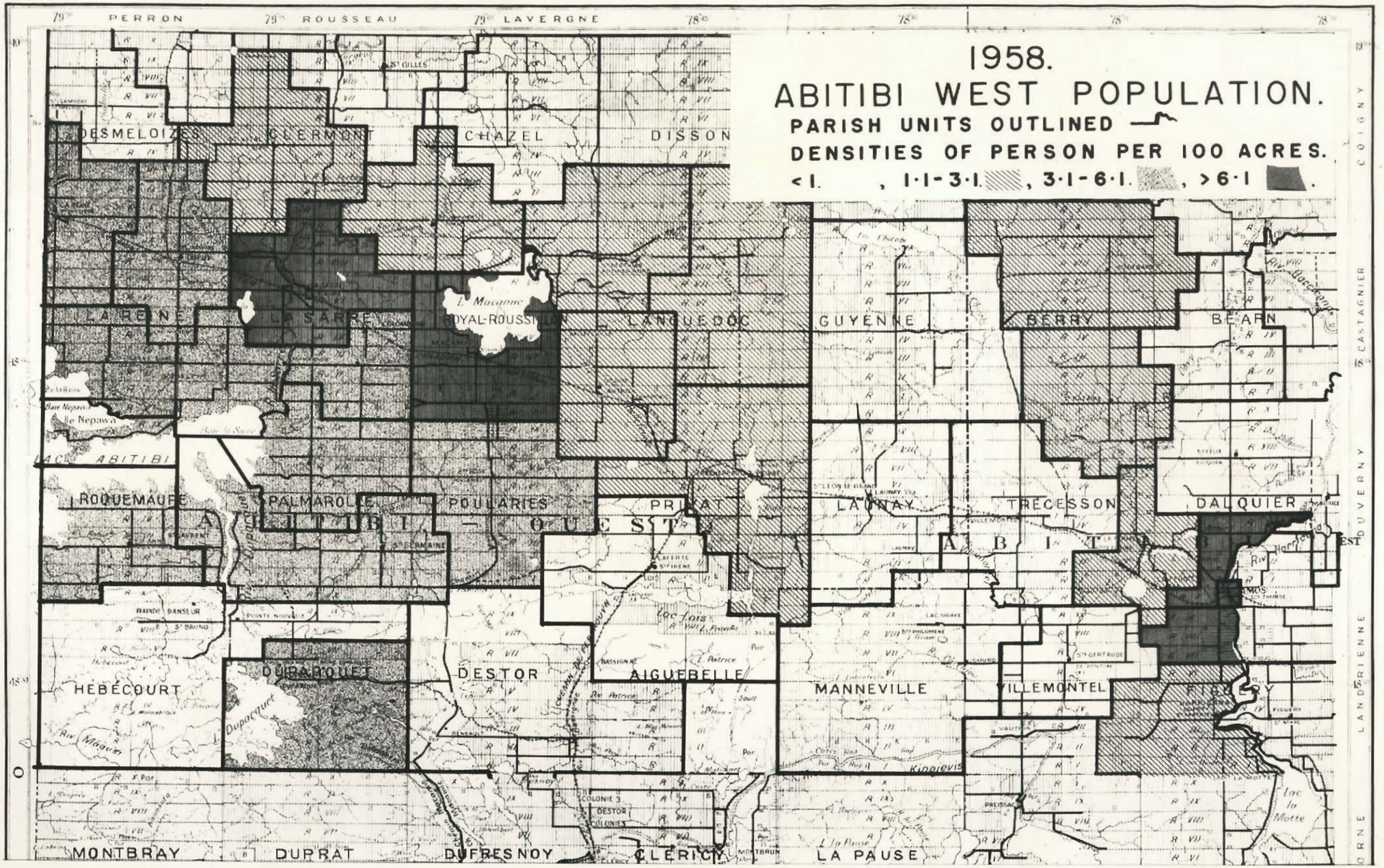
1 Blanchard, R., op. cit., pages 64 and 65.

2 ----Rapport generale du Ministere de Colonisation 1921. Quebec, 1921. Pages 287-295.

3 Chancellerie de l'Evêche, "Diocese d'Amos, Annaire Ecclesiastique". Amos, 1958.

PHOTO 20 Part of Airphotograph A. 13382 No. 49, National Air Photo Library, Ottawa, showing La Reine area, lots subject to frequent turnover, and interprovincial border.


1958.
ABITIBI WEST POPULATION.
PARISH UNITS OUTLINED
DENSITIES OF PERSON PER 100 ACRES.
<1. , 1·1-3·1. , 3·1-6·1. , >6·1 .
PERRON
ROUSSEAU
LAVERGNE
DESMELOIZES
CLERMONT
CHAZEL
DISSON
LA SARRE
LANGUEDOC
GUYENNE
BERRY
BEARN
LAC ABITIBI
ROQUEMAURE
POULARIES
PRIVAT
LAUNAY
TRECESSON
DALQUIER
A B I T I B I - O U E S T
A B I T
HEBECOURT
DUPARQUET
DESTOR
AIGUEBELLE
MANNEVILLE
VILLEMONTEL
MONTBRAY
DUPRAT
DUFRESNOY
CLERICY
LA PAUSE

produced. The exact location, however, of the rural population is along the range lines where the roads run, and the figure of five inhabitants per house can be used as a rough estimate. The main high densities on the map, it will be noted are still in the core regions of earliest settlement, and only in the case of La Sarre and Amos are the conurbations sufficiently large to exaggerate the overall densities. The lower densities in Guyenne, Launay, and Tresson, where it will have been noted from the settlement map[1] there was little early settlement, and where the present day land use map[1] also indicates a lack of agricultural development, there is a markedly sandy stretch of country. This is interpreted as an esker in origin, but may have been associated with the junction moraine between the ice moving from the northeast and that from the northwest. The densities of population of parishes only partially on the map have been excluded but in every case, those to the east of Amos excepted, they are low. The higher density in Duparquet is entirely due to the mining operations, some 77% of the farms there being abandoned and the land idle and the houses empty, the settlers having gone to work in the mine, or elsewhere, full time.[2] In the mining area to the south this is very common, the farms in the pockets of clay land being almost entirely worked, if at all, on a part time basis.

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[1] Cf. Maps on Pages 77 and 13.

[2] McDermott, G.L., Private Communication, December 1958.

Between the wars much money was spent on settlement schemes.

> "As early as 1923 the Quebec Provincial Department of Colonisation gave financial help to settlers and numerous colonisation schemes have since been devised with a view to opening up new territories and providing means whereby settlement would be facilitated".[1]

The most ambitious of these was the Vautrin scheme started in 1934 to settle unemployed from the cities on the land, but owing to the unsuitability of this type of person only a measure of success resulted. Rocquemaure was the last notable prewar scheme, and after one bad winter when food had to be rushed in to the settlers by the church, the township got established and today is reasonably prosperous, though as elsewhere in Abitibi appearances are deceptive as there is much indebtedness on the farms.

Since the war clearing has been further mechanised and,

> "whereas prior to 1940 a farm could be cleared by hand methods at the rate of 5 to 8 acres a year, at present mechanical, power bush clearing equipment can clear 10 to 20 acres a day".[2]

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[1] Gosselin, A. and Boucher, G.P., "Settlement Problems in Northwestern Quebec and Northeastern Ontario". Economic Annalist, Vol. 8, Dec. 1938. Page 84.

[2] Robinson, L.J., "The Northern Extension of the Pioneer Fringe of Agriculture on the Great Plains of Canada". Proc. 8th Gen. Assem. and 17th Internat. Congress, I.G.U. Washington, 1952. Page 657.

PHOTOS 21 and 22 Rocquemaure prewar settlement.

In the Clay Belts of Quebec in particular the 'grande charrue' is used to plough bush up when it has been partially cleared. Thus we are in a new mechanical phase of pioneering, and in Abitibi the outstanding example of this has been in the settling of Guyenne in 1947. Here land was cleared and housing provided before settlers arrived, and the whole has since been run as a co-operative community under the agricultural advisers and the priest. As Vanderhill has recently said,

> "since man, after all, is a very active variable in the land-use equation, it is conceivable that the pioneer fringe might wither away or be obliterated by the agency of men. Abandonment of the poorer lands might accomplish this.[1] Some abandonment is in evidence in every part of the pioneer fringe. Technological advances or sheer pressure of population might convert marginal lands into economic holdings. Already mechanisation is modifying the pioneer processes."[2]

As ever in Abitibi and Timiskaming it remains to man to make up his mind as to whether to withdraw or to pay the ever increasing price required to consolidate his past achievements.

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[1] See Appendix on St. Mathieu Parish and note abandonment.

[2] Vanderhill, B.G., "Observations in the Pioneer Fringe of Western Canada". Journal of Geography, Vol. 57, Dec. 1958. Volume 9, National Council of Geographical Education. U.S.A.

PHOTO 23 La Grande Charrue in action in Abitibi. Settlers are charged about a sixth of the operating cost.

PHOTO 24 Guyenne, cleared and first settled in 1947 is a co-operative community.

PHOTO 25 Guyenne is still the scene of active land clearing.

PHOTO 26 Mechanically cleared land, Belcombe.

CHAPTER VIII

CONCLUSIONS

In the Clay Belts of Quebec there is a rural landscape that, though still raw in many places, testifies to the validity of the vision of the original colonisers. Yet their 'bridge' to the prairies is not yet built and the pace of advance is slackening. This could be associated with the pull of economic factors such as those mentioned above, or it might be that the attractiveness of virgin land is waning. However, it is equally our contention that this is due to a blurring of the ideal that originated the settlement. That is to say, the economic factor is re-evaluated in terms of the thoughts of today's people, and material well-being is becoming more important to them than their ideal. Where this happens the human race become determined rather than acting as the determining agent on landscape.

It is of course realised that the study herein presented is but a pilot scheme for the study of the success achieved by the French Canadians in turning their ideals into facts, far less a final word on the general possibilist contention, but it is a start and is submitted as such. Further work is planned on the Clay Belts since 1917 and on the general problem in North America and elsewhere.

Furthermore, this study would suggest that there is not only ample detailed factual information provided in the Land Sales records and the like, available for work in the general field of historical geography in North America, but also adequate supplementary material for the idealist approach to be used. Hence something of the richness of the pioneering era can be reconstructed beyond the mere, but essential, facts of the advance of the 'frontier', and a better appreciation of our forefathers can be attained. Moreover, knowledge about them is knowledge about ourselves.[1]

Looking to the future such an undertaking would seem to indicate the need for study to avoid the mistakes of the past and planning of such a kind that when welded to a new freedom of the individual to convert his ideas into landscape facts, he will be able to do so with the highest possible chance of success.

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Appendix A. Copy of a Report on St.-Mathieu-d'Harricana Parish, County of Abitibi East, Diocese of Amos, made by the Service of Economic Studies for the Ministry of Colonisation, Quebec. May 1953.

Date of first clearing in Parish		1915.
Canonical erection		1922.
Population in 1952		417.
Total number of lots in parish.....		275.
Number of Patented lots	55.	
Lots under location ticket....	82.	
Transfered to Colonisation....	46.	
Lots not transfered	92.	
	275.	

Lots unsuitable for agriculture .... 60½.

Figuiry Township.

Range I	Lots 1-17.
Range II.	Lots 3-19. 5/6th. South of 20, and 5/6th. South of 20-25.
Range IIIl	Lots 3-8.
Range IV.	Lots 5-8.
Range V.	Lots 7-12.
Range VI.	½ N. of 4-6, all 7-9.

These will be put into Canton Reserve Forest.

Total Number of Lots to be made into new establishments.....63.

Area of total is 27500 acres, or 45 sq. Miles.

Area Conceded 13,700 Acres.

a) 5,500 Ac. Patented .....

b) 8,200 Ac. on bill of location...

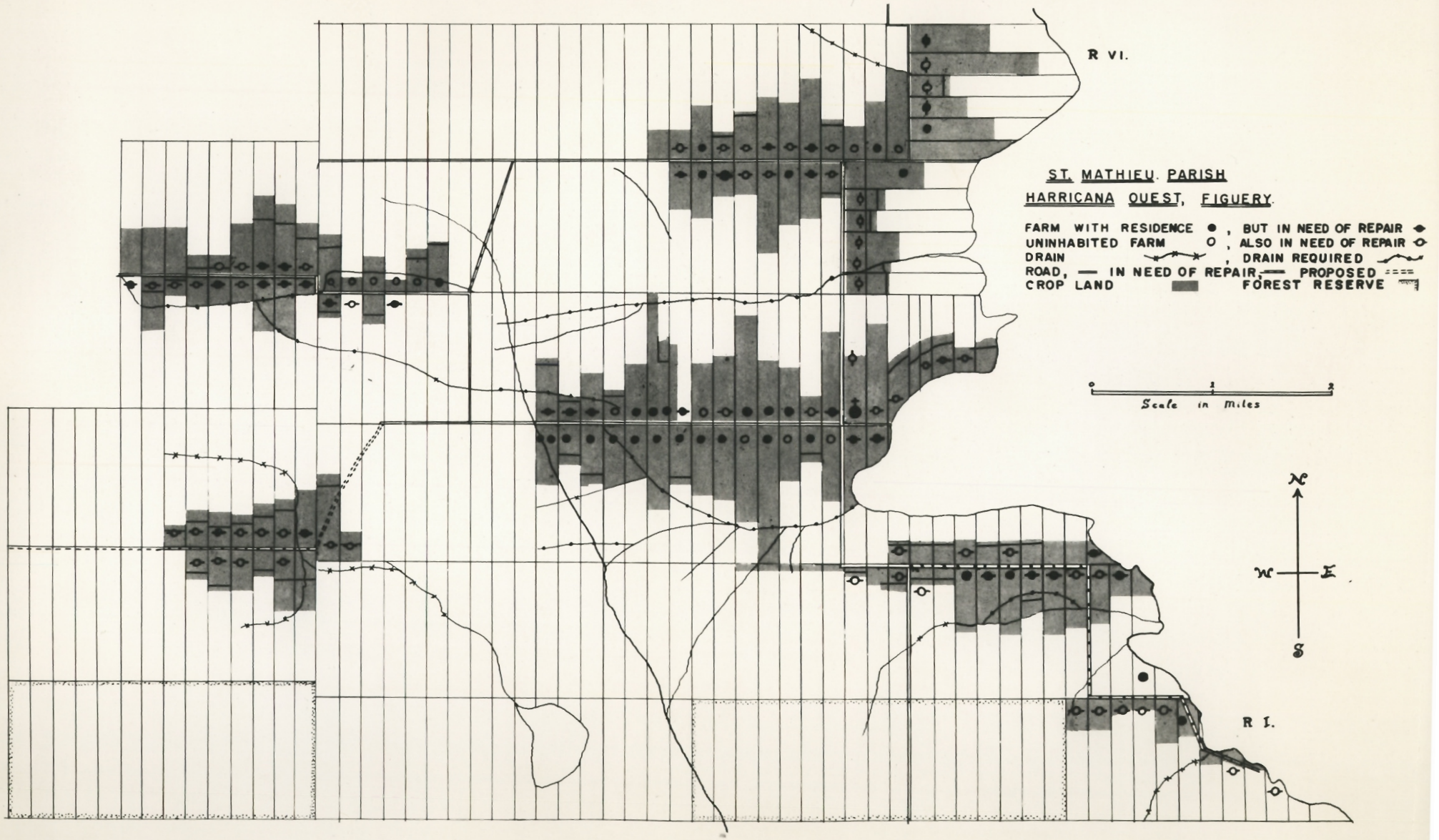
13,700.

Not Conceded; c) Transfered to Colonisation 4,600 Ac.

d) In Canton Forest Reserve. 3,100 Ac.

e) Vacent and held by Dept. of Lands and Forests 6,100.

13,800.


R VI.
ST. MATHIEU PARISH
HARRICANA OUEST, FIGUERY.
FARM WITH RESIDENCE ●, BUT IN NEED OF REPAIR ◆
UNINHABITED FARM ○, ALSO IN NEED OF REPAIR ◇
DRAIN, DRAIN REQUIRED
ROAD, — IN NEED OF REPAIR, — PROPOSED
CROP LAND, FOREST RESERVE
0 1 2
Scale in Miles
N
W E
S
R I.

Status of all Conceded Land.

a)	Ploughed	3,889 Ac.
b)	Worked round stumps	20 Ac.
c)	Not worked brush	15 Ac.
d)	In usuable forest	3,124 Ac.
e)	In non useful forest	6,152 Ac.
f)	Water bodies, marshes etc...	500 Ac.
		13,700 Ac.

Population.

Total in 1942 ..... 454.
Total in 1952 ..... 417.

71 families, 69 are cultivators all of whom are located on the ranges. There are two non. cultivating families living in the village. There is no doctor, no nurse and no professional person in the parish. There are however, one Carpenter, one plumber, one butcher, and one Contractor in the community.

Status of Young People.

2 are studying.
12 work on father's farm.
6 are already established on the land.
5 wish farms of their own.
35 remaining all want other work than farming.

Amenities.

Church located on south of lot 25, Range IV. Figury.
Schools located on Lot 35, Range II.
Lot 15, Range IV.
Lot 25, Range IV.
Lot 26, Range VI.
in Figury and
in Villemontel Lot 57, Range V.

U.C.C. circles . One of 20 members.
Agricultural Co-Op. of 52 members.
A Work Syndicate.
20 Young Farmers.
26 Agricultural Society members.
27 Agricultural Society women members.
165 in Casse Populaire with 23,000 Dollars in active funds.

Means of Living, for 47 families.

18 live from farm revenues only.
29 gain livilihood from farm and other jobs.
Of latter 12 go wood cutting.

Means of living continued.

Mean farmers income	2,900 Dollars.
From agricultural work on the farm.....	2,000 Dollars.
From forest work on the farm	150 Dollars.
From wood cutting for sale	600 Dollars.
From land clearing premiums	150 Dollars.
TOTAL.....	2,900 Dollars.

Agriculture.

Occupied farms	108.
With house .. 59 without house	49.
Abandoned or unoccupied farms .	14.
Total Number of farms	122.
Total farm area	10,400 Acres.
Mean farm size	100 Acres.
Total Cultivated area	3,889 Acres.
Mean per farm	37 Acres.

Farms needing buildings; new or repairs .. 98.

a) On inhabited farms 36
b) On uninhabited farms 45
c) On unoccupied farms..... 17.

Farms needing Drainage.

Inhabited Farms.

Figury .Lot 40 .....Range I
....Lots 30-34 and ½ N. 37-38 and ½ S. 37-38 Range II.
....2/3rds East of Lot 12, Lots 13-16, 23, and ½ S. of river of 34-36. Range III.
....11-13, 15, 2/3rds. W. of 16. 1/3rd. E 16, 1/3rd. W. of 17. Range IV.
....Lots 17-19, 22, 23, Range V.
....Lots 23-24. Range VI.

Villemontel Lots 57-58..... Range IV.

Uninhabited Farms.

Farms needing Drainage.

Uninhabited Farms.

Figury.	Lots 1/4th N. 36,	
	½N. 37 and 38.	
	All lots 39, 41 and 42.	
		Range I.
....	Lots 1/6th N.of20-25.	
	All 26 and 27.	
	3/4ths. N. of 28.	
	½N. of 28.	
	All of 35 and 36.	
		Range II.
....	Lots 22, South of River of	
	27-29, and 30,31,32,33,	
		Range III.
....	Lot 14.	Range IV.
....	Lots 1-4, 20 and 24.	
		Range V.
....	Lots 16-17 and 31-32.	
		Range VI.
Villemontel	Lots 54-56 and ½N 57and58.	
		Range II.

Total areas needing drainage on inhabited farms
318 Acres.
on uninhabited farms
422 Acres.
TOTAL ..... 740 Acres.

Number of Farms with land ready to be stumped.
a) Inhabited farms ..... 47.
b) Uninhabited farms ... 60.

Production of Farms.

There are three hen rearing establishments of commercial importance.

Output sold off farms.
Hay..... 372 tons.
Oats .... 150 sacks.
Cream.... 47,650 lbs.
Meat .... 86,500 lbs.
Potatoes. 892 sacks.

Bought in.
Hay..... 134 tons.
Milled oats
about 200 tons.
Butter... 1610 lbs.
Cases Milk.. 4.

Appendix A.

Roads.

All those in existence, some 20miles in length need improvement.
To be constructed..... $2\frac{3}{4}$ miles.
In urgent need of repair... $5\frac{1}{2}$ miles.

Forest.

Total wood needed for construction and repairs..... 2,294,000 P.M.P.
a) For inhabited farms.....677,000 P.M.P.
b) For uninhabited farms..1,147,000 P.M.P.
c) For unoccupied farms....470,000 P.M.P.

Wood needed annually.
a)By families (each) 1) For construction and repairs.....2,000 P.MP.
2) For heating .. 30 Cords.
b)For all Parish.
1) For construction and repairs.....100,000 P.M.P.
2) For Heating...1,800 Cords.

12 Farms have sufficient wood to sell some.
Quantities sold-
a) For sawing..... none.
b) For heating..... 75 Cords.
c) For pulp..... 100 Cords.
30 Farmers get wood from outwith the Parish.

There is a forestry syndicate which cuts for the International Paper Company. The cut is of the order of 1,250,000 P.M.P. in a season and is from the Lake Granat area 45 miles from Val d'Or.

Implements and stock.

Number of ploughs	60
Number of harrows	66
Carts	79
Miscellaneous	50
Number of horses	65
Number of milk cows	361
Number of heifers	113
Number of bulls	28
Number of sheep	43
Number of pigs	80
Number of fowls	668

(25 more sheep are required to complete the flock.)

The following lots are judged improper for cultivation and should be made into forest reserve land.

Figury Range I ....Lots 1-17
Range II ....Lots 3-19, 5/6ths. S. of 20, 5/6ths. S. of 21-25.
Range III ...Lots 3-8.
Range IV ....Lots 5-8.
Range V .....Lots 7-12.
Range VI ....Lots ½N. of 4-6, and 7-9.

The following lots are to be classified.

Figury Range I ..... Lots 35, 36, ½S.of 37, ½S. of 38.
Range II ..... Lots 1 and 2.
Range III..... Lots 9 and 10.
Range IV ..... ½S. of 3, ½S½ of 4, and Lots 9 and 10.
Range V ..... Lots 13-16.
Range VI ..... Lots 1, 2, 3, ½S of 4, ½S. of 5, and ½S. of 6, all of 10-16.

Villemontel.
Range II. ..... Lots 56, ½S. of 57, ½S. of 58.
Range V ..... ½N. of 53, ½N½ of 54.

The following Patented lots are to be rebought.

Figury Range I ..... Lot 42.
Range II ..... Lots 26 and 27.
Range III ..... Lots S. of river 30.
Range IV ..... Lots 23, 25 and 29 N. of river.
Range V ..... Lots 24-29 inc.
Range VI ..... Lots 18, 20, 32, and 33.

The following lots under location ticket are to have the tickets revoked.

1) With Compensation.

Figury	Range I	Lot 43.
	Range II	¾N. of 28, 30.
	Range III	Lot 22, 31 S.of river. 32 and 33 S. of river.
	Range IV	Lot 30 N.of river.
	Range V	Lots 5 and 6.
	Range VI	Lots 17, 19 and 25.
Villemontel	Range II	Lot 55 and ½N of 57.
	Range III	Lot 57.
	Range V	Lot 56.

Lots under location ticket which are to have the ticket revoked.

2) Without Compensation.

Figury	Range III	Lot 1.
	Range IV	Lot 1 and ½N. of 3 and 4.
	Range V	Lot I.
Villemontel	Range IV	Lots 51, 53, and 54.
	Range V.	Lot 58.

Lots transferred to Colonisation to be conceded as establishments.

Figury	Range III	Lot 2.
	Range IV	Lot 2.
	Range V	Lots 2-4.
Villemontel	Range II	Lots 45-52.
	Range III	Lots 45-51.
	Range IV	Lots 52 and 55.
	Range V	Lots 50-52.

Lots unoccupied or non cultivated.

Figury	Range III	Lots 1 and 2.
	Range IV	Lot 2.
	Range V	Lots 1,2,3,4,5.
Villemontel	Range II	Lot 54.
	Range III	Lot 57.
	Range IV	Lots 51,52, and 58.
	Range V	Lot 58.

Lots Patented in the parish.

Figury	Range I	Lots 39,40,41, and 42.
	Range II	Lots 26, 27, 31, 35, and ½S. of lots 37-39.
	Range III	Lots 19, 21, 24, 25, 26, 30 and 35.
	Range IV	Lots 15, ½W of 16, ¾E.of 17, 18,19, 20, 21, 23, 24, 25, 26, 28, and 29.
	Range V	Lots 20, 21, 23-30.
	Range VI	Lots 18,20, 21-24, 26-29, 32,and 33.

Notes on Appendix A.

The foregoing appendix illustrates the throughness of the work that has been already done for some small sections of the Clay Belts of Quebec. The larger part of this information is already collected and held by government departments, and hence it was felt by the author to be unadvisable to spend time and resources in collecting the same information independently. Unfortunately the sources of the data are however scattered around various government departments in Quebec city who deal with the various aspects of the economy. Moreover, for obvious reasons the more recent information is not generally available. Hence the kind of accurate detail illustrated above can only be achieved for the whole area by a government worker who has full access to all the relevant files.

It should be noted nevertheless form the above report that abandonment is an acute problem in some areas of the region, and that various points made in this thesis, such as the cutting of wood at some distance, are substantiated.

Appendix B.

Constitution et Règlements de la Société du Lac Témiskaming, from "Au Lac Témiskaming", published by the Société in Ottawa 1885.

Art. 1ère. L'association fondée sous la constitution qui suit prend le nom de 'Société de Colonisation du Lac Témiskaming. Cette association est fondée sous le patronage de Nos Seigneurs les évêques d'Ottawa et de Cythère, Vicaire-Apostolique de Pontiac.

Art. 2ième. Le siège de ses opérations est à Hull, comté d'Ottawa et province de Quebec.

Art.3ième. Le but de la société est de coloniser le haut de la région du lac Témiskaming, en particular les cantons Guigues et Duhamel et à l'est de ces cantons, les avoisinant, une étendue de terres suffisante pour former deux autre cantons en venant au secors des colons pauvres qui voudraient s'y établir.

Art.4ième. Pour devenir membre de la société, il faut donner son nom au conseil d'administration soit par l'entremise de l'un des membres du conseil, soit par le secrétaire-trésorier, et remettre à ce dernier au moins le premier versement de sa souscription, et alors le trésorier devra soumettre cette demanande à l'approbation du conseil d'administration. En cas de refus d'admission, la somme versée entre les mains du trésorier sera remise au dit appliquant.

Art.5ième. La souscription des membres de la société est fixée à cent piastres par lot de cent acres pris par les dits souscripteurs, payable au comptant ou par versements annuels de pas moins de vignt piastres.
Les membres fondateurs de la société devront faire leur premier versement en quatre paiements égaux et consécutifs de cinq piastres chacun, le premier devenant échu dans les trente jours de la date de la reconnaissance de la société par le governement, et les trois autres de trois mois en trois mois ensuite.

Art. 6ième. En retour de la dite souscription, la société s'engage à défricher dix acres sur chaque lot de cent acres pris par les souscripteurs, et pour chacun desquels il aura été payé cent piastres à payer le prix d'achat au gouvernement, et à livrer au souscripteur le billet de location du dit lot, cinq ans après le premier versement fait.

Art. 7ième. Il sers du devoir du secrétaire-trésorier, à l'époque des paiements annuals de donner avis aux souscripteurs de payer leur versement, et si dans trente jours après l'époque fixée pour tels paiements, ils ne sont pas faits, le patron en défaut cessera par la même de faire partie de la société, perdra ses droits et le montant de ses versements payés, et la dite société aura le droit de transporter son lot à un autre sociétaire.

Art. 8ième. Les affaires de la société seront gérées par un conseil d'administration, formé des patrons de la société, Nos Seigneurs les évêques d'Ottawa et de Cythère, et de sept directeurs, parmi lesquels on choisira un président et un vice-président.
Le président préside les assemblées générales et les séances du conseil. Il a voix prépondérante.
En son absence, le vice-président le remplace avec tous ses pouvoirs.
En leur absence, un président pro tempore peut être élu.
Le secrétaire-trésorier choisi par le conseil n'a pas voix délibérative. Il sera le dépositaire et ne se dessoisira des sommes d'argent et autres valeurs appartenant à la société que sous la direction du conseil.
Il tiendra les divers comptes dans lesquels il entrera toutes les opérations monétaires de la société régulièrement et sans retard.
A la fin de l'exercise, ou plus souvent s'il en est requis par le conseil, il présentera à celui-ci ainsi qu'a l'assemblée générale de la société un état de compte des affaires financières de la société. Il tiendra aussi les minutes des délibérations du conseil et de la société, dans ses régistres spéciaux, et les procès-verbaux seront signés par celui qui présidera l'assemblée et contresignés par le secrétaire.
Il pourra se nommer un assistant s'il le juge nécessaire; mais cet assistant ne pourra agir

au place ou au lieu du secrétaire qu'après que son choix aura été approuvé par conseil. Tout membre du conseil d'administration qui désirera se retirer de telle administration le fait par avis donné au conseil d'administration par l'entremise du secrétaire-trésorier.

Art. 9ième. Les vacances, qui surviendront dans le conseil d'administration, seront remplies par le conseil lui-même et cette nomination vaudra jusqu'a la première assemblée de la société qui suivra cette nomination.

Art,10ième. Sur la réquisition du président ou en son absence, du vice-président ou de quatre directeurs, et après avis au moins de 6 jours, le conseil sera tenu de siéger pour l'expédition des affaires. Une assemblée générale de la société autre que l'assemblée annuelle, ne peut être convoquée que sur la décision de la majorité des membres du conseil par avis donnés dans les journaux français d'Ottawa et de Hull 6 jours au moins avant la date de telle assemblée.

Art.11ième. Le quorum du conseil sera trois membres, et celui d'une assemblée générale de la société de dix.

Art.12iem. Les séances du conseil seront ouvertes par une prière et par la lecture du procès-verbal de la dernière séance et par l'inspection des livres de comptes si le conseil ou l'un de ses membres le juge à propos.

Art.13iem. Chaque année, pour le premier mardi de février, le président, ou, en son absence, le vice--président, ou en leur absence, quatre membre du conseil, convoqueront, par avis donné au moins 6 jours d'avance dans les journaux français, publiés à Hull et à Ottawa, une assemblée générale des membres de la société, pour l'examen des affaires de la société et pour l'election d'un conseil d'administration pour l'année suivante.
Les anciens membres du conseil seront réeligigles.
Lorsque plus d'un candidat aura été propose pour la même charge, le secrétaire-trésorier comptera les votes, et le président proclamera élu celui qui aura la majorité des suffrages.

Art. 14ième. Pour avoir droit de voter à une assemblée générale, il faudra avoir payé ses arrérages et sa contribution annuelle pour l'année courante.
Tout membre absent et qualifie pourra donner une procuration à un autre membre l'autorisant à voter pour lui. A cette assemblée générale, tout membre pourra demander l'inspection des livres de comptes du secrétaire-trésorier.

Art. 15ième. Si l'assemblée générale du mois de février n'a pas lieu ou si l'élection des membres du nouveau conseil n'a pu être faite à cette assemblée, le président de telle assemblée devra l'ajourner de die in diem, jusqu'à ce que les élections aient été faites ou complétées.

Art. 16ième. Le secrétaire-trésorier fera part au conseil de toutes communications qui lui auront été adressés se rattachant aux intérêts des colons et de la société. Le conseil pourra nommer un député pour s'enquérir et faire rapport sur l'opportunité d'accorder ou de refuser les demandes soumises au conseil.
Le nom des votants devra être enrégistré sur chaque décision prise par le conseil, sur toute demande entrainant une dépense d'argent.
Le Conseil, pourra nommer un député qui aura la surveillance des travaux et fera rapport quand ces travaux seront faits en tout ou en partie.

Art. 17iem. Le gouvernment sera invité d'envoyer un de ses officiers aux séances du conseil d'administration, quand il sera question du tracé ou de la confection des chemins ou des secours qui pourrait accorder le gouvernement.
Sur résolution adoptée par le bureau le nombre des membres a été limité à cent.