UNIVERSITÉ D'OTTAWA ÉCOLE DES GRADUÉS

INDUSTRY IN HULL: ITS ORIGINS AND DEVELOPMENT, 1800-1961

By

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INTRODUCTION

The central theme of this investigation is the evolution of industry in Hull, Quebec. The study provides an account of, and tries to explain the rise of industry in the city, and also seeks to illuminate the relationship between industrial development and certain aspects of the growth of the city.

It has been undertaken for two basic reasons. First, the study of the historic development of industry is essential to an understanding of its present character and distribution.[1] Second, the study of the evolution of space content is, as Ackerman has noted, one of the most important research frontiers in geography.[2] Even though the present investigation is limited to a small urban area, and whatever its imperfections, it may furnish material upon which further advances can be made.

The study is divided into three periods -- 1800 to 1845, 1845 to 1890, and 1890 to 1961. Each period was characterized by a particular type of industrial activity and industrial structure. The beginning of each period was also marked by changes in the economic environment and other factors, which resulted in transformations in industry and its structure. These periods, therefore, possess a certain degree of homogeneity, and attention can be focused on the intervals between them when change seemed to be most rapid. The characteristics and, as far as

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[1]This point has, of course, been made in many works, and most recently in G. Alexandersson, Geography of Manufacturing, (Englewood Cliffs, N.J.: Prentice-Hall, 1967).

[2]E.A. Ackerman, Geography as a Fundamental Research Discipline, University of Chicago, Department of Geography Research Paper No. 53, (Chicago: University of Chicago, Department of Geography, 1958).

possible, the distribution of industry during each period have been delineated and interpreted. A comparison of the three periods can therefore indicate the extent of the change or evolution which occurred.

The major drawback of the study is derived from the nature of the data available. It is only for the last few years of the last period that detailed information on certain aspects of industry in Hull is available, and its reliability and completeness is subject to some doubt. Sufficient evidence was obtained from a variety of sources, however, to follow the evolution of industrial activity in Hull.

CHAPTER I

GENERAL SETTING AND BEGINNING OF SETTLEMENT

The General Setting

The city of Hull, Quebec, is located near the confluence of the Ottawa and Gatineau Rivers, at the point where the Ottawa flows over the Chaudiere Falls. It faces the city of Ottawa from the north bank of the river (Figure 1).

The Ottawa is about seven hundred miles in length and drains an area of approximately sixty thousand square miles.[1] The river is navigable for fair-sized craft from Montreal to Hull, but near this city it traverses a complicated faulted zone of limestone over which it flows in a series of rapids culminating in Chaudiere Falls.[2] Beyond Hull it becomes a series of lakes with rapids and waterfalls at their outlets.

The Ottawa has numerous tributaries, some of them of considerable size. The Gatineau, the most important, is 240 miles long (Figure 1). Nearly all are of the same character as the upper reaches of the main stream.

Between Chalk River and its confluence with the St. Lawrence, a distance of about two hundred miles, the Ottawa hugs the boundary between the Canadian Shield to the north, and the Ottawa-St. Lawrence Lowland to the south.

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[1]For a more detailed description of the Ottawa, see, D.F. Putnam et al., Canadian Regions, (Toronto: Dent and Sons, 1952), p. 130, and E. Greening, The Ottawa, (Toronto: McClelland and Stewart, 1961).

[2]A.E. Wilson, Geology of the Ottawa-St. Lawrence Lowland, Ontario and Quebec, Geological Survey of Canada, Memoir 241, (Ottawa: Queen's Printer, 1964), p. 6.

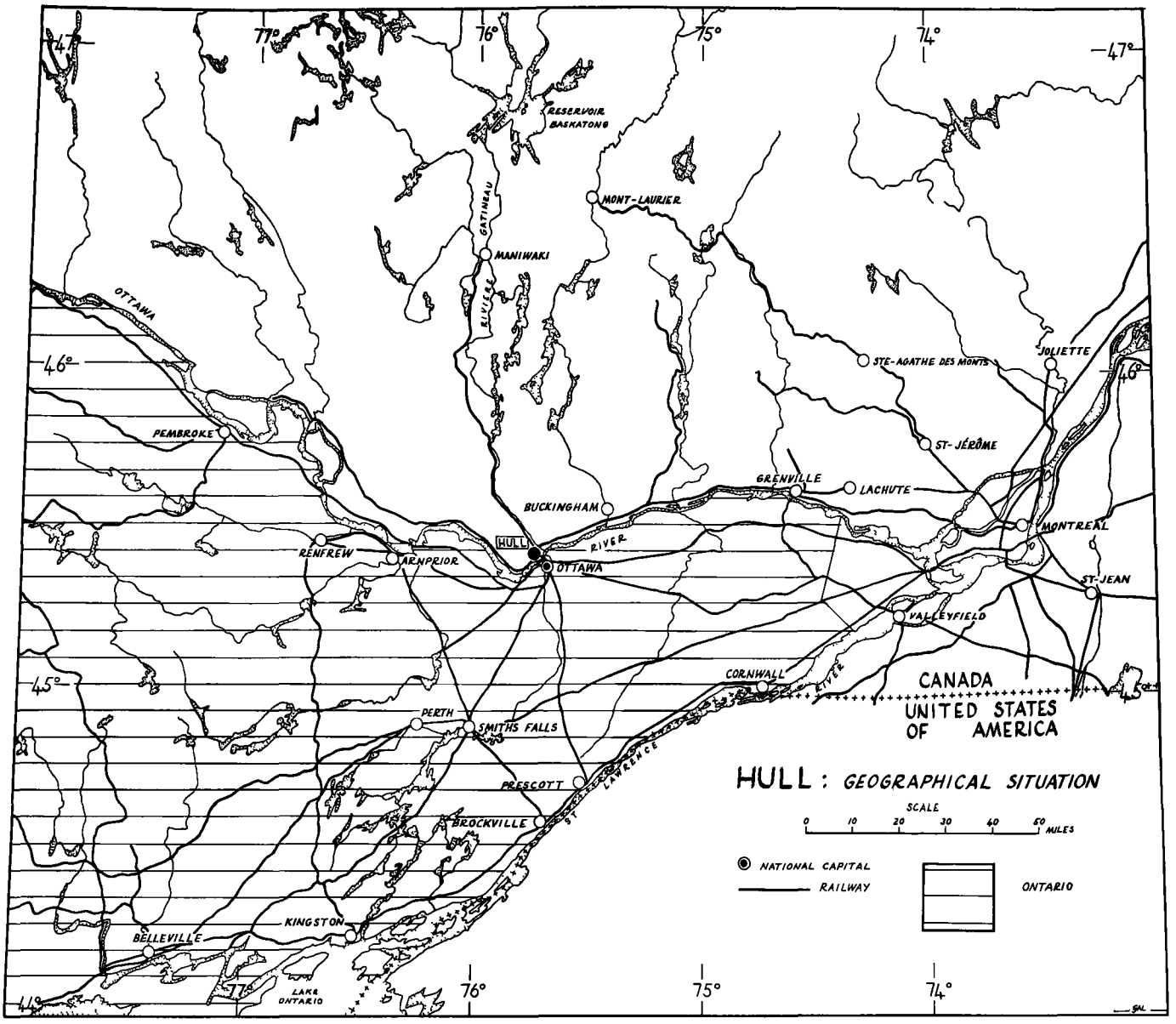
47°
77°
76°
75°
74°
RESERVOIR BASKATONG
MONT-LAURIER
GATINEAU
MANIWAKI
RIVIÈRE
OTTAWA
46°
STE-AGATHE DES MONTS
JOLIETTE
PEMBROKE
ST-JÉRÔME
GRENVILLE
LACHUTE
BUCKINGHAM
MONTREAL
HULL
RIVER
RENFREW
ARNPRIOR
OTTAWA
ST-JEAN
VALLEYFIELD
45°
CORNWALL
RIVER
CANADA
UNITED STATES
OF AMERICA
PERTH
SMITHS FALLS
PRESCOTT
ST LAWRENCE
BROCKVILLE
KINGSTON
BELLEVILLE
LAKE ONTARIO
HULL : GEOGRAPHICAL SITUATION
SCALE
0 10 20 30 40 50 MILES
NATIONAL CAPITAL
RAILWAY
ONTARIO

Figure 1

The Canadian Shield is an immensely irregular surface consisting of Precambrian rocks, and thinly covered with a layer of vegetable mould. Once this is removed, the surface becomes barren. Except for small pockets of good land, therefore, the Shield is generally unsuitable for agriculture.

On the other hand, it lends itself admirably to the industry of lumbering. In its southern part, the Shield lies within the Great Lakes - St. Lawrence Forest Region, a mixed forest which is a transition between the boreal coniferous forest and the deciduous forest of eastern North America.[1] Several of its dominant species -- the white and red pines, and the black and white spruces -- are of great economic importance.[2] The Shield is also crossed by innumerable rivers which, because of the topography of the country, and the good precipitations, never lack water for driving the timber from the forest to its destination.

The Ottawa - St. Lawrence Lowland, on the other hand, is a predominantly flat surface which rises gently to the west and is covered by glacial drift, and stratified clays and sands. Although it originally bore an important forest cover, it later became a predominantly agricultural area.

Although no outstanding supply of economic minerals or metals occur in the Ottawa-Hull area, the region has a good supply of stone for building and construction purposes and for the production of cement and lime.[3]

Hull owes its growth in great part to the physiography of the site and the forest and water resources of the Canadian Shield. The Chaudiere

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[1]Putnam et al., op. cit., p. 26.

[2]Ibid.

[3]Wilson, op. cit., pp. 36-41.

Falls, though preventing navigation between the upper and lower Ottawa, have provided abundant water power. Entering the Ottawa just below Hull from the north, the Gatineau transports logs from the interior of the Shield, and also provides water power. The city itself rises upon the northern edge of the Lowland, and is underlain by thick beds of pure limestone, and by some dolomite, shale and sandstone.[1] It is squeezed between the Ottawa, the Gatineau, and the hills of the Canadian Shield which loom to the north. A small creek, Brewery Creek, crosses the city and forms an island which has become the core of the urban area.

With its 60,000 inhabitants, Hull forms part of a larger urban agglomeration of approximately 450,000 inhabitants -- the Ottawa metropolitan area -- which extends on both sides of the river.

Situated on the northern margin of Canada's most densely populated and most highly industrialized region, Hull has easy access to all parts of this region. It is only 120 and 270 miles to Montreal and Toronto respectively, and the International Rapids section of the St. Lawrence Seaway is only 60 miles away.

The First Settlement

Under the French, settlement in eastern Canada had been largely confined to the banks of the St. Lawrence. The Ottawa had remained a deserted river, except for the passing of the fur-brigade flotillas.[2] This situation was to remain largely unchanged until the last decade of the eighteenth century.

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[1] Ibid., pp. 10-31

[2] L. Brault, Hull. 1800-1950, (Ottawa: Les Editions de l'Université d'Ottawa, 1950). pp. 12-14 and J.W. Hughson and C.C.J. Bond, Hurling Down the Pine, (Old Chelsea, Quebec: The Historical Society of the Gatineau, 1964) pp. 2-3.

In 1792, the authorities of Lower Canada initiated a policy of land grants whereby persons could settle on Crown Lands, subject to certain conditions.[1] In 1797, Philémon Wright, a native of Massachussetts submitted a request for a portion of the lands in the township of Hull, with the intention of establishing a settlement therein.[2]

Wright was probably attracted by the natural advantages of the site. The Chaudiere Falls were the single most important obstacle along the Ottawa and represented a definite break in communications between the upper and lower reaches of the river. The site of Hull had been a meeting and trading place for the Indian tribes of the upper and lower Ottawa valley.[3] In the days of the fur trade it had become an almost obligatory stop for the fur-brigade flotillas.[4] There was sufficient good agricultural land in the environs for settlement to begin, and the Chaudiere represented an important source of water power. It has been said that Wright envisaged the rise of a commercial centre that would become as important as Montreal.[5] In 1800, Wright and his band of settlers made the long trip from Massachussetts and the clearing of the land began.

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[1]L. Rossignol, Histoire Documentaire de Hull. 1792-1900. (Unpublished Ph.D. Thesis, University of Ottawa, 1941), pp. 2-3.

[2]Brault, op. cit., p. 16.

[3]Ibid., p. 23

[4]Ibid., p. 24

[5]Ibid., pp. 24-25.

CHAPTER II

THE PRE-INDUSTRIAL COMMUNITY: 1800-1845

The Pioneer Community

The history of the early community is largely the story of the achievements of the Wright family.[1] Philemon Wright had taken the initiative in securing the land grant and owned the major part of the concession.[2] He was the driving force behind the development of the settlement.

As was usual in communities along the frontier of settlement, agriculture was the settlers' primary occupation. They lost little time in clearing the land, and within a year the first farm belonging to Wright rose by Lake Leamy (Figure 2).[3] This was an extensive, unsystematic type of agriculture. The lack of cash markets provided little incentive to intensify production and encouraged self-sufficiency. Agricultural techniques were primitive, and the clearing of the land was accomplished by slash-and-burn methods. Large quantities of timber were destroyed in the process without any useful product resulting except, when the wood was burned, the pot ash which could be exported.[4]

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[1]The primary source of information on the pioneer community, and on the Wright enterprises is a report by Philemon Wright himself which appeared in the Journal of the Legislative Assembly of Lower Canada, 1823-1824, Appendix (R). It has been extensively cited and quoted in Brault, op. cit., and Rossignol, op. cit.

[2]Wright and his associates had been granted 13,700 acres in the southern part of the Township of Hull. Wright himself owned 11,900 acres. See, Brault, op. cit., p. 22.

[3]Ibid., p. 25, and Hughson and Bond, op. cit., p. 120.

[4]Pot ash was a frontier chemical product, the concentrate of which, largely lye, was used in Europe and North America for the bleaching of cloth.

It was against this agricultural backdrop that secondary activities, exploiting the water power potential of the Chaudiere, began to appear. In 1801, Wright erected a saw and grist mill.[1] This type of mill was common in settlements in a frontier economy. The sawmill met the needs in sawn lumber of the settlers in the immediate vicinity, and the grist mill saved the hard, slow labour of pounding out grain. In 1802, a blacksmith shop was established at the same location and began the manufacture of rudimentary implements.[2] In 1807, a mill for the treatment of hemp was added and a limestone quarry near the Chaudiere was in operation.[3] Craftsmen of various sorts had also begun to arrive in the settlement. A blacksmith and a miller were engaged in 1803 and were followed in 1806 by a baker, a tailor, and a shoemaker.[4]

These establishments were all controlled by Wright and had permitted the community to attain some degree of self-sufficiency. Some indispensable supplies, however, had to be obtained at great expense in Montreal, some 120 miles away. There was, as yet, no road link between the settlement and the outside world; and navigation on the Ottawa river was a slow and dangerous business. Wright had, until then, furnished the necessary capital for development, but his funds were dwindling rapidly. In his report to the Legislative Assembly he wrote: "As I had now been six years in the township of Hull, and expended my capital, it was time for

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[1]Brault, op. cit., p. 25.

[2]Ibid.

[3]Ibid.

[4]Ibid.

me to look out for an export base to cover my imports."[1] His previous attempts at creating such an export base had not met with success. The price of wheat in Montreal barely covered the cost of transportation to market, and hemp had not found a market.[2] In an effort to find a solution to his dilemma he turned to the timber trade.

Beginning of the Timber Trade

Before 1800, the forests of eastern Canada had supplied furs, an important export commodity. However, attempts to develop an export trade in timber had generally failed. Britain was the only market, but it was too distant and, in any case, had more readily available supplies in the Baltic countries. The continental blockade of 1806, however, closed the Baltic to Britain and forced her to turn to her North American colonies. She therefore began to encourage her merchants to bring timber from Canada, and imposed a system of differential duties on timber entering Britain, duties which accorded a preference to colonial timber.[3]

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[1]Journal of the Legislative Assembly of Lower Canada, 1823-1824, Appendix (R), cited in Charles Roger, Ottawa. Past and Present, (Ottawa: Times Printing and Publishing Company, 1871), p. 27.

[2]Hemp was then much in demand by the Royal Navy in connection with naval stores, and its cultivation in the colonies was officially encouraged. Wright had begun its cultivation in 1802 and had obtained remarkable results. The main market was in Halifax however, and it could only be sold in the prepared state. Transport difficulties and the cost of preparation inhibited the development of this activity in Hull. See, Joseph Bouchette, The British Dominions in North America, (2 vols.; London: Longman, Rees, Orme, Brown, Green and Longman, 1832), vol. 1, p. 470.

[3]The origin of the timber trade and the system of differential duties have been widely chronicled and discussed. The best treatment for our purpose appears in W.T. Easterbrook and H.G.J. Aitken, Canadian Economic History, (Toronto: Macmillan, 1965), pp. 187-196, and A.R.M. Lower, "The Trade in Square Timber", University of Toronto Studies in History and Economics, Contributions to Canadian Economics, Vol. 6, 1933, pp. 40-61.

British needs for timber had come just in time for the new settlement. Wright, who somehow was aware of the new demand for timber, seized the opportunity and during the winter of 1805-1806 he established the first lumber camp in the Ottawa valley, near the mouth of the Gatineau.[1] In June of 1806, the first raft of timber was sent to Quebec and sold for cash. "Wright's pioneering raft was soon followed by others and within a few years pine-timber was being cut far above the Chaudiere".[2]

Wright had established a timber business in 1808, and as the years passed by "more and more timber went down the Ottawa from Hull" [3] Although statistics on the amount of timber cut and floated to Quebec are not available, the expansion of the Wright timber business is indicated by the fact that they had to go farther and farther afield as operations progressed. As Hughson and Bond have noted:

> In the winter of 1805-06 Philemon Wright and his men must have been able to cut [timber] ... without stirring far from home. In 1814 they had a shanty at the Chats Falls, and in ...1816, they took [timber] on ... a tributary of the Rideau. By 1819 ... they cut ... on the Bonnechere River, and in 1821 another shanty was opened on the Rideau. Later the Wrights cut [timber] to the west of Ottawa (Figure 1).[4]

In 1832 they were granted permission to cut timber on the Gatineau, a river which until then had been left untouched by lumbermen. They continued to pursue their timber cutting operations until the middle 1840's.[5]

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[1]Hughson and Bond, op. cit., p. 12.

[2]Lower, op. cit., p. 55.

[3]Hughson and Bond, op. cit., p. 62.

[4]Ibid., p. 62.

[5]Ibid., p. 19.

Industrial Growth of the Settlement

Sustained by the timber trade, economic activity in the settlement progressed. Fire consumed Wright's mills in 1808, but they were soon rebuilt. He built a distillery in 1813, and in 1819 added a tannery and a new four-forge blacksmith shop to his holdings.[1] In 1820, according to Bouchette, there were five mills and two distilleries in the township.[2] By 1828, a variety of other small industries had appeared in the township (Table 1).

TABLE 1

Mills and manufactures in the Township of Hull. 1828

Corn mills	1	Lime kilns	12
Carding Mills	1	Looms	13
Sawmills	4	Brick kilns	2
Mills for grinding bark	1	Potasheries	1
Tanneries	2	Distilleries	2
Breweries	1		

Source: Joseph Bouchette, A Topographical Dictionary ...,Art. Hull.

These were typical of frontier settlements, where industrial activity consisted mainly in the exploitation of local raw materials. There was little secondary manufacturing carried on. As money was scarce and wages were high, much of the further transformation, when possible, was

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[1]Brault, op. cit., pp. 26-27.

[2]Joseph Bouchette, A Topographical Dictionary of the Province of Lower Canada, (London: Longman, Rees, Orme, Brown, Green and Longman, 1832). Art. Hull.

accomplished by the settlers themselves.[1] The situation had hardly changed by 1844, as Table 2 indicates.

TABLE 2

Mills and Manufactures in Ottawa County. 1844

Grist mills	14	Threshing mills	1
Sawmills	29	Tanneries	5
Fulling mills	1	Pearl asheries	62
Carding mills	1	Other	8

Source: Census of 1844, in Census of Canada, 1871, Vol. 4, Table 10.

Although the figures in the above table refer to Ottawa County, a much larger area in which the township of Hull was comprised, in the absence of other material they may be taken as indicative of the situation in Hull at that time. They indicate that, although some expansion seems to have taken place, there had been little change in the industrial structure. Industry still had not progressed beyond the point of transforming raw materials into a semi-processed state.

Factors of Development

The key factors in the development of the local economy, and of the settlement during this period were entrepreneurship, the timber trade, and the network of transportation and communication facilities. The last two elements constituted the base of the economic environment at the time. It is suggested here that it was Wright's ability to react to this environment which was responsible for the development of the settlement.

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[1]See, H.A. Innis and A.R.M. Lower, Select Documents in Canadian Economic History, 1783-1885. (Toronto: University of Toronto Press, 1933), pp. 261-283.

At the same time, however, the economic environment imposed limitations on development, and determined, to a large extent, the direction which it could and would take.

The Entrepreneurs:

It is difficult to arrive at a precise definition of entrepreneurship. According to Thompson, some of its elements are inventiveness, organizational talent, and venturesomeness.[1] Watkins defines entrepreneurship as the ability to perceive and exploit market opportunities.[2] Whatever definition is adopted, the role of Wright as entrepreneur is everywhere apparent during this period.

Philemon Wright had recognized the natural advantages which the site of Hull offered when he settled in the region. The settlement which he founded was located near a major source of water power and a major break in transportation on the Ottawa River, and near the confluence of the Ottawa and its major tributary, the Gatineau. Although the agricultural potential of the site seems to have been the major attraction when Wright founded the settlement,[3] he was quick to utilize the water power of the Chaudiere, and to perceive and exploit the market opportunities for timber that developed in 1806. His attempt, albeit unsuccessful, to initiate the large scale cultivation of hemp in the township, is another

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[1]W.R. Thompson, A Preface to Urban Economics, (Baltimore: The Johns Hopkins Press, 1965), p. 44.

[2]M.H. Watkins, "A Staple Theory of Economic Growth", Canadian Journal of Economics and Political Science, Vol. 29, No. 2, 1963, pp. 141-158.

[3]It is in his report to the Legislative Assembly that Philemon Wright gives his impressions of the Chaudiere area. See, Rossignol, op. cit., pp. 2-15.

indication that he possessed sufficient flexibility and sense of innovation to permit shifts into new activities, whether for the export or domestic markets.

Although they engaged in other activities, the timber trade was the Wrights major interest and, contrary to the then dominant practice, they had placed their timber operations on a business footing. In effect, during the first half of the nineteenth century timber making was essentially a small scale operation, and many pioneer farmers engaged in cutting timber during the winter.[1] The two occupations however, often proved incompatible and many settlers were ruined. On the other hand, the Wrights who had been granted Timber Privileges,[2] employed jobbers to run shanties, or lumber camps for them.[3] The larger scale of their operations therefore guaranteed a certain stability to their business, although they also experienced difficulties.

The Role of the Timber Trade:

The role of the timber trade in the development of the local economy and of the settlement is best explained within the framework provided by the staple theory of economic growth.[4] This theory has become the main view point of Canadian economic history. According to this view point, Canadian economic development is to be interpreted in terms of

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[1]Lower, op. cit., p. 58.

[2]Timber Privileges were government licences granting exclusive rights to cut timber in certain areas, known as timber limits.

[3]Hughson and Bond, op. cit., pp. 62-64.

[4]See, Watkins, op. cit., pp. 141-158, and K. Buckley, "The Role of Staple Industries in Canada's Economic Development", Journal of Economic History, Vol. 18, No. 4, 1958, pp. 439-452.

continual adjustments to a series of staple industries, such as the timber industry, the products of which have always found their main markets abroad. The fundamental assumption is that staple exports are the leading sectors of the economy and set the pace for economic growth. Economic development will then be a process of diversification around this export base, and the central concept of the staple theory is the spread effects of the export sector, i.e. the impact of export activity on the local economy. The advantage of the theory is that it classifies these effects and indicates their determinants. It leads from the resources of a region, therefore, to an analysis of the activity induced by their development.

In the case of Hull and the Ottawa valley the timber trade was the major export sector. The diversification and growth which derived from the trade, however, depended mainly on its character and technology.[1] It were these factors which determined the range of investment opportunities in domestic activities, or the extent of diversification around the export base.

"Until the late 1820's almost all of the timber from British North America was in the form of what was called 'square timber'".[2] Squaring involved cutting four flat sides on the trunk with a broad axe, the timber being then floated to destination. The essential thing is that no sawing was done until the timber reached Britain. There were, therefore, no possibilities for further processing in the region of production, and no inducement to invest in industries which might use timber as raw

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[1]Watkins, op. cit., pp. 141-158.

[2]Eaterbrook and Aitken, op. cit., p. 196.

material. Except for the small, ubiquitous sawmills which had only a local market, and for pearl asheries which still produced lye for export,[1] wood industries were largely absent from the manufacturing scene (Tables 1 and 2).

Production techniques in the timber industry were simple, and there was little investment in the home-production of capital goods for the export sector. "All that was necessary [for timber making] was a 'gang' of about six men, ... broad and narrow axes, ... and not much more".[2] The timber trade led to the development of metallurgical plants near the forest, where new tools could be made and old ones repaired. Quite early in the life of the settlement, Wright had established a blacksmith shop which he subsequently enlarged. This seems to have been the only direct link between the timber trade and manufacturing. There was no other production of capital goods for the export sector.

As the timber makers came swarming up the Ottawa, other settlers followed them. According to Bouchette, the population of the township was 703 inhabitants in 1820, and 1066 eight years later.[3] There was therefore an inducement to invest in industries and activities producing goods for the local market. "From the first, on the Ottawa there was that phenomenon rare in Canadian rural experience, a good local market".[4] This was first and foremost a market for agricultural products.

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[1]Although there was exportation of pot ash, it was much less important than timber. See, Innis and Lower, op. cit., p. 261.

[2]Lower, op. cit., p. 52. An account of the technology of the timber industry may be found in Hughson and Bond, op. cit., pp. 48-61.

[3]Bouchette, A Topographical Dictionary ..., art. Hull.

[4]A.R.M. Lower, Settlement and the Forest Frontier in Eastern Canada, (Toronto: Macmillan, 1936), p. 44.

Agriculture tended to follow the timber camps as they pushed farther and farther upstream, but as the activities of the timbermen increased and the amount of produce, raised locally decreased as the river was ascended, the settlements farther down the river did not lose their market. The Wrights had several large farms in the township which partly supplied the needs of the inhabitants and of the forest workers.[1]

Although the population increased, and the revenue derived from the timber trade and from agriculture raised the level of income in the community, they apparently were not sufficient to promote any important industrial development. This was due in part to the fluctuations in the timber trade which "was one of the most uncertain trades in which it was possible to engage".[2] An idea of the variations in the trade may be had from the number of cribs of timber passing through the Wrights' slides[3] at the Chaudiere between 1839 and 1846 (Table 3).

TABLE 3

Number of Cribs of Timber Passing Through the Wright Slides at the Chaudiere. 1839-1846

1839	3726	1843	3421
1840	4229	1844	4829
1841	6084	1845	8263
1842	5541	1846	6886

Source: Ruggles Wright, Memorials, Documents and Affidavits submitted to the Executive Government with reference to His Slides at the Chats and Chaudiere on the Ottawa River. (Montreal: Lovell and Gibson, 1849), p. 11.

[1]Rossignol, op. cit., pp. 28-30.

[2]Lower, "The Trade ...", p. 49.

[3]On the subject of slides see pp. 20-21.

Although general expansion of the trade was the rule, variations in the price of timber on the British market led to periodic over-production, and on more than one occasion the Wrights had difficulty selling their timber and went into debt.[1] Furthermore, as the trade expanded, it outgrew the agricultural resources not only of the settlement but of the region. Imports of foodstuffs increased and constituted a drain on the financial resources of the community.[2] Since level of income is the prime determinant of the inducement to invest in industries producing for the local market,[3] these conditions did not favour important developments in this sector.

Transportation:

The timber trade therefore provided the means for development to occur, but its character and technology imposed strong restrictions on the whole process. Closely allied to the main export sector in determining the growth of the settlement and its economy was the network of transportation and communications.

Although a local network of roads connected the various parts of the settlement (Figure 2), it was not until 1828 that construction began on an overland connection between Hull and Montreal.[4] Even when this road was eventually completed, it proved to be impassable in spring and winter. Hence the reliance on water transportation. Since the days of the fur trade, the Ottawa river had been a major transportation artery, broken

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[1]Hughson and Bond, op. cit., pp. 8-28.

[2]Ibid.

[3]Watkins, op. cit., pp. 141-158.

[4]Brault, op. cit., pp. 108-109.

however by a series of falls and rapids and navigable for only seven or eight months of the year. These difficulties help to explain in part the development of secondary industry in Hull. Although the market was not large, "the shelter of the protection given by distance, the difficulties of transportation, ... together with local initiative, slowly developed industry".[1]

The state of the transportation system also served to promote commercial activity in Hull. Since the settlement was located near one of the major obstacles along the river, it represented a necessary break in transport both for timber moving downstream, and for men and supplies moving upstream. It became an important stop along the Ottawa as witnessed by its hotel and distillery. This position was reinforced when the first steamer on the Ottawa, the Union of the Ottawa, began to ply between Hull and Grenville in 1819.[2] This ship, whose construction had been partly financed by the Wrights, made four round trips a week and was joined by another in 1829.[3]

The two major transportation developments during this period were the invention of the timber slide in 1829, and the opening of the Rideau Canal in 1834. The former was to revolutionize the transportation of the staple, and the latter to open a direct route to the Great Lakes.

The timber slide was a brilliantly simple invention of Ruggles Wright. It was an artificial inclined channel which by-passed rapids and falls, and down which whole sections of timber rafts could pass. The

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[1]Innis and Lower, op. cit., p. 290.

[2]Brault, op. cit., p. 124.

[3]Hughson and Bond, op. cit., p. 12.

channel for the first slide was cut through a peninsula which jutted into the river at the foot of the Chaudiere falls on the Hull side (Figure 2).[1] Prior to the erection of the slide, since a timber raft had to be completely dismantled when passing the Chaudiere, its passage took twenty days and it was next to impossible to get all the timber to market the same year it had been cut. By the slide, five or six rafts could pass in one day.[2] The timber slide, which was quickly copied and reproduced elsewhere on the Ottawa, therefore, speeded up the movement of timber and was of considerable benefit to the economy of the valley. Since a toll was charged for timber using the slides it also provided an added source of revenue for the Wrights.[3]

After the war of 1812, the government had decided to open a water communication from Montreal to Kingston by improving navigation on the Ottawa River and making a navigable waterway from near the mouth of the Rideau River through the Rideau Lakes.[4] By 1834, the Ottawa had been made navigable from Montreal to the mouth of the Rideau, and the Rideau Canal to Kingston had been completed.[5]

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[1]The cutting of the channel resulted in the creation of an island, Philemon Island. The original slide can be seen today beside the main office of the E.B. Eddy Co.

[2]Ruggles Wright, Memorials, Documents and Affidavits submitted to the Executive Government with reference to His Slides at the Chats and Chaudiere on the Ottawa River. (Montreal: Lovell and Gibson, 1849), pp. 80-81.

[3]Ibid.

[4]G.P. deT. Glazebrook, A History of Transportation in Canada, (2 vols.; The Carleton Library No. 11 and 12, Toronto: McClelland and Stewart, 1964), vol. 1, pp. 76-78.

[5]Ibid., pp. 78-79.

The building of the canal meant an increase in industrial activity in Hull. The Wrights' sawmill provided lumber for its construction, and in 1830 they began production of cement that was used not only on the Rideau Canal, but on canals along the St. Lawrence.[1] Once again the Wrights had shown enough initiative to exploit nascent market opportunities.

It is difficult to determine the effects of the canal on the development of Hull during this period. Although the settlement was ideally located with respect to navigation both on the Ottawa and on the Rideau waterway, the canal was essentially geared to the needs of defence rather than markets.[2] Square timber was still the most important export product of the Ottawa valley, and its market lay overseas via Montreal and Quebec. It did not therefore broaden the market area of the region. It did, however, provoke an increase in the carrying trade and the ships visiting Hull became more numerous.[3] The construction of the Rideau Canal had also given rise to a settlement located near its entrance locks. Bytown, as the settlement was called, provided an element of competition for Hull and was eventually to overshadow it.

Growth of the Settlement

Settlement was largely dispersed throughout the township and had a distinctly rural character during this period. The major part of the population was engaged in agriculture and most of the farms were scattered

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[1]Hughson and Bond, op. cit., pp. 14-18.

[2]S.D. Clark, The Developing Canadian Community, (Toronto: University of Toronto Press, 1962), p. 64.

[3]Brault, op. cit., p. 124.

along the main roads in the township (Figure 2).[1] During this period there was no incorporated village in Hull. The settlement functioned as part of the township.

The nucleus of the future city of Hull, however, had been established as early as 1801 when Philemon Wright had erected his first mills by the Chaudiere. A structure to house the mill employees was added in 1806, followed by a general store and a residence for Wright himself in 1810.[2] By 1823, a school, a hotel and a church rose in the vicinity of the falls. The choice of the site was evident. The Chaudiere provided power for the mills, which in turn provided the settlers with certain semi-manufactured goods. This nucleus therefore developed as an industrial and commercial area, and was to experience the fastest growth in the settlement.

A secondary nucleus developed a little to the east of the Chaudiere, around the site of the wharf on the Ottawa (Figure 2). This was the terminal of the navigation service which assured the communication between Hull and Grenville, and later Montreal, and also of the Hull-Bytown ferry service. Since most of the provisions for Hull and Bytown came by water, this had become a small commercial centre, quite distinct from the one to the west.[3] Outside of these two nucleii, habitat was dispersed.

The growth of population in the settlement was not rapid. In 1851, there were only 2811 inhabitants in the township, not quite three times the number of twenty years before (See Table 4 below). This can be

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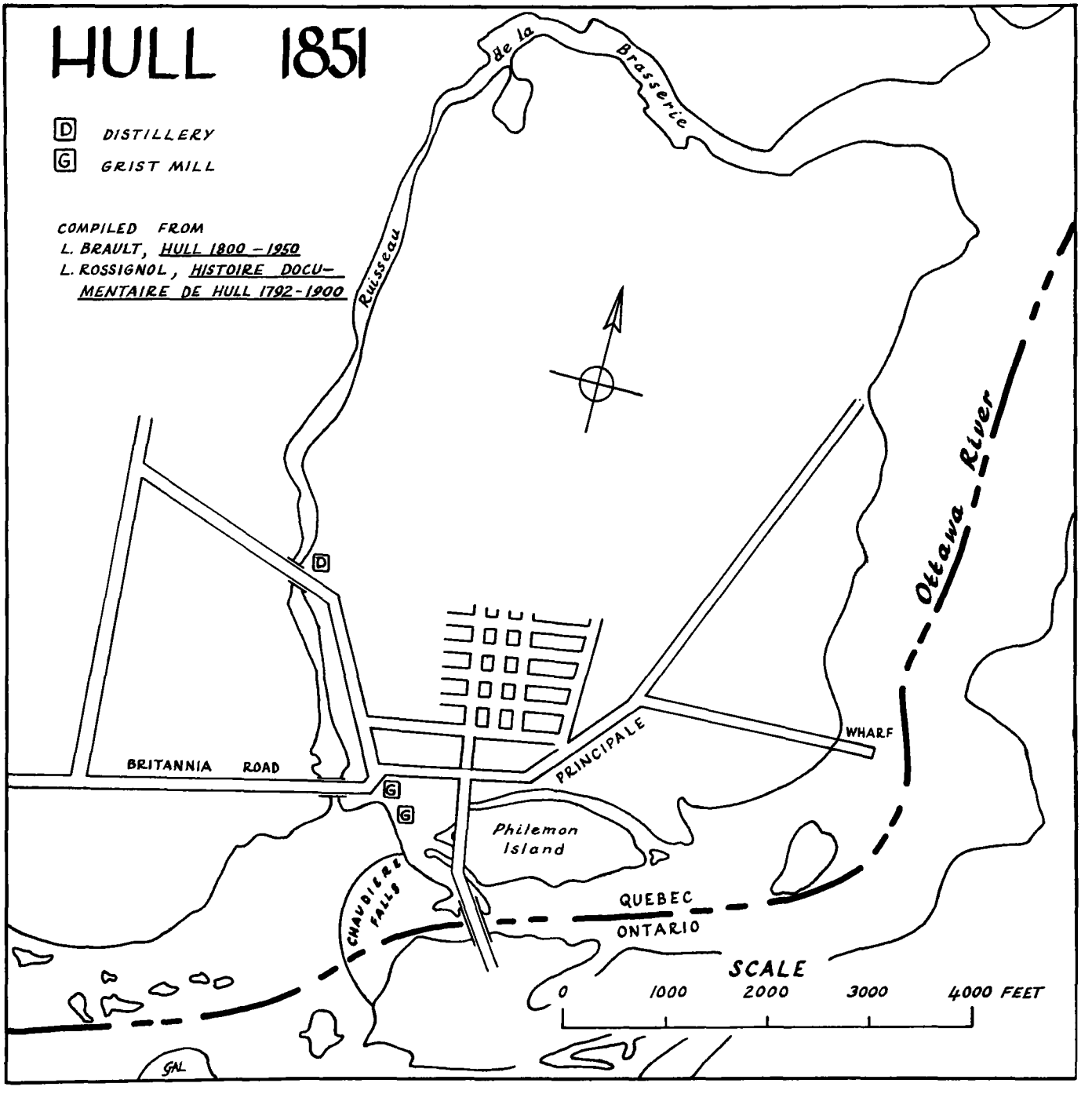
[1]Rossignol, op. cit., p. 30.

[2]Information for this section has been obtained from Brault, op.cit., pp. 25-27.

[3]Rossignol, op. cit., p. 140.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CHAUDIERE FALLS
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0 1000 2000 3000 4000 FEET
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Figure 2

ascribed to several factors.

The square timber trade which was the most important export sector, was a spatially diffused type of activity and did not lead to any major population concentrations. This was due to the nature of square timber itself. Timber makers could only choose the straightest and largest trees for squaring purposes, leaving the others untouched. It was estimated that only five per cent of the trees in a stand of timber could be exploited in this fashion.[1] The rate of exploitation of the forest was therefore extraordinarily rapid, and the timber makers were constantly on the move upstream.[2] Since the transportation of supplies for the timber camps was difficult and costly, agricultural settlement followed the timber makers, leading, therefore, to the dispersal of population in the Ottawa valley. From 1828 to 1851 the population of Hull township almost tripled whereas the population of Ottawa County almost decupled (Table 4). In the late

TABLE 4

Population of Hull Township and Ottawa County at Various Dates

Year	Hull Township	Ottawa County
1827	n.a.	2488
1828	1066	n.a.
1844	n.a.	12516
1851	2811	22903

Source: Joseph Bouchette, A Topographical Dictionary of Lower Canada, art. Hull; Census of Lower Canada, 1851-1852, vol. 1; Census of Canada, 1871, vol. 4.

[1]Lower, "The Trade ...", pp. 51-55.

[2]Ibid.

1820's, when the trade was still in its period of development, the township contained nearly fifty per cent of Ottawa County's population, but in 1851 it accounted for only fifteen per cent of the total. Although the settlement had an advantage in the sense that it is there that timber making had originated on the Ottawa, it was not able to translate that advantage into exclusive specialization.

Summary

The square timber trade had not promoted in any significant way the rise of manufacturing. Industry was limited to handicraft activities and the processing of local raw materials. The state of transportation facilities reduced the market area of these industries. This, coupled with the fact that the primary location factor was the availability of hydraulic power and that water-power sources were abundant in the region, favoured the diffusion of industry. "The local mills must have been very numerous ... . Every small water-power seems to have been pressed into service".[1] Again this did not favour industrial concentration or specialization, and there was no great demand for labour in this sector. Although some increase in manufacturing activity seems to have occurred during this period, it would be difficult to ascribe the growth of the settlement, such as it was, to this type of activity.

If the settlement did grow it was due more to its role as a transportation centre. It functioned as a necessary stop along the Ottawa waterway, both for movement of the staple and of men and supplies. This contributed to the community's commercial activity. The fact that

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[1]A.R.M. Lower, The North American Assault on the Canadian Forest, (Toronto: The Ryerson Press, 1938), pp. 44-45.

timbering was a seasonal activity and that the timber trade was given to important yearly fluctuations, and that the Ottawa was not navigable during the winter months, must have restricted this activity, however, and steady growth was difficult.

The development of the community during this period was closely linked with the Wright fortunes. The importance and extent of the Wright interests may be gathered from the terms of Philemon Wright's will in 1839, as cited by Hughson and Bond:

> Tiberius and Ruggles Wright jointly received title to the land known as the Chaudiere Falls, an area that extended from the Royal Alexandra Bridge to Brebeuf Park [to the west of the Chaudiere] and inland for about half a mile. It included all ... watercourses, water falls, mills, ... taverns, shops, factories and other buildings erected thereon.[1]

Philemon Wright had been able to perceive and exploit both the water power potential of the Chaudiere and the wealth of the region's timber resources. He and his family had been responsible for initiating two important transportation development - steamship service on the Ottawa and the timber slide. If entrepreneurship is a crucial factor in explaining the development of a young country,[2] then the role of the Wrights can hardly be underestimated. It appears however, that their initiative was severely limited by the character of the square timber trade, and by the general level of economic and transportation development that prevailed during those times. The effectiveness of this local entrepreneurship rested on factors which lay outside its control.

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[1]Hughson and Bond, op. cit., p. 28.

[2]Watkins, op. cit., pp. 141-158.

CHAPTER III

THE RISE OF MANUFACTURING: 1845-1890

Transition Years: 1845-1860

The years between 1845 and 1860 represent a period of transition in the development of Hull and its economy. The economic environment was changing. For more than twenty years after 1821, there had been no change in the duties on foreign timber entering the British market, and exports of square timber from the Ottawa valley had generally increased. The first serious reduction in tariff preference enjoyed by colonial timber came in 1842, followed by further reductions in 1845, 1846, 1848 and 1851.[1] Baltic timber could again compete with the colonial product. In 1848, the square timber trade on the Ottawa decreased by twenty five per cent and continued to decline during the following years,[2] although it was not to end until the beginning of the twentieth century.[3] The British market for timber had ceased to expand, and the main support of the Ottawa valley's economy was threatened.

This period also marked the end of the Wright era in the timber business. Beginning in 1842, they had divested themselves of their timber limits to the north, and although the name of Wright did not completely disappear from the scene, its influence was much reduced. A sort of vacuum was therefore created, which had repercussions on the community. The situation in Hull in 1851 seems to have been depressed. The Canada

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[1]Easterbrook and Aitken, op. cit., pp. 200-201.

[2]Rossignol, op. cit., p. 178.

[3]Lower, "The Trade ...", pp. 59-60.

Directory of 1851 lists one hotel-keeper, one in-keeper, one general store, one axe factory, one grist mill, and three lumber merchants.[1] According to the Census of 1851-52, there were eight stores and five inns in the township at the same period.[2] There were also three sawmills in operation, of which only one was in the village. Their total yearly output was only sixty thousand feet, compared to the three million feet from the four Bytown mills.[3]

At the same time, however, a new market was developing. Urban expansion and the spread of industry in the United States meant huge demands for sawn lumber, which was then the universal building material. The exhaustion or absence of conveniently located supplies in that country, and the growth, in conjunction with the natural waterways, of the canal system in both countries, encouraged the springing up of a trade in Canadian lumber with the United States.[4] "For the first time there developed, within North America, a large-scale market for a Canadian staple"[5] In 1854, the Reciprocity Treaty guaranteed the free admission of Canadian lumber into the United States, and was to mean a new and more vigorous burst of expansion.[6]

This new American trade was accompanied by a change in the character of forest exploitation. The American market did not want choice square

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[1]R. MacKay, The Canada Directory, (Montreal: John Lovell, 1851), p. 115.

[2]Census of Canada, 1851-52, vol. 2, Table 8.

[3]Hughson and Bond, op. cit., p. 34.

[4]Lower, The North American Assault ..., pp. 89-102.

[5]Easterbrook and Aitken, op. cit., p. 202.

[6]Innis and Lower, op. cit., pp. 502-505.

timber but would take any type of boards or sawn stuff, and gave rise therefore to a large scale sawmill industry. "While the two industries, square-timber making for the British market and sawn-lumber production for the American ... existed side by side for many years, eventually the sawmill won and square-timber making disappeared".[1]

Although the shift had already begun in other areas in the 1830's, development of the sawmill industry in the Chaudiere area was to await the beginning of the fifties. It was at that time that "the depletion of the better timber reserves in New England resulted in the migration of individuals engaged in the lumber trade to Canada".[2] American interests and capital were attracted to the Chaudiere for obvious reasons. The area offered not only facility of transportation for raw material from the forest, and for the manufactured product to market via the Ottawa and the Rideau Canal, but there were also very large and convenient supplies of water power. Furthermore, by 1854 a railway connected Bytown and Prescott, on the St. Lawrence, permitting easy access to the American market.[3]

These developments were going to benefit Bytown, or Ottawa as it became known in 1855, before the village across the Chaudiere. Until 1848, when the first sawmill rose on the south side, the Wrights had been the only ones to exploit the water power of the Falls.[4] They also owned the land for a considerable distance along the water-front. Since there were

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[1]Lower, op. cit., p. 99.

[2]H. Marshall, F.A. Southard Jr., and K.W. Taylor, Canadian-American Industry. A Study in International Investment, (Toronto: The Ryerson Press, 1936), p. 4.

[3]Glazebrook, op. cit., p. 164.

[4]Hughson and Bond, op. cit., p. 30.

still good hydraulic lots left on the Bytown side, the Americans moved in and erected mills therein.[1] Ottawa thereby acquired an advantage in the lumber business which it was never to relinquish. Although large sawmills were eventually to rise in Hull, development there was to take a slightly different course.

While large sawmills were rising on the Ottawa side, there seems to have been little change in Hull. There are no records of sawmill construction during this period, and the state of industrial activity may be gathered from Tables 5 and 6.

TABLE 5

Industries in Ottawa County. 1851-52

Grist mills	16	Pot and pearl asheries	44
Sawmills	21	Tanneries	3
Carding mills	1	Others	6
Woolcloth making	1		

Source: Census of 1851-52, in Census of 1871, Vol. 4, Table 8.

TABLE 6

Industries in Ottawa County. 1860-61

Grist mills	4	Tanneries	1
Sawmills	19	Others	8

Source: Census of 1860-61, in Census of 1871, Vol. 4, Table 8.

[1]The Baldwin, Young, Perley, Pattee and Bronson names are famous in the annals of the lumber trade and of the national capital. Originally from New England, they all arrived in the Ottawa area in the 1850's. See Charlotte Whitton, A Hundred Years A-Fellin'. 1842-1942, (Braeside, Ontario: Gillies Brothers Ltd., 1943), pp. 53-54.

Although these tables do not permit detailed analysis of manufacturing activity, they do indicate that no great change, at least in the type of activity, occurred during this period.

In the early 1850's, however, occurred an event which was to have great repercussions on the future development of Hull -- the arrival of E.B. Eddy. Ezra B. Eddy, an American from Vermont, established himself in the village in 1851.[1] As Lower has remarked, "he represented a different type of American immigrant, but one just as valuable as the capitalists."[2] Being without capital he did not immediately enter the lumber trade, but engaged in an activity which depended directly upon the presence of sawmills. Using the waste from the nearby mills as raw material, he began making matches by hand, selling his product from door to door in Hull and vicinity. By 1856, he had branched out into the manufacture of wooden pails, clothes-pegs and washboards which he shipped to central and southern Ontario via the Rideau Canal. Using the capital accumulated in these activities, Eddy soon turned to the sawn lumber industry.

The Era of Sawn Lumber: 1860-1890

During this period manufacturing in Hull was to be completely transformed, and the small village was to attain the rank of a city.

The extent of development that occurred in manufacturing may be gathered from a comparison of Tables 6, 7, 8 and 9. Analysis is again

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[1]Although most authors who have dealt with the area have mentionned Eddy, the best treatment of his activities appears in G. Carruthers, Paper in the Making, (Toronto: G. Carruthers, 1947), pp. 389-406.

[2]Lower, op. cit., p. 114.

[3]Carruthers, op. cit., pp. 389-406.

TABLE 7

Manufacturing in West Ottawa County. 1870-1871

Category	No. of establishments	No. of employees	Value of production ($)
Bakeries	8	14	60,178
Blacksmithing	27	52	33,000
Boots and Shoes	23	32	23,660
Cabinet and Furniture Making	3	4	3,800
Carding and Fulling Mills	2	6	2,400
Carpenters and Joiners	4	8	4,250
Carriage Making	9	27	16,810
Flour and Grist Mills	6	10	161,125
Lime Kilns	4	12	5,411
Saddle and Harness Making	5	7	7,650
Sawmills	26	1,463	1,504,244
Shingle Making	4	5	2,731
Tanneries	2	4	5,500
Tailors and Clothiers	3	18	16,950
Tin, Sheet and Iron Working	4	4	n.a.
Printing	1	4	300
Sash, Door and Blind Factories	1	50	17,000
Stone and Marble Cutting	1	6	800
Match Factories	1	790	125,000
Cement Mills	1	12	2,200
Pail and Tub Factories	1	70	149,000
Total	137	2601	2,157,809

Source: Census of 1870-1871, Vol. 3, p. 293.

TABLE 8

Manufacturing in Ottawa County. 1881

Category	No. of establishments	No. of employees	Value of production ($)
Bakeries	9	17	79,960
Blacksmithing	72	124	81,033
Boots and Shoes	36	55	42,818
Cabinet and Furniture Making	2	4	1,770
Carding and Fulling Mills	4	12	28,100
Carpenters and Joiners	20	27	13,730
Carriage Making	28	56	37,935
Flour and Grist Mills	16	33	210,432
Lime Kilns	10	18	1,863
Saddle and Harness Making	11	17	18,840
Sawmills	49	1,899	2,404,072
Shingle Making	2	5	900
Tanneries	11	14	11,633
Tailors and Clothiers	20	36	17,285
Tin, Sheet and Iron Working	13	16	14,690
Printing	1	3	1,200
Sash, Door and Blind Factories	2	32	41,500
Match Factories	1	255	100,000
Cement Mills	1	20	16,858
Pail and Tub Factories	1	18	65,000
Brick and Tile Making	2	7	1,250
Cooperage	1	1	381
Dress Making	10	22	9,090

TABLE 8 (contn'd)

Category	No. of establishments	No. of employees	Value of production ($)
Foundries and Machine Working	1	3	4,000
Wool Cloth Making	31	40	17,443
Jewellers and Watchmakers	2	2	1,580
Ship Yards	1	7	21,000
Edge Tool Manufactories	1	7	21,000
Wood Turning	1	3	1,400
Totals	359	2753	3,166,763

Source: Census of 1881, Vol. 3.

TABLE 9

Manufacturing in Ottawa County. 1891

Category	No. of establishments	No. of employees	Value of production ($)
Bakeries	25	51	143,432
Blacksmithing	114	147	126,730
Boots and Shoes	44	61	47,700
Cabinet and Furniture Making	14	18	19,560
Carding and Fulling Mills	4	4	7,850
Carpenters and Joiners	33	36	21,725
Carriage Making	37	66	58,366
Flour and Grist Mills	22	35	213,668
Lime Kilns	17	25	4,105
Saddle and Harness Making	18	24	23,845
Sawmills	79	2,021	1,795,334
Shingle Making	2	4	1,280

TABLE 9 (contn'd)

Category	No. of establishments	No. of employees	Value of production ($)
Tanneries	9	18	33,510
Tailors and Clothiers	12	52	37,346
Tinsmithing	15	35	31,875
Printing and Publishing Offices	1	2	1,500
Sash, Door and Blind Factories	4	88	75,657
Match Factories	2	266	144,763
Cement Mills	1	50	55,300
Pail and Tub Factories	1	83	99,762
Brick and Tile Making	3	72	18,850
Cooperage	1	1	250
Dress Making and Millinery	35	55	17,747
Foundries and Machine Works	1	10	10,000
Woollen Mills	3	29	33,000
Jewellers and Watchmakers	1	1	n.a.
Boatbuilding	1	1	n.a.
Edge Tool Factories	1	6	12,000
Agricultural Implements	1	7	9,000
Breweries	1	4	5,000
Cheese Factories	3	3	3,088
Furriers and Hatters	1	n.a.	n.a.
Gloves and Mitts	1	2	1,752
Lath Mills	1	30	7,200
Meat Curing	18	23	17,976
Mica Cutting	1	10	40,000

TABLE 9 (contn'd)

Category	No. of establishments	No. of employees	Value of production ($)
Packing Case Factories	1	100	16,621
Planing and Moulding Mills	5	13	188,000
Pulp Mills	2	96	186,086
Weavers	27	27	4,332
Totals	662	3,576	3,305,210

Source: Census of 1891, Vol. 3.

handicapped by the lack of statistics dealing specifically with Hull. Although aggregate values are available for 1881 and 1891, detailed industrial statistics during this period were only published by county, except in the case of a few large urban centres. Furthermore, since the definition of industries changed, and since there were variations in county boundaries the figures are not strictly comparable. Used in conjunction with other material, however, they provide the best indication of the industrial scene in Hull, and permit some conclusions to be drawn.

The most striking and evident characteristics of the period are the rise of a large sawmilling industry, and the development of secondary industries.

The Rise of the Sawmills:

By the beginning of the 'sixties, the demand for sawn lumber had increased enormously. This was due partly to the continuing expansion of the export trade to the United States, and also to the construction of government buildings in Ottawa which had become the capital of the United

Provinces in 1857.[1] For example, the lumber output of the Ottawa mills rose from twenty to twenty-five million board feet in 1859, to forty-five million in 1862.[2] Ottawa valley lumber was normally shipped through the Richelieu to New York, but with the development of the American west, some of it went to developing cities on the shores of Lake Erie and as far away as Chicago.[3]

The Reciprocity Treaty had been terminated in 1866, and a tariff imposed on Canadian lumber entering the American market.[4] Yet, instead of decreasing the trade actually increased as demand during 'Reconstruction' remained high enough to offset the new tariff. At the same time, producers began to acquire an interest in the British market, which was a quality market, and exports of sawn lumber to Britain began to increase In 1866 E.B. Eddy built a sawmill in Hull and was joined in 1868 by the Ottawa Steam Mill.[5] In 1871 they had a combined production of seventy million board feet, out of a total Ottawa area production of 240 to 260 million board feet.[6] Within the decade they were joined by a series of other mills -- William Hurdman's, Gilmour's, Lemay's, and the Crandall Company's.[7] The output of Ottawa-Hull continued to mount until by 1886 it had reached 288 million board feet, of which E.B. Eddy was producing 55

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[1]Hughson and Bond, op. cit., p. 36.

[2]Ibid., p. 37.

[3]Lower, op. cit., pp. 140-141.

[4]Ibid., pp. 148-150.

[5]Hughson and Bond, op. cit., p. 37.

[6]Ibid.

[7]Brault, op. cit., pp. 140-144.

million.[1] A comparison of the Censuses of 1871, 1881, and 1891 indicates that the Ottawa valley was one of the most important production areas in Canada. The mills of Ottawa City stood well up in the ranks of producers in terms of hands employed and value of production, and in 1871 led all census divisions in this respect. In the province of Quebec, the counties of West Ottawa in 1871, and of Ottawa in 1881 and 1891 were the most important producers. It may be seen from Tables 7, 8, and 9 that in these counties, and probably also in Hull, the sawmills accounted for the largest labour force and led in value of industrial production.

As the sawmilling industry grew, it also became more efficient due to technical improvements. Before 1850, sawing was a very slow process. The gang-saw, which simply involved fitting several saws into the saw frame, made its appearance in the region in the 'fifties and contributed to increased productivity.[2] It was followed by the circular saw and by the most powerful of all saws, the band-saw, towards the end of the century.[3] In the 1860's the iron turbine wheel had replaced the wooden water-wheel and had also contributed to increased cutting capacity.[4] All the mills, however, were not water-powered. The steam engine became an increasingly popular source of motive power, and all the mills in Hull, with the exception of those located by the Chaudiere, were steam-driven. The introduction of the steam engine in the early 'fifties enabled mills to dispose of their refuse by burning it as fuel, and it loosened the ties

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[1]Hughson and Bond, op. cit., p. 39.

[2]Whitton, op. cit., p. 142

[3]Lower, op. cit., p. 46.

[4]Whitton, op. cit., p. 142.

that bound sawmills to breaks in watercourses. Since it also represented a greater capital investment than the water-wheel, it encouraged concentration in the industry.

Other devices gradually emerged to complete the mechanization of the sawmill. Logs were hauled from the water by wheels and placed on cradles which guided them through the saws.

Increasing mechanization was accompanied by increasing rationalization of production. An anonymous report on the lumber trade of the Ottawa Valley in 1871 gives the following description of the process of production:

> There are various kinds of saws, each performing its particular duty in the process. The slabber-gate, ... cuts the outside of the log into boards 1 in. thick, leaving the bulk in a slab of 14 inches in thickness.
>
> The large slab is then turned over ... and run through the stock-gate, which ... saws the slab into 1 inch boards.
>
> The Yankee-gate is a combination of the slabber and stock-gate. ... This gang saws both ways.
>
> The butting and edging tables are for the purpose of taking off the rough sides and ends of the planks as they come from the larger gangs. ...
>
> The piling grounds are of vast extent, and in many cases are supplied with railways over which the lumber is drawn in horse trucks.[1]

Sawmills working for the export market had become factories. For example, in 1873 Gilmour and Company's Mill in Hull produced 14,000,000 feet of lumber annually. This mill employed over 100 men and had a capacity of 100,000 to 110,000 feet every 24 hours.[2]

It will be noticed from a comparison of Tables 7, 8, and 9 that the number of sawmills increased considerably from 1871 to 1891. As settlement

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[1]Anon., The Lumber Trade of the Ottawa Valley, 3rd edition, (Ottawa: Times Steam Printing and Publishing Company, 1872), pp. 51-53.

[2]Innis and Lower, op. cit., p. 515, footnote 3.

increased during this period, the demand for lumber increased and more supplies of logs became available from cleared land.[1] As a result there was an increase in the number of mills, most of which were small however. In Hull there appears to have been several small mills working exclusively for the local market.

The Development of Secondary Industries:

While sawmilling constituted the most important activity in terms of labour force, value of production, and as the main export item, there also developed a series of secondary industries as a result of increased population in Hull.[2] These were essentially of two types -- those that used local raw materials directly, and those that used the products of the sawmills, or which were in some way linked with this industry.

The first type was quite common in Canada during this period. Its composition and structure has been aptly summarized by Higgins and Lermer:

> The character and extent of manufactures were determined primarily by the distribution and abundance of raw materials, but lack of transportation made the development of large-scale enterprise negligible. ... Industries were scattered throughout the towns and villages. ... Industrial establishments ranged, in order of value, through flour-mills, small sawmills, boot and shoe factories, tanneries, bakeries, woollen-mills, blacksmith shops, and many others. Simple agricultural implements and tools were widely manufactured. Establishments, however, were small.[3]

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[1] Ibid., pp. 521-522.

[2] The words 'secondary industries' as used here cover all categories except the sawmilling industry. Broadly speaking, the difference between the two lies in the fact that the secondary industries were distinguished by a dependence on the domestic market and by a location near to markets.

[3] B.J. Higgins and A. Lermer, "Trends and Structure of the Economy", in Canada, G.W. Brown, ed., (Toronto: University of Toronto Press, 1953), p. 225.

An examination of Tables 7, 8, and 9, shows that this description applies to the Hull area during this period.

The development of the secondary industries was due to the growth of population, to the lack of transportation, and to the tariffs which had been imposed on foreign manufactured goods in 1859.[1] This measure, in fact, had been taken with a view to favouring the development of domestic industry. The protection was reinforced when the National Policy of tariff increases came into effect in 1878.[2] The majority of industries in this sector seem to have remained untouched by technical development, and to have multiplied rather than increased capacity as the local market expanded.

Another characteristic of the period was the development of industries dependent on the lumber trade for their raw materials. Activities such as cabinet and furniture making, carriage making, shingle making, sash and door making, pail and tub making, and match making were closely dependent on the sawmills for their primary materials. Innis and Lower quote a report which probably refers to the Eddy mills in Hull, and which illustrates the nature of the relationship which existed between certain of these activities and the lumber trade:

> At one of the leading mills, ... near the Chaudiere Falls, ... the larger refuse is rapidly converted into water pails by very ingenious machinery. Such as is not available for pails is used by a neighbouring match manufactory.[3]

By-product industries, representing secondary stages of production, had

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[1]Easterbrook and Aitken, op. cit., p. 373.

[2]Ibid., p. 388.

[3]Sessional Papers of the House of Commons, Vol. 12, 1887, quoted in Innis and Lower, op. cit., p. 509, footnote 2.

developed in relation to the large mills producing for export.

As industry developed and as trade increased, the demand for packing cases, boxes and barrels increased. Likewise, the development of overland transportation led to the development of establishments producing carriages. The growth of population stimulated the demand for building materials and gave rise to sash, door and blind factories, and to the production of shingles. Although these were not by-product activities, yet they depended on the sawmills for their raw materials.

Contrary to the situation that occurred in industries of the first type -- bakeries, flour mills, etc., the number of establishments in the 'wood' industries generally did not increase except for carriage, and cabinet and furniture making (Tables 7, 8, and 9). This is due to the fact that in Hull, and in most places in the Ottawa Valley, these activities were under the control of large sawmilling interests. The match, pail and tub, and packing case factories, and at least one of the sash, door and blind factories referred to in tables 7, 8, and 9, most probably refer to those of E.B. Eddy. The mechanization and rationalization of production which had occurred in the sawmills was therefore extended to these secondary sectors. In the Eddy match factory there were separate machine, dipping, drying and packing rooms.[1] The wood was cut up by machines which divided it into pieces of the exact size of the match.[2] In the pail factory "every part was made by beautiful machinery".[3] In one room the staves were sawn into regular size, in another the bottoms and

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[1] The Lumber Trade ... , p. 38.

[2] Ibid., p. 38.

[3] Ibid., p. 39.

hoops were manufactured, in another the handles turned and in another the various parts assembled.[1] In 1872, the Eddy establishments manufactured 600,000 pails, 45,000 wash tubs, 72,000 washboards, and 270,000 gross of matches.[2] This scale of production was sufficient to meet the needs not only of the local market but also of the export trade. There was therefore little opportunity for new establishments to enter the market. Carriage making and furniture making, on the other hand, were still handicraft-type industries.[3] As the market expanded, they simply multiplied, especially as small sawmills were still numerous.

Although, when compared to the previous periods, the period from 1860 to 1890 was one of industrial expansion and industrial change in Hull, yet growth was not uniform. The fastest growth seems to have occurred between 1860 and 1880. It was during this time that E.B. Eddy had expanded his by-product operations, and that large sawmills had risen in the community. The lumber trade was expanding and this was a time of rising prosperity in Canada.[4] By 1881, the city had forty-three establishments which employed 1,424 persons, and had a total value of production of $1,846,358.[5] This represented approximately half of the industrial activity in Ottawa County. By 1891, however, although the number of establishments had risen to 70, employment had only increased to 1,573 and value of production had fallen to $1,287,292.[6] This now

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[1] Ibid.

[2] Ibid., p. 36.

[3] Innis and Lower, op. cit., pp. 518-523.

[4] O.J. Firestone, Canada's Economic Development. 1867-1953. (London: Bowes and Bowes, 1958), pp. 206-208.

[5] Census of 1901, Vol. 3, Table 20.

[6] Ibid.

represented only one-third of industrial activity in the County of Ottawa. This situation contrasted with manufacturing activity on the national scene. In Canada, from 1881 to 1891, there had been a 51.8 per cent increase in the number of establishments, a 44.4 per cent increase in the number of employees, and a 53.5 per cent increase in the gross value of production.[1]

This was due, in part, to the disappearance of several large sawmills. Although for the County as a whole, the number of sawmills increased, their value of production decreased (Tables 8 and 9). In Hull, the Gilmour, Leamy, Crandall and Ottawa Steam mills had ceased production during this period.[2] There were also changes beginning to occur in the economic environment, changes which will be discussed more fully in the next chapter, and to which industry in the city was only beginning to react.

On the other hand, the secondary sector continued to expand, and new activities entered upon the scene. However, since most of these were small establishments, they swelled the ranks of industry without contributing greatly to the labour force and value of production.

The Growth of Hull

As manufacturing developed after 1861, the population of the township increased rapidly. The rate of growth from 1861 to 1871 was four times greater than that during the previous decade (Table 10).

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[1]O.J. McDiarmid, Commercial Policy in the Canadian Economy, (Cambridge: Harvard University Press, 1946), p. 185.

[2]Brault, op. cit., pp. 143-145.

TABLE 10

The Growth of Population. Hull Township. 1851-1871

	Population	Percentage change
1851	2811	
		32%
1861	3711	
		125%
1871	8318	

Source: Census of Canada, 1851, 1861, 1871.

In the early 1870's however, the population was still largely dispersed throughout the township, and there had been little change in the pattern of settlement in the community since 1850 (Figures 2 and 3).[1] As at the time of the Wrights, there were still two major concentrations -- one behind the Chaudiere and the other around the wharf, a little to the east. The first one functioned as the commercial centre of the settlement and was the most important. It was there that settlement had begun, and it was located at the entrance to the only bridge connecting Hull and Ottawa. Three additional concentrations had also developed -- the 'villages' of Bretagne and Argentine to the west of Brewery Creek, and that of St. Joseph to the north of the two main nucleii (Figure 3).[2]

The location of manufacturing exerted a strong influence on this pattern. In effect, at a time when rapid intra-urban means of transportation were non-existent, the desire to reduce the journey to work to a

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[1]Information on the development of Hull during this period has been largely obtained from Brault, op. cit., pp. 77-128, Rossignol, op. cit., pp. 212-261, and E.E. Cinq-Mars, Hull, son origine, ses progrès, son avenir, (Hull: Bérubé Frères, 1908).

[2]Rossignol, op. cit., p. 227.

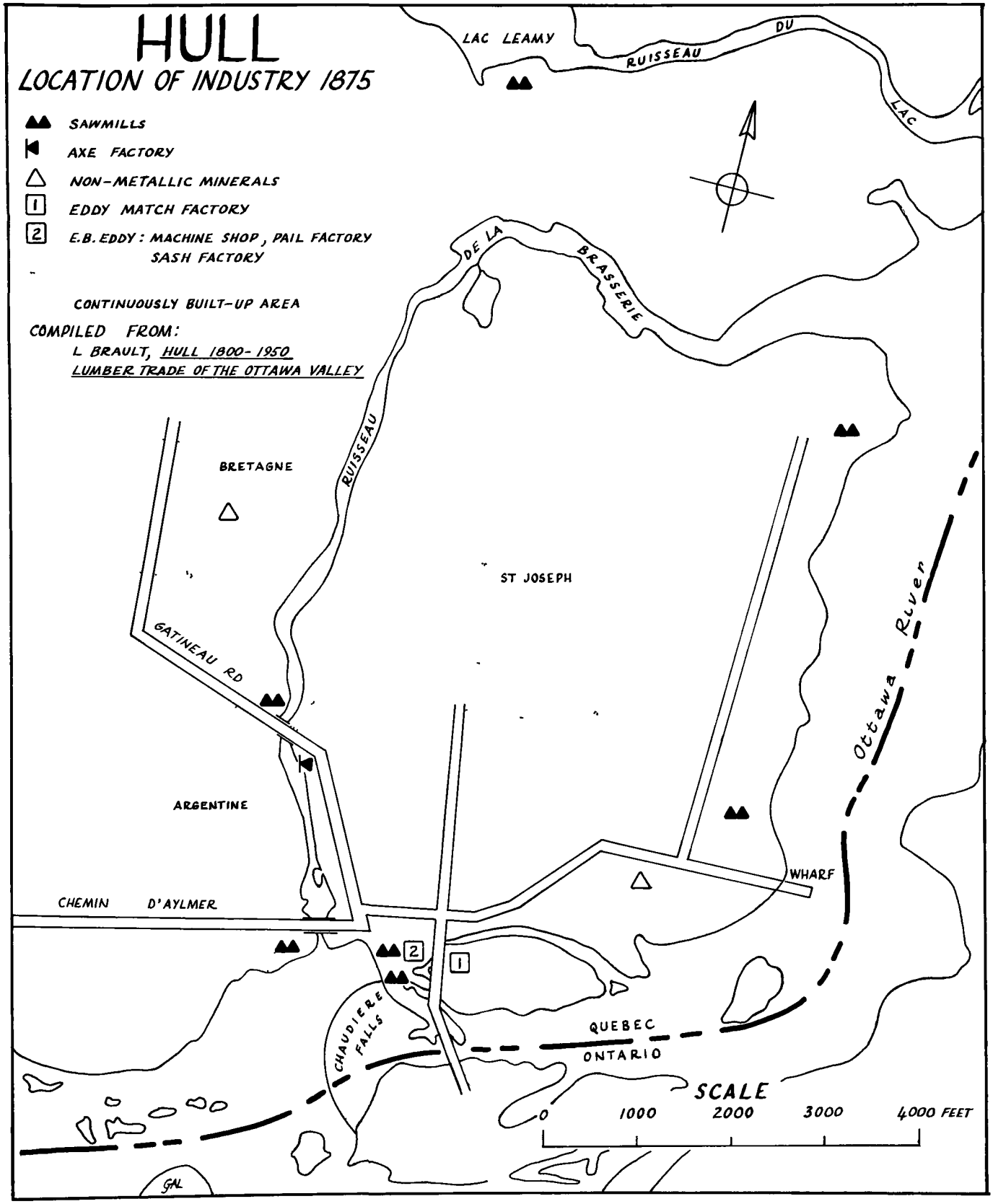
HULL
LOCATION OF INDUSTRY 1875
SAWMILLS
AXE FACTORY
NON-METALLIC MINERALS
1 EDDY MATCH FACTORY
2 E.B. EDDY: MACHINE SHOP, PAIL FACTORY
SASH FACTORY
CONTINUOUSLY BUILT-UP AREA
COMPILED FROM:
L BRAULT, HULL 1800-1950
LUMBER TRADE OF THE OTTAWA VALLEY
LAC LEAMY
RUISSEAU DU LAC
DE LA BRASSERIE
RUISSEAU
BRETAGNE
ST JOSEPH
GATINEAU RD
ARGENTINE
CHEMIN D'AYLMER
WHARF
Ottawa River
CHAUDIERE FALLS
QUEBEC
ONTARIO
SCALE
0 1000 2000 3000 4000 FEET
GAL

Figure 3

minimum stimulated the rise of workers' houses in the vicinity of the manufacturing establishments. As Aileen Ross has noted, it was with reference to the factory, the plant or the mining pit that the workers' houses, the service establishments and other community institutions successively located themselves.[1] As factories located within the settlement, they determined a geographical re-distribution of the residential districts and of their service institutions.[2]

The two original concentrations had been reinforced by the presence of the Eddy mills and factories, and by that of the Hurdman and Ottawa Steam mills. Argentine was located by Lemay's mills and the axe factory along Brewery Creek. Bretagne was within easy distance of these and of the developments along the Chaudiere. St. Joseph was close to the Gilmour mill in the northeastern sector of the settlement. (Figure 3).

Not only did industry influence the urban pattern, but it also had an impact on the urban landscape. The whole waterfront was taken up by mills and piling grounds for lumber, and by other factories (Figure 3). A description of the Eddy establishments in 1871 underlines this aspect:

> Eddy's mills and piling grounds ... extend from above the Chaudiere falls to the island opposite the Parliament buildings. They consist of one large pail factory built solidly of stone; a match factory also of stone; four saw mills of great extent, ... and numerous other buildings, offices, etc. necessary to such extensive operations, including a sash, door, and blind factory, and a general store.[3]

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[1] A.D. Ross, "The Changing Social Structures", in Essays on Contemporary Quebec, J.-C. Falardeau, ed. (Quebec: Laval University Press, 1953), pp. 101-124.

[2] Ibid.

[3] The Lumber Trade ..., p. 36.

The smaller secondary establishments were scattered throughout the urban area and probably did not contribute a distinctive tone to the urban landscape.

After its incorporation in 1875, the population of the city continued to increase and the urban area expanded. From 1881 to 1891 the population increased from 6,890 to 11,264 inhabitants, an increase of 63 per cent.[1] This happened despite the fact that manufacturing had been generally stagnant during this period. The increase must be largely attributed to the large number of people leaving the farms as agricultural prices dropped in the 1880's.[2]

As the population increased, the area between the two major concentrations gradually built up. This was rendered considerably difficult by the rough terrain and by the presence of several small creeks which emptied into the Ottawa. However, by 1891 the whole lower part of the 'island' was occupied and housed most of the city's inhabitants (Figure 4). It was the administrative, commercial and industrial heart of the urban area. Although most of the essential municipal services were still lacking, yet the groundwork had been laid for future development of the city.

Summary

In assessing the development of manufacturing during this period, two factors stand out -- the economic climate of the times, and the role of E.B. Eddy.

Economic development in the region was based on external demand for

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[1]Census of Canada, 1881, 1891.

[2]Firestone, op. cit., p. 206.

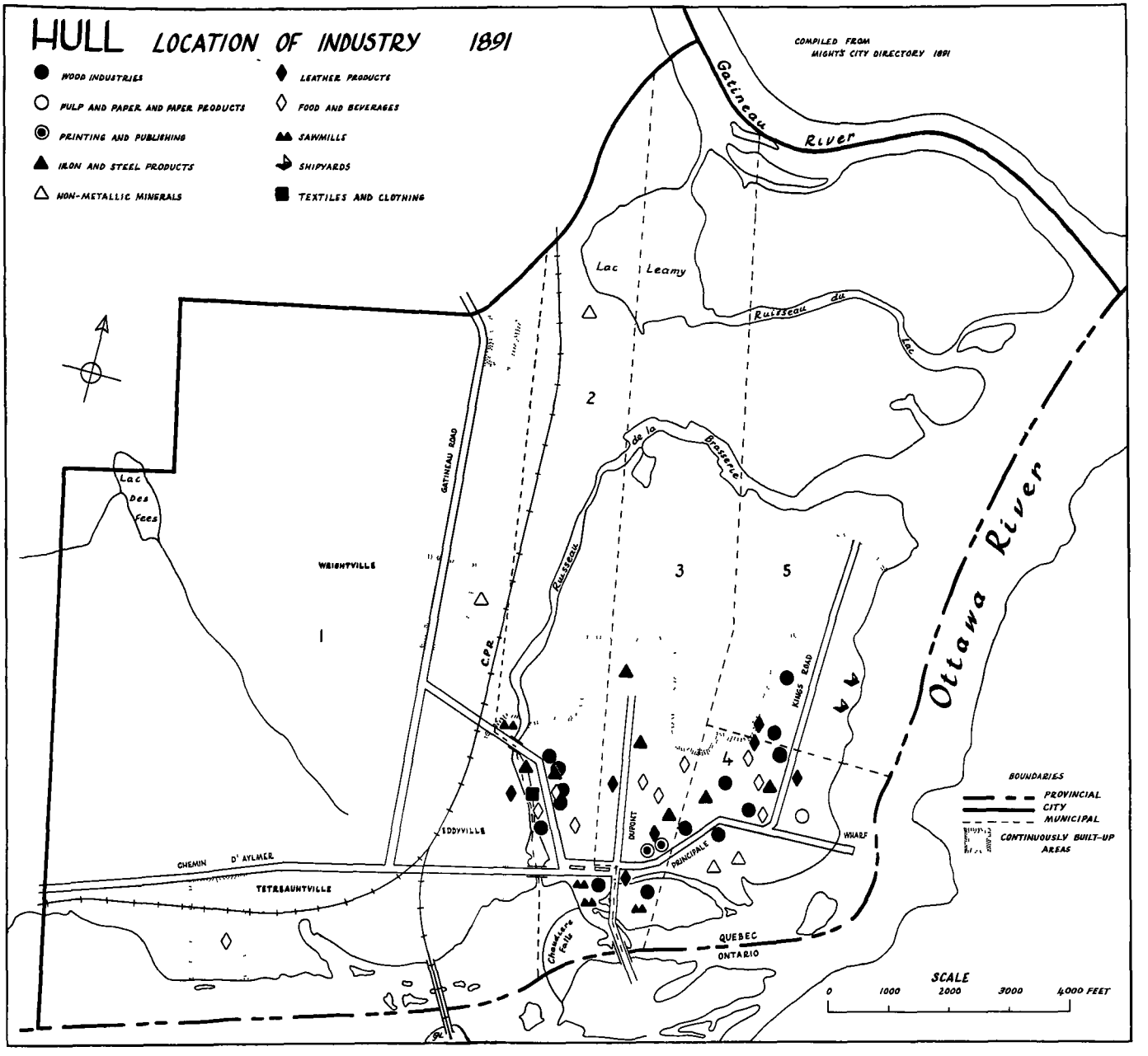
HULL LOCATION OF INDUSTRY 1891
COMPILED FROM MIGHTS CITY DIRECTORY 1891
WOOD INDUSTRIES
PULP AND PAPER AND PAPER PRODUCTS
PRINTING AND PUBLISHING
IRON AND STEEL PRODUCTS
NON-METALLIC MINERALS
LEATHER PRODUCTS
FOOD AND BEVERAGES
SAWMILLS
SHIPYARDS
TEXTILES AND CLOTHING
Gatineau River
Lac Leamy
Ruisseau du Lac
Lac Des Fees
WRIGHTVILLE
GATINEAU ROAD
de la Brasserie
Ruisseau
C.P.R.
KINGS ROAD
Ottawa River
EDDYVILLE
DUPONT
PRINCIPALE
WHARF
CHEMIN D' AYLMER
TETREAUVILLE
Chaudière Falls
QUEBEC
ONTARIO
1
2
3
4
5
BOUNDARIES
PROVINCIAL
CITY
MUNICIPAL
CONTINUOUSLY BUILT-UP AREAS
SCALE
0 1000 2000 3000 4000 FEET

Figure 4

sawn lumber. As the major export product, sawn lumber played a similar role to that of square timber before the 1850's. Since it involved the processing of the raw material on a large scale however, it promoted the rise of large sawmills, in contrast with the situation that prevailed during the previous period. Sawmills were the channel through which technical developments and the factory system penetrated into the Ottawa-Hull area. At the same time, the sawmills provided inputs for other industries and gave rise to industrial concentrations. The rise of secondary industry was further encouraged by the large population which the sawmills attracted and by the protective tariffs in vigour during this period.

It is against this background that industry developed in Hull. The city, because of its abundant waterpower and proximity to transportation facilities, attracted several large sawmills which were among the most important in the region. Hull also became a specialized centre in the production of matches, washboards, pails and tubs. This was due to the good management and the ability to shift resources at the dictate of the market shown by E.B. Eddy. He was engaged not only in sawmilling but had begun the production of matches in the area. Displaying remarkable inventiveness, he had developed a process for making water pails from compressed sawdust, and had designed the machinery in his match, and pail and tub factories. His operations were integrated since he not only controlled his supply of raw materials but also had a distribution network in operation in Ontario and Quebec. His establishments were the major element in the export base on which the community could expand.

As the local economy became more complex, it attracted establishments serving both the export and local markets. The end of this period

however, marked another change in the industrial development of the community. Changing internal and external factors were to usher in a new era in manufacturing.

These developments were to be accompanied by a fast growth of the city's population, and by a movement towards the peripheries of the urban area (Table 11 and Figure 5).

TABLE 11

Growth of Population in Hull, by Wards. 1885-1900

Wards	1	2	3	3a	4	5	Total
1885	351	1,138	3,364	-	2,434	709	7,996
1900	1,068	2,122	2,684	2,782	2,432	2,363	13,451

Source: Cinq-Mars. Hull, son origine, son progrès, son avenir.

CHAPTER IV

THE RISE OF MODERN INDUSTRY: 1890-1961

Before 1890, industry in Hull comprised of sawmills and wood industries, and a number of small establishments geared to the local demand. Because of great demand abroad for forest products, the area had been able to use its hydraulic and forest resources to good advantage. As the main export sector developed, secondary industries arose and the community expanded.

However, during the twenty years which straddle the turn of the century, the industrial structure of the city began to undergo a transformation under the impetus of a series of changes in internal and external conditions.

Two significant developments had occurred in the area near the end of the previous period -- the harnessing of the Chaudiere for the production of hydroelectricy in 1885,[1] and the beginning of production of groundwood and sulphite pulp in 1886 and 1889 respectively.[2] These events, all due to E.B. Eddy, constituted a minor revolution in that they transformed the conditions of industrial progress in the area. Once again, they were the result of a clear awareness on the part of Eddy of the shifting advantages and disadvantages which the area offered to industry.

In effect, economic conditions in Canada were changing, and the

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[1]J.H. Dales, Hydroelectricity and Industrial Development. Quebec 1898-1940. (Cambridge, Mass.: Harvard University Press, 1957), p. 143.

[2]Carruthers, op. cit., pp. 393-416.

Canadian economy was entering an era of industrialization.[1] Most importantly, from our point of view, this transformation was accompanied by the substitution of steel for wood as the basic product of industry. Thus a new era was beginning, during which coal and iron would be the primary factors conditioning economic development. At the same time, the St. Lawrence and the Great Lakes had become the major axes of trade and industry in eastern Canada. The economy of the Ottawa region which was based on lumber and water resources, was threatened in the long run. The area lacked both coal and iron, lay outside the St. Lawrence axis and was therefore placed at a comparative disadvantage.[2]

On the other hand, as the population in the United States and Canada increased and as the movement toward urbanization progressed, there arose a new demand for newsprint and other paper products.

At the same time, with the development of communications and technical progress in transportation, the national economy was becoming more and more integrated. The raison d'être of many small establishments which had flourished in a more or less closed local environment was going to disappear. Bigger industries with larger market areas were, in certain cases, going to replace them.

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[1]See Easterbrook and Aitken, op. cit., pp. 400-407 and pp. 515-557; Firestone, op. cit., pp. 208-210; R. Parenteau, 'The Impact of Industrialization in Quebec", in The Canadian Economy. Selected Readings, J.J. Deutsch et al., ed., (Toronto: McGraw-Hill, 1961), pp. 508-523; A. Faucher and M. Lamontagne, "History of Industrial Development", in Essays on Contemporary Quebec, J.-C. Falardeau, ed., (Quebec: Laval University Press, 1953), pp. 23-37.

[2]The iron deposits to the north of the city had been worked at various times in the past, but their exploitation had last ceased in 1880. Although extraction was to begin again during the First World War, it was soon terminated due to the poor quality of the ore. See, Brault, op.cit., pp. 145-148.

When viewed in this context, the afore-mentioned developments in Hull assume their full significance. The pulp and paper industry was going to become the dominant mode of exploitation of the forest resources of the region at a time when the lumber industry in eastern Canada was beginning to operate in an increasingly unfavourable environment.[1] Water also became a cheaper and more flexible substitute than coal as a source of power. The resources of the Hull area were therefore going to assume new locational significance.

It was during this period that Hull began to acquire the industrial structure and the industrial pattern that were going to characterize it to the present day. The factory was going to become a permanent part of the urban landscape.

Industrial Development: 1891-1910

Industrial development during this period can be assessed from Tables 12, 13 and 14.

TABLE 12

Manufactures in Hull. 1891-1910

Year	No. of establishments	No. of employees	Value of products ($)
1891	70	1,573	1,287,292
1900	8[a]	1,508	3,182,050
1910	31[a]	2,918	7,259,301

Source: Census of 1901, vol. 3, and Postal Census of Manufactures, 1916.

[a]Establishments employing five hands and over.

[1]Lower, op. cit., pp. 185-201.

TABLE 13

Manufactures in Wright County. 1901

Category	No. of establishments	No. of employees	Value of products ($)
Butter and cheese	8	20	51,211
Log products	15	611	733,595
Cut mica	4	90	95,226
Other[a]	12	1,282	2,635,317
Total	39	2,003	3,515,349

Source: Census of 1901, vol. 3.

[a]Includes 1 axes and tools, 1 brick, 1 carriages and wagons, 1 electric light and power, 1 flouring and grist mill, 2 lime, 1 paper, 1 slaughtering and meat packing, 2 woolen goods, 1 matches.

TABLE 14

Manufactures in Wright County. 1911

Category	No. of establishments	No. of employees	Value of production ($)
Bread, biscuits and confectionery	5	80	199,220
Butter and cheese	20	26	82,023
Electric light and power	4	135	202,316
Housebuilding	4	251	622,205
Log products	34	1,304	1,561,500
Lumber products	8	64	86,250
Cut mica	3	94	51,000
Other[a]	22	2,252	6,576,878
Total	100	4,206	9,381,392

Source: Census of 1911, vol. 3.

[a]Includes 1 awnings, tents and sails, 1 axes and tools, 1 carriages and wagons, 1 cement, 1 clothing, 1 flour and grist mill, 1 furniture and upholstered goods, 1 malt liquors, 2 mattresses, 1 paper, 2 printing and publishing, 1 ships, 1 slaughtering and meat packing, 2 stone, 1 woollen goods.

It is difficult to ascertain exactly the changes that occurred in manufacturing between 1891 and 1900. It appears that the number of establishments decreased during this period, although this can not be verified from the tables alone, since the statistics for 1900 refer only to establishments employing five hands or more. The city directory for 1900 indicates that there were 45 establishments in Hull at the time.[1] A comparison of value of production for 1891 and 1900 indicate however, that some growth in manufacturing did occur. Table 12 also shows that a few large establishments dominated the industrial structure although small establishments were prevalent.

The years from 1900 to 1910 witnessed a rapid rate of industrial growth. The number of establishments employing five hands or more increased by 257 per cent, the number of employees grew by 93 per cent, and the value of industrial production increased by 128 per cent. For Canada as a whole, the comparable increases were 31 per cent, 51 per cent and 142 per cent.[2]

The growth of manufacturing from 1891 to 1910 can be attributed in good part to the establishment of new concerns in the city. In 1893, Gilmour and Hughson had erected a large sawmill near the mouth of Brewery Creek and were producing for the export market.[3] At the same time, slaughtering and meat packing were being organized on a more rational basis. In 1896, the George Matthews Co., with official encouragement from

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[1]The Ottawa City Directory, 1900-1900. To which is added a Directory of Hull, Que., (Ottawa: Might's Directory Co., 1901).

[2]Compiled from Higgins and Lerner, op. cit., p. 242.

[3]Brault, op. cit., p. 143.

the municipality, has erected a pork packing establishment that supplied many of the lumber camps on the upper Ottawa and Gatineau, and the growing urban population of the region.[1] It replaced several small meat curing establishments in existence before this time. In 1903, a portland cement factory began exploiting the limestone deposits near Leamy's Lake,[2] and in 1906 the first major textile plant arose.[3] The Woods Manufacturing Co. specialized in the production of sports wear and of clothing and canvas for the lumber industry and had a large market in eastern Canada.[4] Originally established in Ottawa, it moved to Hull when faced with expropriation in the capital and began tapping the reservoir of female labour in Hull.

These establishments had sufficient capital behind them to engage immediately in large scale operations and to finance further development. They produced mainly for export and had regional and/or national markets.[5]

During this period, the Eddy Co. abandoned its sawmilling operations and concentrated on the by-products of wood, a move which began around 1890. In 1889, the company had started to produce sulphite pulp, and by 1900 it was engaged in the production of newsprint, paper, cardboard and paper and cardboard products.[6] At the same time it was still pursuing

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[1] Ibid., pp. 149-151.

[2] Ibid., p. 149.

[3] Ibid., p. 151.

[4] Cinq-Mars, op. cit., p. 155.

[5] Canadian Industrial Blue Book, (Montreal and Toronto: The Manufacturer's List Co., 1904), p. 148.

[6] Carruthers, op. cit., pp. 393-416.

activities such as match, and pail and tub making that Eddy himself had begun almost fifty years earlier. It loomed very large in the industrial structure of the community, and the Canadian Industrial Blue Book for 1904 lists indurated fibreware, match, pail and tub, paper bag, and washboard factories, as well as paper and sulphite pulp mills and machine shops under the company name.[1]

Several small establishments such as dairies, and electric power plant, a mica factory, a printing plant, a brick factory, and a woollen mill also began production during this period. Their small size did not restrict them exclusively to the local market however. The Walters axe company had a dominion-wide market, and Farley Brick had a provincial market.[2] They joined 'traditional' activities such as baking, blacksmithing, carriage making, tailoring and dress making which were already well represented at the beginning of the period.[3]

The large increase in number of establishments, when compared to the increase in value of production, especially from 1900 to 1910 would indicate that the small establishments were by no means insignificant, and that they must have contributed a great deal to the industrial growth of the community.

As manufacturing developed, the industrial structure underwent a transformation. It became characterized not so much by new types of activity, except for the pulp and paper industry, as by the entry of large firms into sectors previously dominated by small establishments, and by a

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[1]Canadian Industrial Blue Book, p. 148.

[2]Ibid.

[3]This has been established from a comparison of the Might's City Directory for 1891, 1900 and 1910.

lesser dependence on the direct exploitation of the forest resources of the area. At the same time, the resources of the area were being put to more sophisticated use. Limestone deposits not only provided the raw materials for portland cement but also for plaster of Paris, sewer pipes, drain pipes and tiles, etc. Canvas goods, sporting wear, gloves and socks were typical textile products. The E.B. Eddy Co., of course, was producing a wide range of paper, cardboard, wooden, and wood fibre goods.[1]

Growth of the City and Location of Manufacturing: 1891-1910

Between 1890 and 1910, the greatest expansion of the urban area took place on the 'island'. In 1890, the lower part of the 'island', and a northward extension along the Ottawa were already built up (Figure 4). The rest of the population was located in small concentrations to the west of Brewery Creek (Figure 4). The main business arteries were Main and Bridge streets, with a minor commercial development occurring along King's Rd. By 1910, the urban area on the 'island' was further extended to the north, and the concentration to the west of Brewery Creek had grown considerably (Figure 5).

During this period, close to 90 per cent of the city's population still resided in the major concentration (Table 15 and Figures 4 and 5).

The above table also indicates that a movement of population was occurring towards the outlying wards and that the core of the city, ward no. 3, experienced a slight decline.

This outward expansion was the result not only of the increasing population, but of the beginning of a street-car service which speeded up

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[1]Might's City Directory, 1891, 1900 1910, and Canadian Industrial Blue Book, 1904.

TABLE 15

Growth of population in Hull, by wards. 1900-1908

Ward	1	2	3	3[a]	4	5	Total
1900	1,068	2,122	2,684	2,782	2,432	2,363	13,451
1908	1,265	1,803	2,186	3,472	2,622	3,172	14,520

Source: Cinq-Mars, Hull, son origine, ses progrès, son avenir.

communications within the city,[1] and of the growth of industrial zones along the periphery of the main urban area (Figure 5).

By 1910, a distinct pattern of industrial location had begun to emerge. The waterfront zone, whose growth had been promoted largely by the presence of large sawmills during the previous period (Figure 3),now consisted of a power company, the Eddy pulp and paper mills and other Eddy factories, a lumber mill and a textile plant (Figure 5). It was the only continuous industrial zone in the sense that land use was strictly industrial.

A second well defined, but not continuous zone occurred along both sides of Brewery Creek, and extended from the Chaudiere to the bridge on Brewery street. It consisted mainly of small establishments in the textile, iron products, and food sectors (Figure 5).

A third zone had begun to emerge along the railway tracks to the west of Brewery Creek. It was anchored at either end by the cement factory and by the pork-packing establishment, but much of the area in between was as yet unoccupied (Figure 5).

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[1]For a history of the Hull Electric Company, see J.F. Due, The Intercity Electric Railway Industry in Canada, (Toronto: University of Toronto Press, 1966), pp. 99-100.

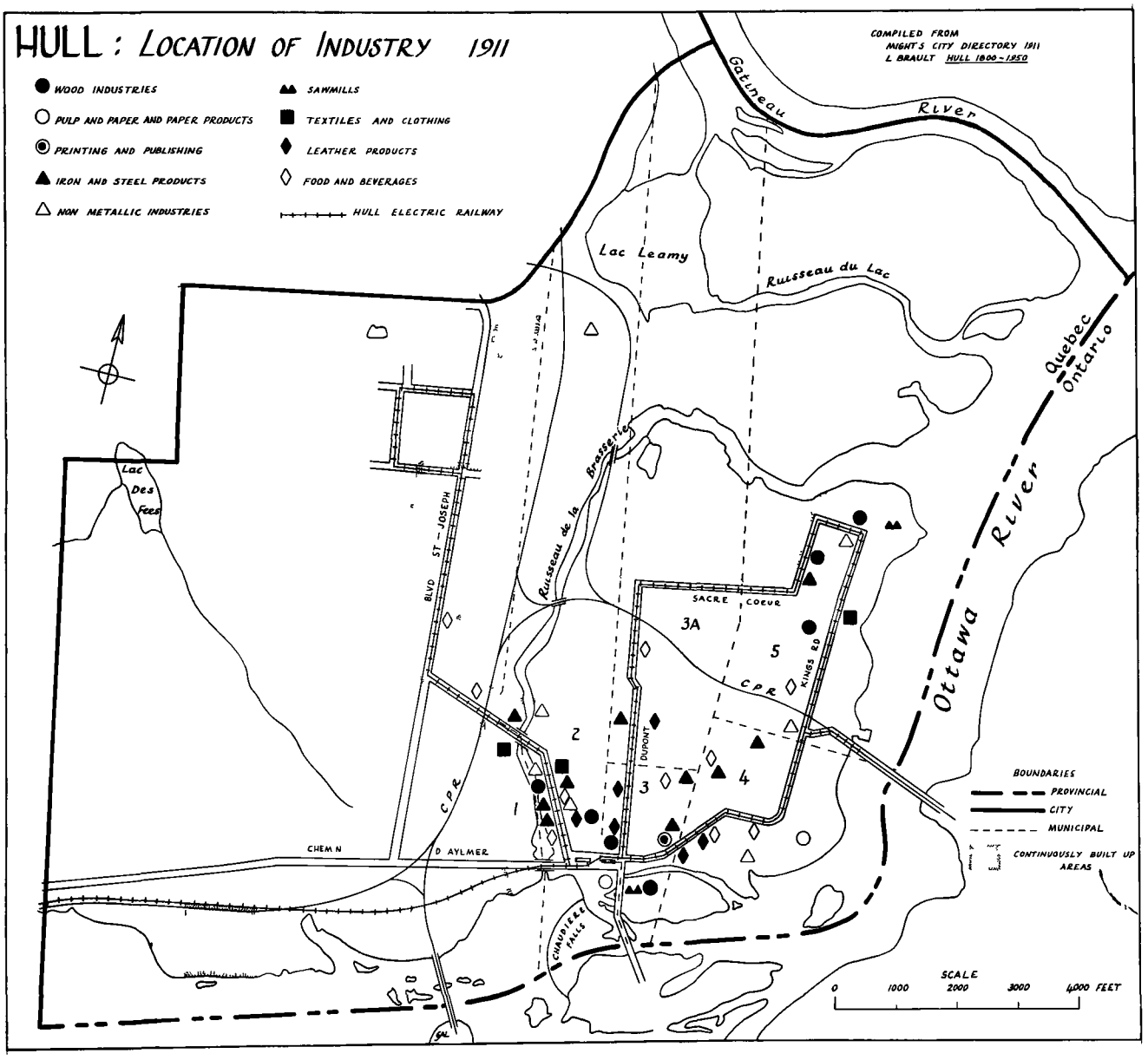
HULL : LOCATION OF INDUSTRY 1911
COMPILED FROM
MIGHT'S CITY DIRECTORY 1911
L BRAULT HULL 1800 - 1950
WOOD INDUSTRIES
PULP AND PAPER AND PAPER PRODUCTS
PRINTING AND PUBLISHING
IRON AND STEEL PRODUCTS
NON METALLIC INDUSTRIES
SAWMILLS
TEXTILES AND CLOTHING
LEATHER PRODUCTS
FOOD AND BEVERAGES
HULL ELECTRIC RAILWAY
Gatineau River
Lac Leamy
Ruisseau du Lac
Quebec
Ontario
Ottawa River
Lac Des Fees
BLVD ST - JOSEPH
Ruisseau de la Brasserie
SACRE COEUR
3A
5
KINGS RD
CPR
DUPONT
2
3
4
1
CPR
CHEM N
D AYLMER
CHAUDIERE FALLS
BOUNDARIES
PROVINCIAL
CITY
MUNICIPAL
CONTINUOUSLY BUILT UP AREAS
SCALE
0 1000 2000 3000 4000 FEET

Figure 5

Other small manufacturing establishments were scattered throughout the lower part of the 'island', and occurred alongside residential and business establishments (Figure 5).

This intraurban location of manufacturing is explained by several factors. Sawmills and pulp and paper mills are traditional waterfront industries.[1] In this case, the importance of the Chaudiere as a source of power only reinforced the pattern. The cement factory, using a bulky raw material was attracted to its source. Its location was further determined by the presence of the railroad. Large concerns like the meat packing factory and the Woods textile plant, having large space requirements, were guided in their choice by the availability of land and by the presence of major transportation facilities.

The major transportation arteries also seem to have determined the location of many of the small establishments, although several of these located indiscriminately in the heart of the city, since their space requirements were small and they served the local market.

One general requirements of almost all industries was proximity to the built-up area and to the workers' homes. Despite the installation of a street-car system, this was still a predominantly walk-to-work city and manufacturing establishments drew most of their labour force from the immediate vicinity.

After 1910, as manufacturing continued to grow, the above pattern was going to be reinforced and exert considerable influence on the development of the urban area.

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[1]A. Pred, "The Intrametropolitan Location of American Manufacturing", Annals of the Association of American Geographers, Vol. 54, No. 2, 1964, pp. 165-180.

Industrial Development: 1910-1940

Unfortunately, this is a difficult period to analyze due to the almost complete lack of material. Although figures are available by industry groups, there are no details concerning their geographical distribution. When, on the other hand, the geographical distribution becomes available details concerning industrial groups are withheld, except in the case of metropolitan areas. The major industries which were approached were loath or unable to reveal anything but the most general information. It was not until 1940, when the Hull Assessor's Office began an industrial census that employment figures by establishments became available. Their definition of what constitutes a manufacturing establishment, however, varies considerably from the Standard Industrial Classification. By consulting business directories, and through interviews it was possible however to follow the evolution of manufacturing during this period.[1]

From 1910 to 1940, manufacturing passed through a series of ups and downs. The years from 1910 to 1915 witnessed a decline in every aspect of industrial production (Table 16). This was accompanied on the national scene by a decrease in the number of establishments and employees, but by a slight increase in value of production.[2]

This decline may be attributed to the effects of the First World War. A comparison of the city directories for 1910, 1915 and 1921, indicates that some establishments had disappeared in 1915, only to crop up again by 1921. Although the war had promoted increased activity in

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[1]The author is especially indebted to Messrs. R. St. Cyr, H. Hinchey, A. Dupuis, M. Landau and H. Gauthier for their assistance.

[2]Higgins and Lermer, op. cit., p. 242.

some sectors, this was largely limited to non-ferrous metals and steel products, industries which were absent in Hull.[1]

TABLE 16

Industrial Activity in Hull: 1910-1915

Year	No. of establishments	No. of employees	Value of production ($)
1910	31[a]	2,918	7,259,301
1915	19[a]	2,260	6,737,274

Source: Postal census of Manufactures, 1916.

[a]Employing five hands and over.

By 1921, manufacturing seems to have rebounded to its pre-war level. There were now forty-five establishments, compared with forty-two in 1910.[2] Several new clothing establishments as well as an iron and steel foundry, which supplied materials for construction purposes and for ornamental work, had entered the scene.

The end of the recession of the early 1920's had seen the rise of the mass-consumption market in North America,[3] and was accompanied by a building boom.[4] In the late twenties, the most important growth in Hull occurred in the pulp and paper, cement, textile and food industries. Both the E.B. Eddy Co. and the Canada Cement Co. increased their capacity as the market for their products expanded. These increases were also

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[1]Firestone. op. cit., p. 242

[2]Might's City Directory. 1910 and 1921.

[3]W.F. Lougheed, Secondary Manufacturing in the Canadian Economy, (Toronto: Baxter Publishing Co., 1961), pp. 51-57.

[4]Firestone, op. cit., p. 211.

promoted by the extensive hydroelectric developments that occurred in the region at this time. The Gatineau Power Company, which emerged between 1926 and 1931,[1] supplied surplus electric power to both of the above establishments, favouring development beyond that permitted by the Chaudiere's potential. The prosperity of the late 'twenties also promoted the growth of the meat packing industry in the city and led to the establishment of the first large dairy in the city.

Several new firms entered the scene during this period, but they were mainly of small scale. Some were typical urban-oriented industries such as dairies, construction and building materials establishments, and printing shops, while others such as jewellery and mica manufacturers exploited a wider but more specialized market. At the same time some establishments disappeared, the most important being the Gilmour and Hughson sawmill and the Eddy match and woodenware factories. The disappearance of the latter was due to the increased substitution of metals for wood as a raw material for durable goods. Some small establishments, producing for the local market, also ceased to exist but they were usually quickly replaced by others of the same kind.

The Depression affected manufacturing in Hull as it did in all of Canada. In 1932 in the county of Hull manufactures employed 1890 persons and produced goods valued at $6,750,032.[2] This level of activity was inferior to that of the city of Hull in 1915 (see Table 16). In 1933, however, recovery began and by 1939 manufacturing employment in Hull had risen to 2,497 and value of production to $12,928,260.[3] If to many

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[1]Dales, op. cit., pp. 142-148.

[2]Canada, Dominion Bureau of Statistics, General Manufacturing Statistics, 1932.

[3]Ibid., 1939.

observers in Hull the years from 1935 to 1939 seem to have been ones of rapid growth in manufacturing, this was due less to expansion of capacity than to the increase in activity due to the recovery. There are no indications that in 1939 the level of activity was higher than in 1929. No important firm entered the industrial scene during that period and the forty-five establishments of 1939 were a slight decrease from the fifty-two of 1929.[1]

One characteristic note of the period from 1910 to 1940 was the decreasing importance of manufacturing as a source of employment for the population of Hull (Table 17).

TABLE 17

Number of Persons Ten Years of Age and Over Engaged in Gainful Occupations in Hull: 1911-1931

Year	All occupations	Manufacturing	Manufacturing as percentage of total
1911	6668	3643	54%
1921	8284	3625	43%
1931	9902	2926	30%

Source: Census of Canada, 1911, 1921, 1931.

As the labour force grew, employment in manufacturing decreased both in absolute and relative terms. Although this can be partly attributed to gains in productivity and to increasing mechanization, it indicates that, as a whole, the manufacturing sector did not greatly expand during the period. This becomes more evident when compared with the

[1] Might's City Directory, 1929-1939.

situation on the national scene. Although manufacturing employment in Canada had decreased in relative importance, it had undergone an absolute increase during this period.[1]

At the same time, the number of Hull residents employed in manufacturing was greater than the employment provided by manufacturing in Hull. A part of the labour force was not absorbed by local manufactures and was employed in other parts of the Ottawa-Hull region. Since 1911, therefore, manufacturing had lost its relative importance as a source of employment.

There had been a few changes in the industrial structure of the city since 1910. Pulp and paper had become the most important sector and there had been growth in the textile, non-metallic minerals (especially cement), and meat packing sectors. Activity in these sectors was in the hands of a few large firms, which had regional, provincial or national markets, and most of which were in existence before the beginning of the period. As the main export industries, they largely determined the evolution of manufacturing in the city.

On the other hand, sawmilling had completely disappeared and wood products had lost a great deal of their former importance. Activities such as carriage making and blacksmithing, having outlived their usefulness also disappeared from the scene.

Growth of the City and Location of Manufacturing: 1910-1940

The pattern of growth of the urban area had already been fixed during the previous period. By 1910, most of the 'island' was already built up, and the sector to the west of Brewery Creek was beginning to develop

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[1]Firestone, op. cit., p. 242.

(Figure 5). It was this sector which was to experience the greatest rate of population growth and of urban expansion from 1910 to 1940 (Tables 18 and 19, and Figure 6).

TABLE 18

Population Growth of Hull. 1911-1941

1911	18,222	1931	29,433
1921	24,117	1941	32,947

Source: Census of Canada, 1911, 1921, 1931, 1941.

TABLE 19

Population Growth in Hull by Ward -- Selected Years

Wards	1	1[a]	2	3	3[a]	4	5	Total
1927	2,336	4,907	2,781	3,479	5,968	3,567	5,049	28,087
1935	2,805	5,680	3,072	2,472	6,626	3,787	5,591	30,058
1940	3,203	6,022	3,059	2,572	6,909	3,978	5,724	31,467

Source: City of Hull, Report of the Assessor, 1927, 1935, 1940.

The 'island', which during the previous period had accounted for ninety per cent of the city's population, had seen its share drop to seventy-five per cent by 1927, as development occurred along St. Joseph Boulevard (Figure 7). A commercial nucleus had developed there which, although not as important as the main one along Main Street, was quite distinct from it. The reason for this development is apparent. As the 'island' was built up, the only space available for expansion lay to the west. The presence of Brewery Creek, the railway and a nascent industrial zone created a buffer zone, which the residential areas were forced to skip. The north-south expansion of these areas conformed to the general

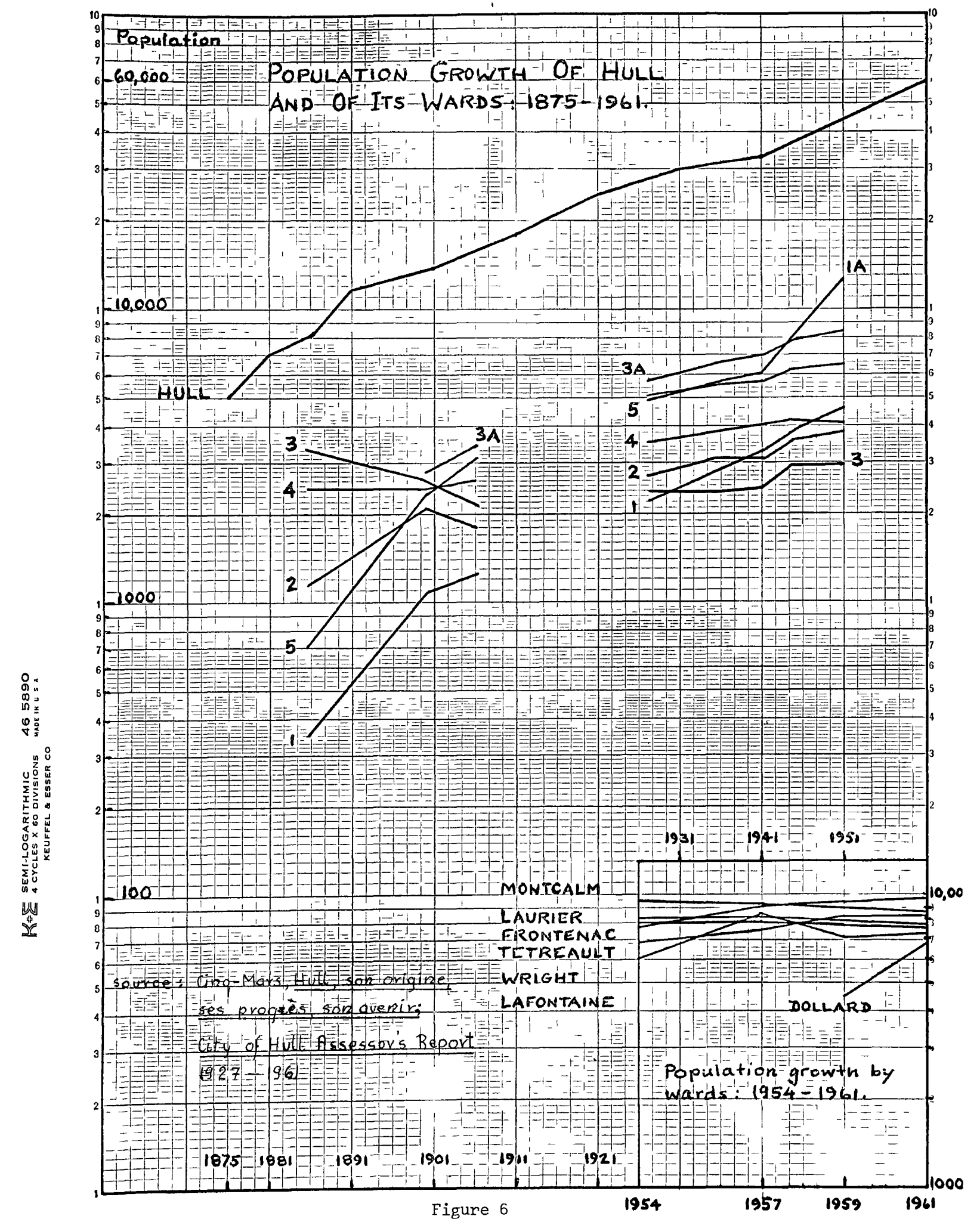
Population
60,000
10,000
1000
100
POPULATION GROWTH OF HULL AND OF ITS WARDS: 1875-1961.
HULL
1A
3A
5
4
2
3
1
1875
1881
1891
1901
1911
1921
1931
1941
1951
1954
1957
1959
1961
MONTCALM
LAURIER
FRONTENAC
TETREAULT
WRIGHT
LAFONTAINE
DOLLARD
10,00
1000
Population growth by wards: 1954-1961.
source: Ono-Mars, Hull, son origine, ses progrès, son avenir;
City of Hull Assessor's Report
1927 - 1961
SEMI-LOGARITHMIC
4 CYCLES X 60 DIVISIONS
KEUFFEL & ESSER CO
46 5890
MADE IN U.S.A.

Figure 6

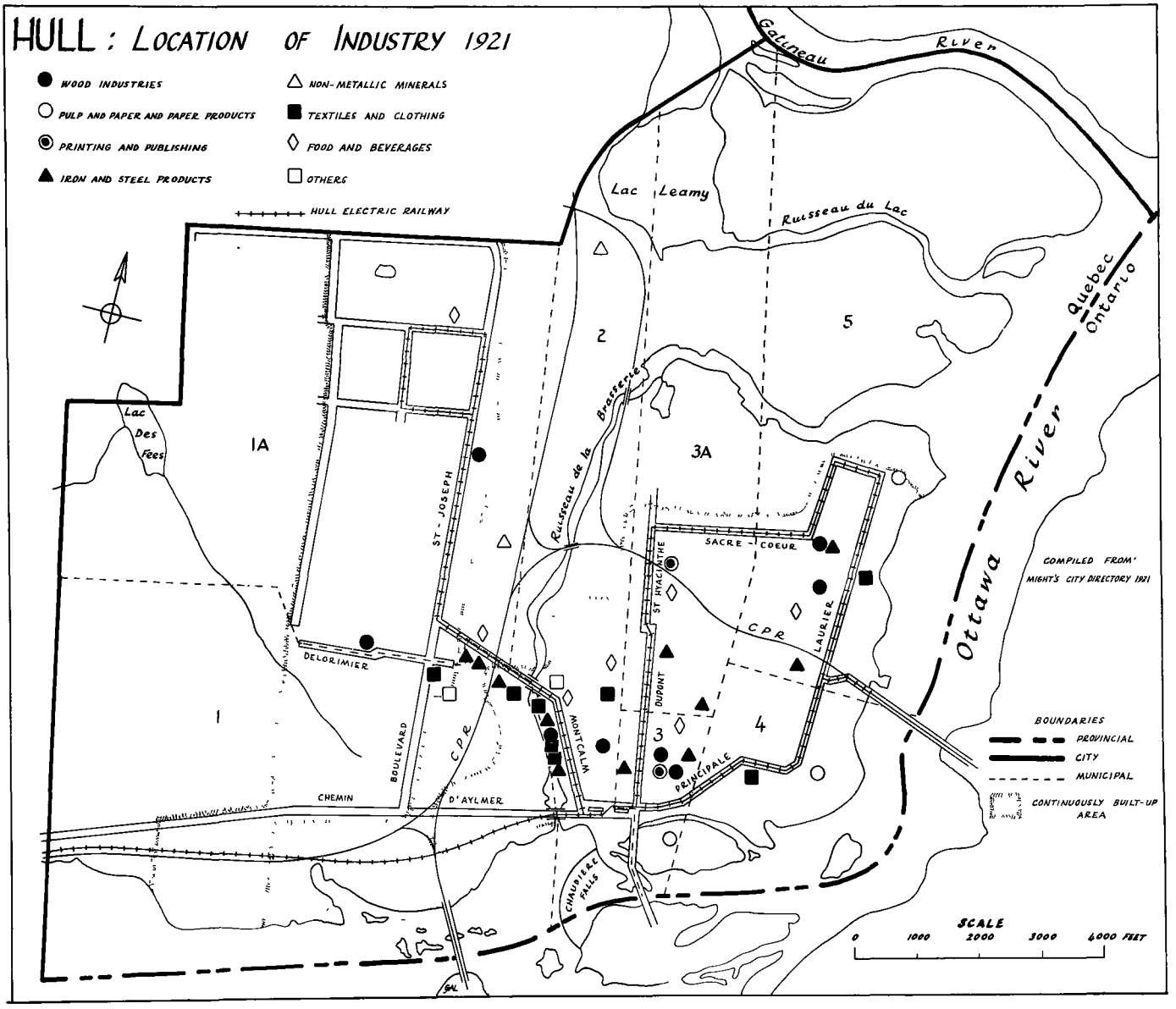
HULL : LOCATION OF INDUSTRY 1921
WOOD INDUSTRIES
PULP AND PAPER AND PAPER PRODUCTS
PRINTING AND PUBLISHING
IRON AND STEEL PRODUCTS
NON-METALLIC MINERALS
TEXTILES AND CLOTHING
FOOD AND BEVERAGES
OTHERS
HULL ELECTRIC RAILWAY
Gatineau River
Lac Leamy
Ruisseau du Lac
Quebec
Ontario
Ottawa River
Lac Des Fees
1A
1
2
3
3A
4
5
ST-JOSEPH
Ruisseau de la Brasserie
SACRE-COEUR
ST HYACINTHE
DUPONT
LAURIER
CPR
DELORIMIER
BOULEVARD
MONTCALM
PRINCIPALE
CHEMIN
D'AYLMER
CHAUDIERE FALLS
COMPILED FROM: MIGHT'S CITY DIRECTORY 1921
BOUNDARIES
PROVINCIAL
CITY
MUNICIPAL
CONTINUOUSLY BUILT-UP AREA
SCALE
0 1000 2000 3000 4000 FEET

Figure 7

pattern of development of the industrial zone and to the orientation of the major transportation arteries, which had themselves guided, to some extent, the development of the manufacturing area.

The period from 1927 to 1935 saw a further reduction in the relative importance of the 'island' as its proportion of the population dropped to 65 per cent of the total, although in absolute terms its population increased and the most populous wards were still located there.

The most heavily populated wards formed a pattern which followed closely that of the major transportation arteries, and of the industrial zones. The influence of these elements on the distribution of population must have been important. Table 20, which indicates the distribution of factories, stores and residences in the city, confirms the relationship between the industrial zones and population development of the wards.

TABLE 20

Statement Showing the Various Classes of Business and Residences in the City of Hull

Wards	1	1[a]	2	3	3[a]	4	5
1927-28							
Factories	13	11	11	5	7	2	5
Stores	10	49	33	117	55	61	63
Residences	481	906	539	498	1,092	647	956
1934-35							
Factories	13	11	14	5	7	3	7
Stores	18	58	39	125	90	60	81
Residences	502	1,009	554	586	1,233	759	1,013
1938-39							
Factories	11	10	17	5	6	3	6
Stores	10	58	39	124	90	59	79
Residences	498	1,029	568	572	1,219	961	756

Source: City of Hull, Assessor's Report, 1927, 1935, 1939.

The discrepancy in the case of ward 1 may be explained by the fact that most industries there were located by Brewery Creek and probably exerted considerable influence on the neighbouring wards. There was little change in population distribution from 1935 to 1940, except that the 'island' regained some importance, with seventy per cent of the population in 1940.

The main business arteries also followed the industrial zones. Laurier, Main, Montcalm streets and St. Joseph Boulevard were the most active commercial routes, although there was a considerable number of business establishments in the northern sector (ward 3a). As the table indicates, the old commercial nucleus of the city had retained its importance.

The distribution of manufacturing remained stable during this period. Even though the waterfront zone had lost an important member in the Gilmour and Hughson sawmill, it still formed a solid front along the Ottawa. The inner zone, along the railway tracks, had begun to fill in as smaller concerns established themselves between Canada Packers and the Canada Cement Co. These two zones were linked by a ribbon development on both sides of Brewery Creek (Figures 7 and 8). It is in these zones that the major establishments working for the export market were located. Most of the industries serving the local market were scattered throughout the rest of the urban area.

Industrial Development: 1940-1961

The evolution of manufacturing in Hull during this period is indicated by Tables 21 and 22.

TABLE 21

Employment in the Industries of Hull: 1941-1961

Industrial Group	1941	1945	1951	1961
Food and beverages	1,279	1,335	1,535	1,565
Textile and clothing	676	935	717	321
Wood industries	188	155	237	133
Pulp and paper	1,000	1,073	1,329	1,338
Iron & steel products	157	770	125	167
Non-metallic minerals	153	166	260	373
Printing & publishing	n.a.	27	29	1,348
Others	103	78	134	379
Total	2,556	2,939	3,366	4,604

Source: City of Hull, Assessor's Report, 1941, 1951, 1961.

TABLE 22

Industrial Activity in Hull: 1940-1961

Year	No. of establishment	No. of employees	Value of production ($)
1940	45	2,877	17,902,558
1941	47	3,277	20,774,840
1945	49	3,652	23,824,148
1951	62	3,983	53,055,315
1961	52	2,709	50,202,000

Source: Dominion Bureau of Statistics, General Manufacturing Statistics, 1941. 1945, 1951, 1961.

The figures in table 21 have been compiled from the Assessor's Report of the City of Hull. Since coverage was not always complete, the totals differ from those published by the Dominion Bureau of Statistics, as can be seen by comparing tables 21 and 22, and should therefore be handled with some care. The great discrepancy in 1961 is largely due to the fact that the Queen's Printer does not appear as a manufacturing establishment in the federal report. Since the Assessor's Report is the most complete, detailed source concerning employment in industry in Hull, it was felt necessary and practical to use these figures. They give a good indication of the industrial employment structure.

By 1941, the industrial situation in Hull had greatly improved as compared to that of the previous period. This was due to the general war-time industrial boom and this growth continued throughout the war years as manufacturing employment rose by thirty per cent from 1940 to 1945. This increase was very selective, however, and concerned mainly the textile and clothing, and the iron and steel products, which were engaged in military production. The consumer goods and building materials industries increased much more slowly. This was due to the particular nature of war-time demand. "Expansion of production capacity was particularly striking in tool making, electrical apparatus, chemicals and aluminium".[1] Since these activities and others of their kind were absent from the industrial scene in Hull, growth was not as important as might have been expected.

In the postwar period from 1945 to 1951, the reverse process occurred. The end of the war hit the industries engaged in military production hard owing to the necessity of changing over to peace-time production. This is

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[1]Firestone, op. cit., p. 112.

especially apparent in the case of iron and steel products industry, which had only a small local market before the beginning of the war. The textile and clothing industry, however, was able to reconvert its operations and experienced a less pronounced decline. On the other hand, as the post-war population expansion began, as pent-up consumer demand made itself felt, and as construction activities resumed, activity in the remaining sectors increased more quickly than it had during the war. The E.B. Eddy Co. once again increased its capacity by acquiring the J.R. Booth establishments. New firms in the food and beverage sector made their appearance. Likewise, the construction materials sector (wood and non-metallic minerals) expanded. This increase in manufacturing is reflected in all aspects of industrial activity (Tables 21 and 22).

After 1951, the manufacturing situation seemed to deteriorate, as a number of establishments left the city (Table 22). The most important of these were the Hull Iron and Steel Works, which went into bankruptcy, and the Woods Manufacturing Co., whose properties had been expropriated by the National Capital Commission. The Canada and Federal match factories also closed down as production in that sector became concentrated in the hands of a few large concerns. Some bakeries and bottling works also went the same way.

It was during this decade that the federal government erected a large printing plant in the city, employing more than 1,000 persons. Yet, many local observers speak of industrial decline during this period. This is due to the fact that this establishment pays no municipal taxes, and that a large part of its labour force still resides in Hull, the site of the former plant. Because of this its effects on the city economy are not very potent. However, it still represents an important addition to the

industrial structure of the city.

The industrial structure during this period was dominated by a few large firms which accounted for most of the employment in manufacturing (Table 23).

TABLE 23

Employment in the Major Industries of Hull as a Percentage of the Total Manufacturing Employment

	1941	1951	1961
E.B. Eddy	30%	33%	29%
Five largest firms (including E.B. Eddy)	56%	56%	78%

Source: City of Hull, Assessor's Report. 1941, 1951, 1961.

The E.B. Eddy Co., as the largest firm, has consistantly accounted for about one-third of manufacturing employment. The five largest firms, which have always accounted for over half of manufacturing employment, have seen their importance grow with the establishment of the Queen's Printer.

From 1941 to 1961, the role of manufacturing in assuring employment for the labour force of Hull continued to diminish. This trend, which had begun to assert itself during the previous period, can be followed from table 24. Except for 1941, which was a war year, manufacturing has become less and less important as a source of employment. It is also clear, from a comparison of tables 22 and 24 that industries in Hull do not absorb the whole of the manufacturing labour force of the city.

TABLE 24

Manufacturing Labour Force in Hull: 1931-1961

	1931[a]	1941[b]	1951[b]	1961[c]
All industries	9,902	9,728	16,437	20,867
Manufacturing	2,926	3,836	4,390	3,643
Employment in manufacturing as a percentage of total employment	30%	39%	26%	17%

Source: Census of Canada, 1931, 1941, 1951, 1961.

[a]10 years of age and over.

[b]14 years of age and over.

[c]15 years of age and over.

Growth of the City: 1941-1961

Population growth during the period from 1941 to 1961 was one of the most rapid during this century (Figure 6). From 1941 to 1951, the population increased from 32,497 to 43,483 inhabitants, a thirty per cent increase. By 1961 it had reached 57,000 inhabitants, another thirty per cent increase. The increase during the first decade parallels the increase in manufacturing activity in the city. During the second decade, however, the population continued to grow at the same rate, while manufacturing activity declined, if we exclude the Queen's Printer. This is a clear indication that the economic base of the city has become more and more diversified.

The rise of employment in the public administration, especially in the federal government, has meant the development of another major export sector as far as Hull is concerned. The overwhelming majority of federal agencies are located in Ottawa, and this means the export of certain

services from Hull. In 1961, for the first time, more residents of Hull were employed by the federal government than by industry (Table 25). The construction, commercial and transportation sectors also assured a greater importance than they had at the beginning of the period (Table 25). Although this was typical of most Canadian cities since the Second World War, an examination of employment statistics for cities of 30,000 population and over shows that no other matched the rise in federal government employment.

TABLE 25

Employment in Selected Occupations in Hull: 1941-1961

	1941[a]		1951[a]		1961[b]
All occupations	9,728		16,437		20,867
% change		+ 68%		+28%	
Manufacturing	3,836		4,390		3,643
% change		+ 16%		-20%	
Government administration	n.a.		167		4,382
% change		-		+2,500%	
Construction	812		1,136		2,067
% change		+ 38%		+81%	
Trade	1,535		n.a.		3,169
% change		-		-	
Transport and communication	354		1,214		3,169
% increase		+280%		+158%	

Source: Census of Canada, 1941, 1951, 1961.

[a]14 years of age and over.

[b]15 years of age and over.

As Hull's population grew, the urban area continued to expand (Figures 8 and 9). The greatest expansion occurred to the west of Brewery Creek, and the proportion of the population living on the 'island'

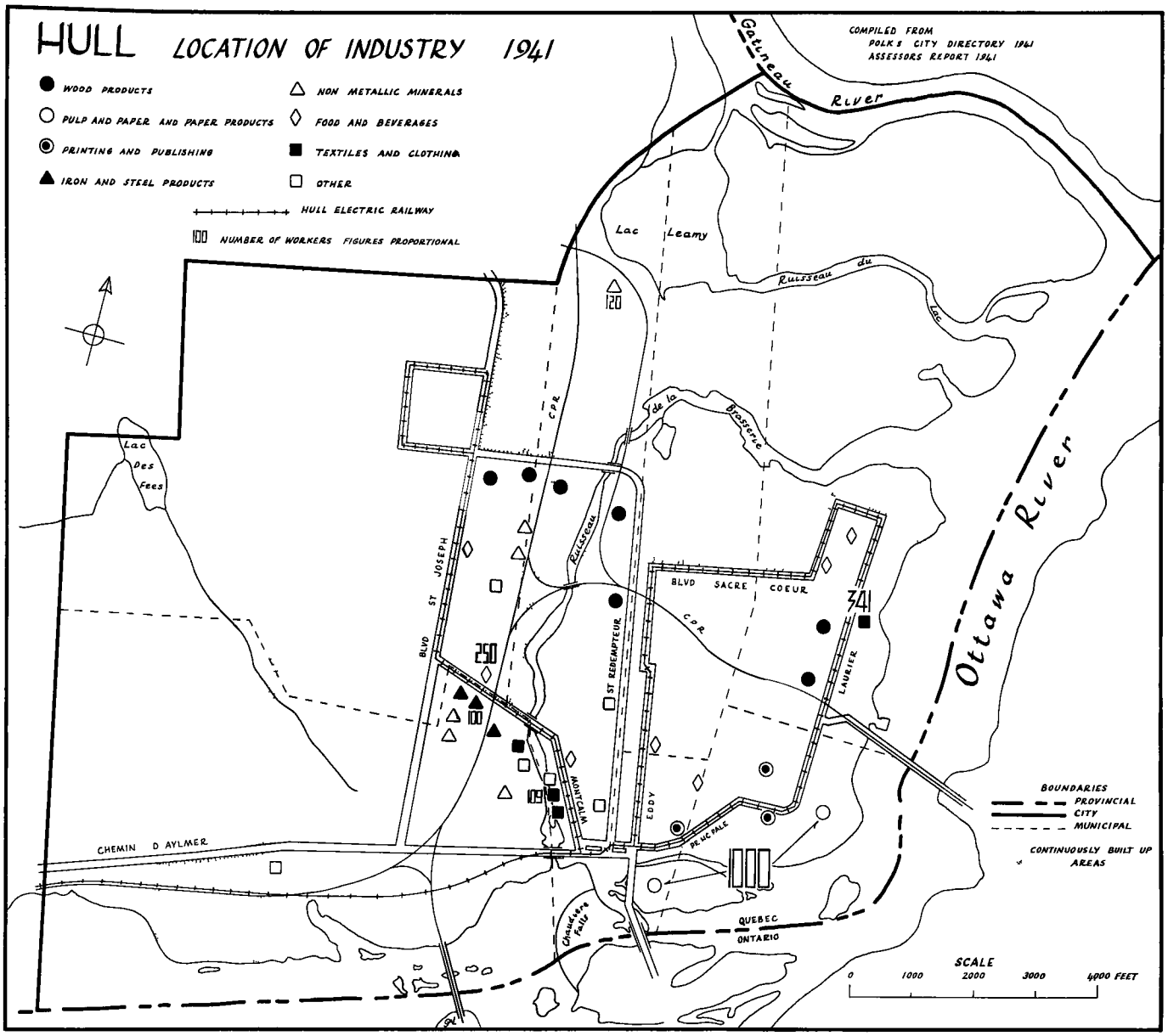
HULL LOCATION OF INDUSTRY 1941
COMPILED FROM
POLK'S CITY DIRECTORY 1941
ASSESSORS REPORT 1941
WOOD PRODUCTS
PULP AND PAPER AND PAPER PRODUCTS
PRINTING AND PUBLISHING
IRON AND STEEL PRODUCTS
NON METALLIC MINERALS
FOOD AND BEVERAGES
TEXTILES AND CLOTHING
OTHER
HULL ELECTRIC RAILWAY
100 NUMBER OF WORKERS FIGURES PROPORTIONAL
Gatineau River
Lac Leamy
Ruisseau du Lac
de la Brasserie
Lac Des Fees
CPR
BLVD ST JOSEPH
Ruisseau
ST REMEMPTEUR
BLVD SACRE COEUR
LAURIER
Ottawa River
MONTCALM
EDDY
PE.WC PALE
CHEMIN D AYLMER
Chaudiere Falls
QUEBEC
ONTARIO
BOUNDARIES
PROVINCIAL
CITY
MUNICIPAL
CONTINUOUSLY BUILT UP AREAS
SCALE
0 1000 2000 3000 4000 FEET

Figure 8

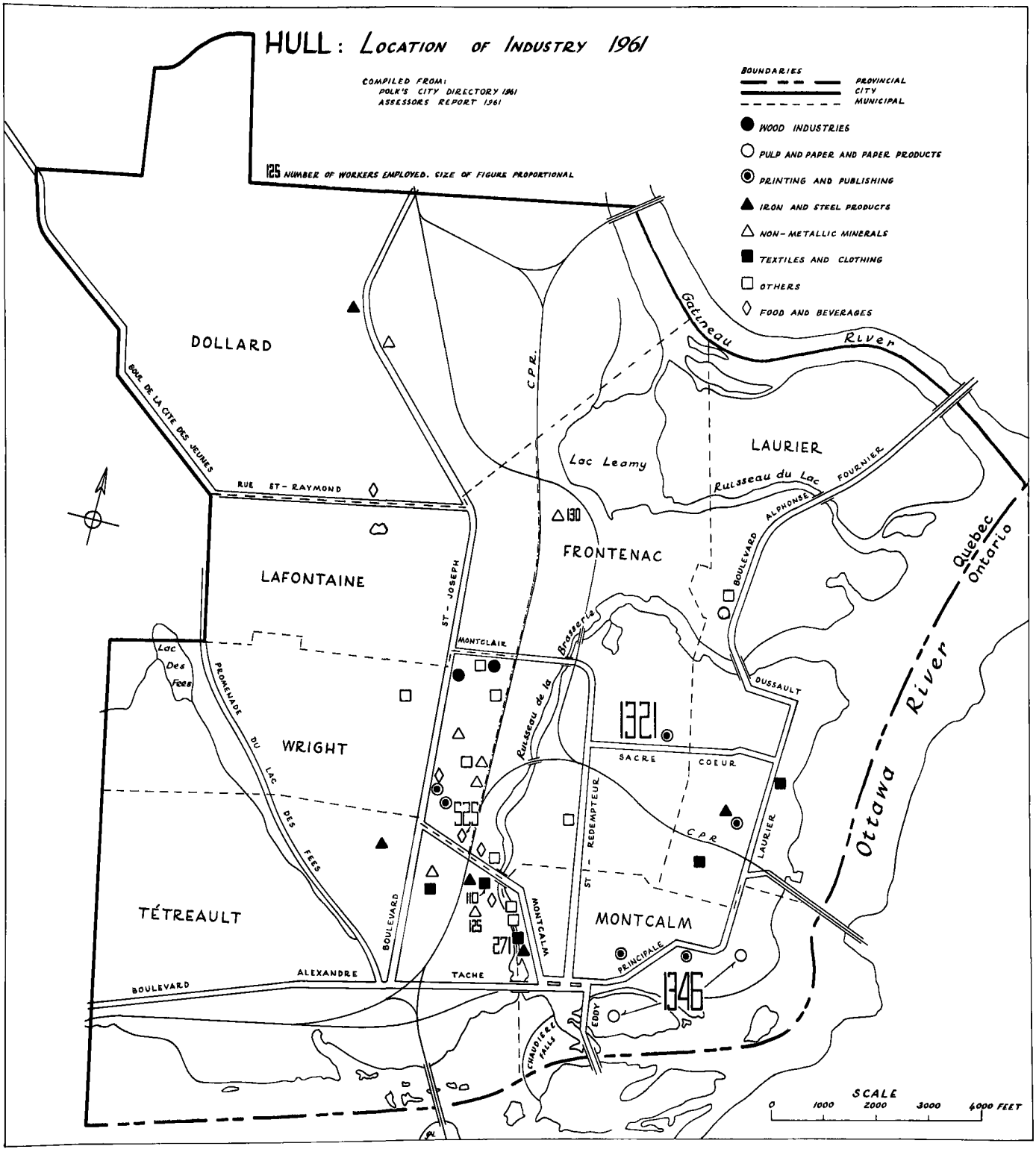
HULL: Location of Industry 1961
COMPILED FROM:
POLK'S CITY DIRECTORY 1961
ASSESSORS REPORT 1961
125 NUMBER OF WORKERS EMPLOYED. SIZE OF FIGURE PROPORTIONAL
BOUNDARIES
PROVINCIAL
CITY
MUNICIPAL
WOOD INDUSTRIES
PULP AND PAPER AND PAPER PRODUCTS
PRINTING AND PUBLISHING
IRON AND STEEL PRODUCTS
NON-METALLIC MINERALS
TEXTILES AND CLOTHING
OTHERS
FOOD AND BEVERAGES
DOLLARD
LAFONTAINE
WRIGHT
TÉTREAULT
FRONTENAC
LAURIER
MONTCALM
Gatineau River
Ottawa River
Quebec
Ontario
Lac Leamy
Lac Des Fees
CPR.
BOUL. DE LA CITE DES JEUNES
RUE ST-RAYMOND
ST-JOSEPH
MONTCLAIR
Brasserie
Ruisseau de la
Ruisseau du Lac
FOURNIER
ALPHONSE
BOULEVARD
DUSSAULT
SACRE COEUR
ST-REDEMPTEUR
LAURIER
PROMENADE DU LAC DES FEES
BOULEVARD
ALEXANDRE
TACHE
MONTCALM
PRINCIPALE
EDDY
CHAUDIERE FALLS
130
1321
110
125
271
1346
SCALE
0 1000 2000 3000 4000 FEET

Figure 9

continued to drop throughout this period (Figure 6). Whereas in 1941, the 'island' contained 70 per cent of the population, the proportion had dropped to 60 per cent by 1951 and to 42 per cent by 1961 (Tables 26 and 27). Until 1951, however, the older districts witnessed an increase in their population. It was not until the last decade that a movement away from these districts became discernible (Tables 26 and 27).

TABLE 26

Hull Population by Wards. 1941-1951

Ward	1	1a	2	3	3a	4	5	Total
1941	3,203	6,022	3,059	2,572	6,909	3,978	5,724	32,497
1951	4,607	12,208	3,834	2,893	8,392	4,010	6,524	43,483

Source: City of Hull, Assessor's Report. 1941, 1951.

TABLE 27

Hull Population by Wards. 1954-1961[a]

Ward	Frontenac	Laurier	Montcalm	Tétreault	Wright	Dollard	Total
1954	7,962	8,219	9,585	7,876	6,036	-	46,646
1959	7,942	8,039	9,088	9,392	7,249	4,491	54,302
1961	7,862	7,922	8,840	9,667	7,396	6,773	56,776

Source: City of Hull, Assessor's Report. 1954, 1959, 1961.

[a]In 1954, the wards were reorganized into Montcalm, Laurier and Frontenac wards, which correspond to the former wards 2, 3, 3a, 4 and 5, and into Tétreault, Wright, and Lafontaine wards, which correspond to the former wards 1 and 1a. In 1959, Dollard Ward was created by annexation and from part of Lafontaine ward.

This pattern of expansion was primarily determined by the availability of space. The older districts, already densely occupied and ringed by

industry and park land, were in no position to expand. The advantage therefore passed to those zones beyond the inner industrial zone, where there was room for development. As the population of the city increased, they naturally experienced the fastest rate of growth.

There were few significant changes in the distribution of manufacturing during this period. The waterfront zone was further amputated when the Woods Co., left the city. The original factory, however, is still standing and is partly occupied by a small textile firm. Except for this firm, the Eddy establishments are now the only ones left in this zone. A major establishment, in the form of the federal printing plant, rose on Sacré Coeur Blvd., in the northern sector of the 'island'. The majority of establishments were still congregated in the vicinity of Brewery Creek and of the railroad (Figure 9).

Prior to 1941, the location of manufacturing had exerted a strong effect on the pattern of urban development. Residential and commercial development had to take into account the ring of industry around the island. As the urban area spilled over Brewery Creek and the railway the situation was, however, reversed. Availability of space for industrial rather than residential growth has become the main problem. It is now the major industrial zones which find themselves caught in a squeeze, and the location of future industries will be guided by the pattern of residential development.

Summary

The foundations of the modern industrial structure of Hull were laid down as far back as the late 1880's when E.B. Eddy began the production of pulp and paper, and when he established one of the first hydroelectric

generating stations in the Ottawa valley. This was a typical development in Quebec, and was to usher in a new phase of industrialization. "Much of the hydroelectric development in Quebec has been closely allied with ... pulp and paper production".[1]

Pulp and paper was to become the most important industrial activity in Hull, at least in terms of employment. As its production began, other activities were attracted to the city, most notably the slaughtering and meat packing, the textile and clothing, and the cement industries. While the development of cement industry was favoured by the good supply of limestone and quartz in the region, the others were based largely on the availability of cheap labour, and also on Hull's proximity to both the forest regions and the large markets of eastern Canada.[2] One common characteristic of all these industries, however, is that they are heavy consumers of electrical energy.

Hydroelectricity has been the main source of energy in a region which is deficient in fuel resources. According to the theory advanced by J.H. Dales, the demand for electricity in industry is essentially a demand for power, whereas the demand for heat is a demand for fuels.[3] We should therefore expect to find water-power rich regions, such as Hull, deficient in industries requiring large amounts of heat in their

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[1]Dales, op. cit., p. 3.

[2]Interviews conducted with several firms have revealed that labour costs in Hull have generally been lower than in Ottawa, although the situation is beginning to change. The major exception has been in the E.B. Eddy Co., where labour has been organized since the early 1900's.

[3]J.H. Dales, "Fuel, Power and Industrial Development in Central Canada", American Economic Review, Vol. 43, No. 2, 1953, pp. 181-198.

production processes.[1] This is true to a surprisingly small degree in Hull. The textile and clothing industry is the only major industry with a dominant demand for power. The slaughtering and meat packing industry requires energy for refrigeration and for curing and processing of meat. The pulp and paper, and cement industries exert a strong demand for heat in their production processes, and their growth was encouraged by the important hydroelectric developments that occurred in the region starting in the late 'twenties.[2] The Gatineau Power Company sells large quantities of surplus power both to the E.B. Eddy and the Canada Cement companies for the purpose of raising heat. Hydroelectricity has therefore been one of the keys to industrial development in Hull, although not exactly according to Dales' theory.

Electricity has also affected the city. In the form of the street-car it exerted an effect on the residential and commercial pattern of the city. As it became feasible to travel greater distances to and from work, the urban area began to expand. This is also explained, however, by the fact that manufacturing employment decreased in relative importance during this period, and that less and less of the population was directly involved with industry. The decentralization of population was not accompanied by the decentralization of industry in Hull. Industry remained tied, to a large extent, to the traditional waterfront and railway-line locations, which had been established at the beginning of

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[1]The production processes of various industries are described in E.B. Alderfer and H.E. Michl, Economics of American Industry, Toronto: McGraw-Hill, 1957.

[2]Hydroelectric development in the Ottawa valley is described in J.H. Dales, Hydroelectricity and Industrial Development ..., pp. 142-153.

this period, giving rise to segregated industrial zones.

Each of the major industrial sectors existed in some form or other before this period began. They do not therefore represent new types of activity, but a more intensive use of the advantages which the city presented -- water power, proximity to forest resources, a good supply of non-metallic minerals, and a large labour force. As technological progress occurred, and as new markets developed, large modern concerns began exploiting these advantages to good effect.

The same is true of the smaller industries. Except for some highly specialized establishments such as mica and jewellery manufacturers, the handicrafts were converted into modern industries with the expansion of population.

SUMMARY AND CONCLUSION

Since its beginning, industry in Hull has passed through three stages. The first stage was characterized by various small mills and handicraft industries which existed to serve the local market. The second stage was based on sawmilling and wood industries, and saw the rise of the first factories, although handicraft activities still occupied a large place in the industrial structure. The third stage, that of modern industry, has been characterized by the dominance of the pulp and paper industry, and also by the growth of other establishments exploiting on a large scale the advantages which the city had to offer.

Throughout the period of its development, industrial activity has been based to a large extent on the exploitation of the forest and hydraulic resources of the Ottawa valley. They have provided the major export products upon which growth could occur. Furthermore, the nature of the demand with its repercussions on techniques of production, and the location of the markets for these products have determined to quite a large extent the kind and quantity of industrial development which occurred. Industry in each of the three stages represents an adaptation to these factors and to the general economic environment in which it operated. As these elements changed, industry was transformed, and periods of change and transition from one stage to another have been identified.

Of vital importance to industrial development in Hull was the role of entrepreneurs who were able to recognize and exploit market opportunities. Not only did they launch various industrial entreprises, but they also showed a capacity to transform their operations and to shift

resources as demand for their products changed. They were the agents through which changes in industrial activity occurred.

The relationship between demand and location of markets for the export products, and the nature of industrial activity was quite straightforward until the end of the first stage at least when wood products were the only exports. The staple theory of economic growth has been used to illustrate this relationship. However, as industrial development continued and as the population increased, new export and domestic activities developed. The links between these industries became more complex and it became more difficult to determine their contribution to the growth of industry in general. It was possible however to recognize an opportunity structure determined by geography, natural resources and the economic environment and to study the behaviour of industry within this structure.

Industry played a large role in the growth and development of the city. Not only was the rise of large scale industry accompanied by growth of the city's population, but the distribution of industry governed the expansion of the urban area. The nucleus of the city developed behind the oldest of the industrial districts, and until quite recently, industry formed a barrier which contained quite effectively the spread of the built-up area.

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