A

THESIS

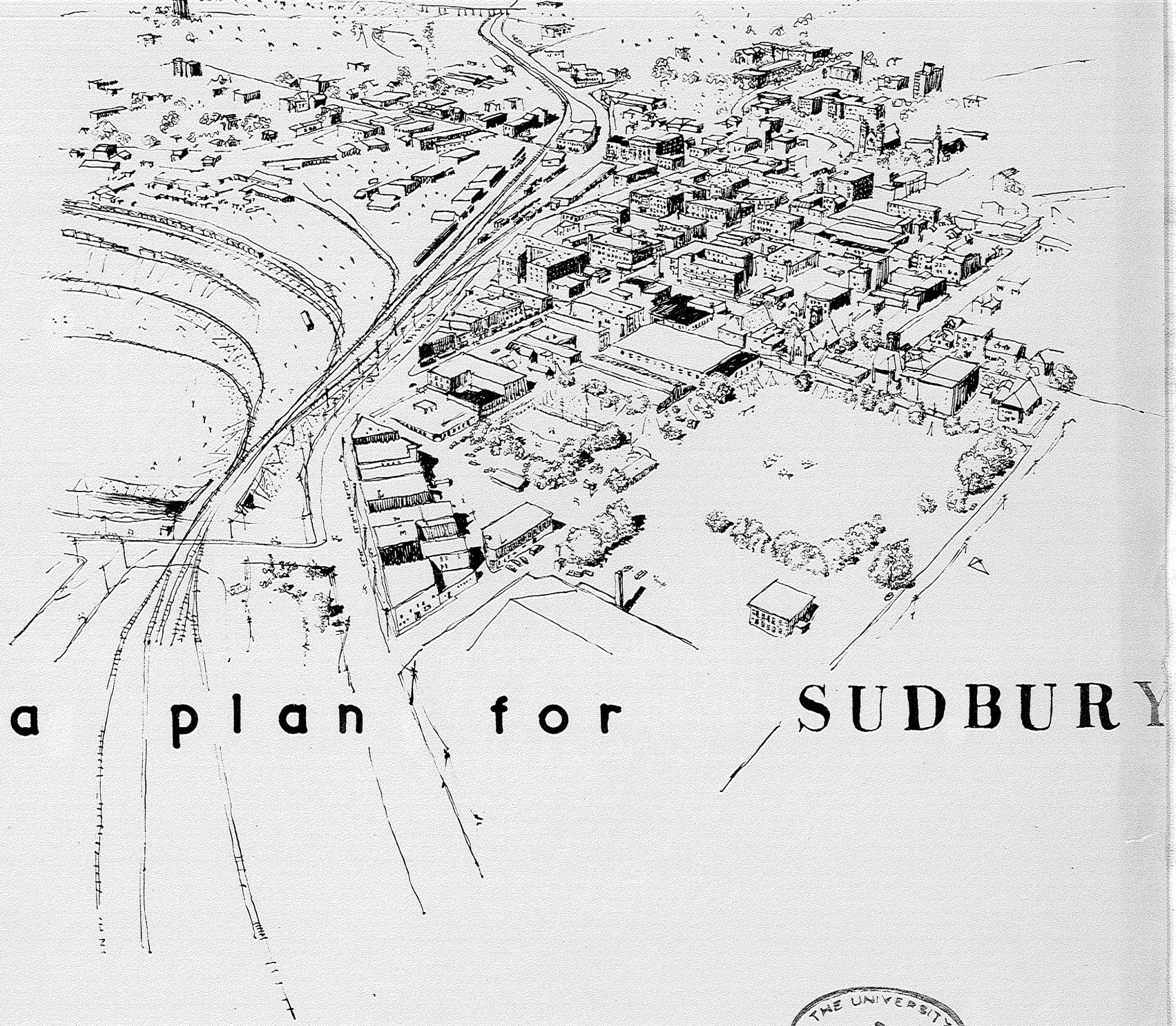
REPORT FOR

THE DEGREE OF

MASTER OF ARCHITECTURE
COMMUNITY PLANNING

ARNOLD FAINTUCK

ORYST H. SAWCHUK



a plan for SUDBURY

APRIL 1955

UNIVERSITY OF MANITOBA

P R E F A C E

The following, an excerpt of a letter addressed to Mr. Pat Murphy, Clerk Comptroller of the City of Sudbury, marked the initial step towards the realization of our report.

December 1, 1954.

"Mr. Pat Murphy,
Clerk Comptroller,
City of Sudbury,
Cedar Street,
Sudbury, Ontario.

Dear Mr. Murphy:

You may recall our discussion this summer in which I requested information pertaining to background material necessary for a study of Sudbury and district planning problems. During the course of this discussion I was lead to understand that this material would be made available to me for such a purpose as soon as possible. The information has not yet arrived.

I realize that the gathering of such information necessarily takes time, however, I find this very element of time has become critical in my even considering attacking a problem of such magnitude. It was my desire to use Sudbury's problems as theme for my thesis project, and having committed myself, I feel a personal responsibility in this regard.

I have discussed the matter with another fellowship student, and we were both agreed that within the over limiting factor of time and relatively large scale of the problem, it would require at least two of us to accomplish anything of value for Sudbury as a community, or for us as students.

Consequently, Arnold Paintuck and I proposed to Professor V. J. Kostka, the head of graduate work in Community Planning at the University of Manitoba that we, as a team, using the forthcoming Sudbury information, would attempt to develop a joint thesis project as mentioned above. He was of the opinion that the project was a worthy one, but, there is a danger of undertaking such a work with insufficient information....."

This danger, though imminent at first, was reduced considerably after we spent three weeks of the months of December and January making a land use survey of the city and three townships, and compiling what relevent information there was available in the municipal offices of the City of Sudbury and Townships of Nelim and Neelon-Garson.

Our full report is comprised of a large land use map of three townships, a large map indicating the planning concept, and the bound report. The report itself is broken down into five main parts--the first four, the result of our survey and research, and the fifth, the concept of approach for the plan.

We were faced with the dual problem of preparing a report; first, to satisfy the jury judging it as a thesis, and who had to be made aware of the problems involved even at the expense of repeating locally accepted facts; and secondly, to provide the municipalities concerned with a report that attempts to clarify their particular situations.

Having now completed it, we hope that it will at least give some direction to the planning activity underway in the area, and that by 1957, on the 70th anniversary of the Sudbury's first plan, the people of the region can be proud of the implementation of a master plan.

We offer our most sincere appreciation to those in the Sudbury, Nelim and Neelon-Garson civic offices who were so generous with their time, material, and personnel in providing us with the necessary information needed for our study.

Our thanks also to Al Battray, Frank Dowse, Don Erb, Harold Perrin, Karen Morrison, Ken Wolfe, Joe Kendrack, Bill Kuryk, and Frances Trach without whose help preparation of the report would have been impossible.

Special thanks are due to Professor John A. Russell whose kind provision of adequate work space came at a time when hope for such facilities seemed dim. On this account we would also like to thank Mr. B. W. Thrift, Director of the Metropolitan Planning Commission of Greater Winnipeg whose work facilities we were able to use and whose counsel was so generously given.

As well, we would acknowledge all the help given us by Professors A. G. Larsen and W. J. Kostka.

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

Part V - continued

-Green areas

-University site and stadium

-Town centre

-Planning control area

T A B L E O F F I G U R E S

I N T R O D U C T I O N

The chaotic admixture of foundries, houses, and other land uses, the absence of provision for recreation, enjoyment and culture; the low quality of buildings; the congestion of property; the overcrowding of families; the confusion of traffic, rising accident rates; these are all the manifestations of poor planning evident in Sudbury and its immediate region.

The fundamental problem, however, is basically an economic one. The city, burdened with this dilemma, has not the financial ability to take the bold steps needed to set its house in order, but has to content itself with trying to solve detailed problems, which, when solved in themselves, only create new and broader problems. It has not the financial ability because it has not a broad enough tax base. It has a narrow tax base because there is a lack of taxable industrial land within the city to supplement the revenues derived from residential and commercial land. There is a lack of taxable industrial land because there is a lack of good land within the city on which to site industry. Thus before any plan for the area can become of any more value than the price of the paper upon which it is proposed, this fundamental economic problem must be solved.

To add to the dilemma the population continues to grow and spill over into the surrounding municipalities, who, perhaps impressed by their sudden growth, may believe themselves to be on the road to a healthy development. If such is the case, the impression is false, since their tax bases also lack broadness, and consequently, they can only suffer the same financial fate as Sudbury.

Even if some attempt is made to site industry on available land in these municipalities, they still would not have solved their planning problems since they are not urban entities in themselves, but are dependent on Sudbury to provide them with many necessary urban services

and activities. This makes the whole of the urban built-up area actually one urban pattern, and although the respective townships are to be commended for trying to provide some planning guide to their development, the all important question of approach is missing. Plans of individual subdivision of housing units smaller than neighborhoods should proceed from the perspective of the total neighborhood that fits with some overall concept of the whole city structure.

Urbanity knows no political boundaries, so if there is confusion and disorder in any part of the urban pattern, the whole of the urban pattern is affected. Thus the problems of Sudbury are the problems of McKim, the problems of McKim are the problems of Neelon, and so on, whether those concerned wish it or not.

As student planners this problem became our problem, and our first big job was to find, recognize, and understand it, so we could attempt its resolution intelligently and realistically. Divorced from the scene by the space of many miles, hampered by the lack of complete information, and always pressed for time, all we could hope to do was establish an approach towards reaching a complete solution to this gigantic problem as it unfolded before us.

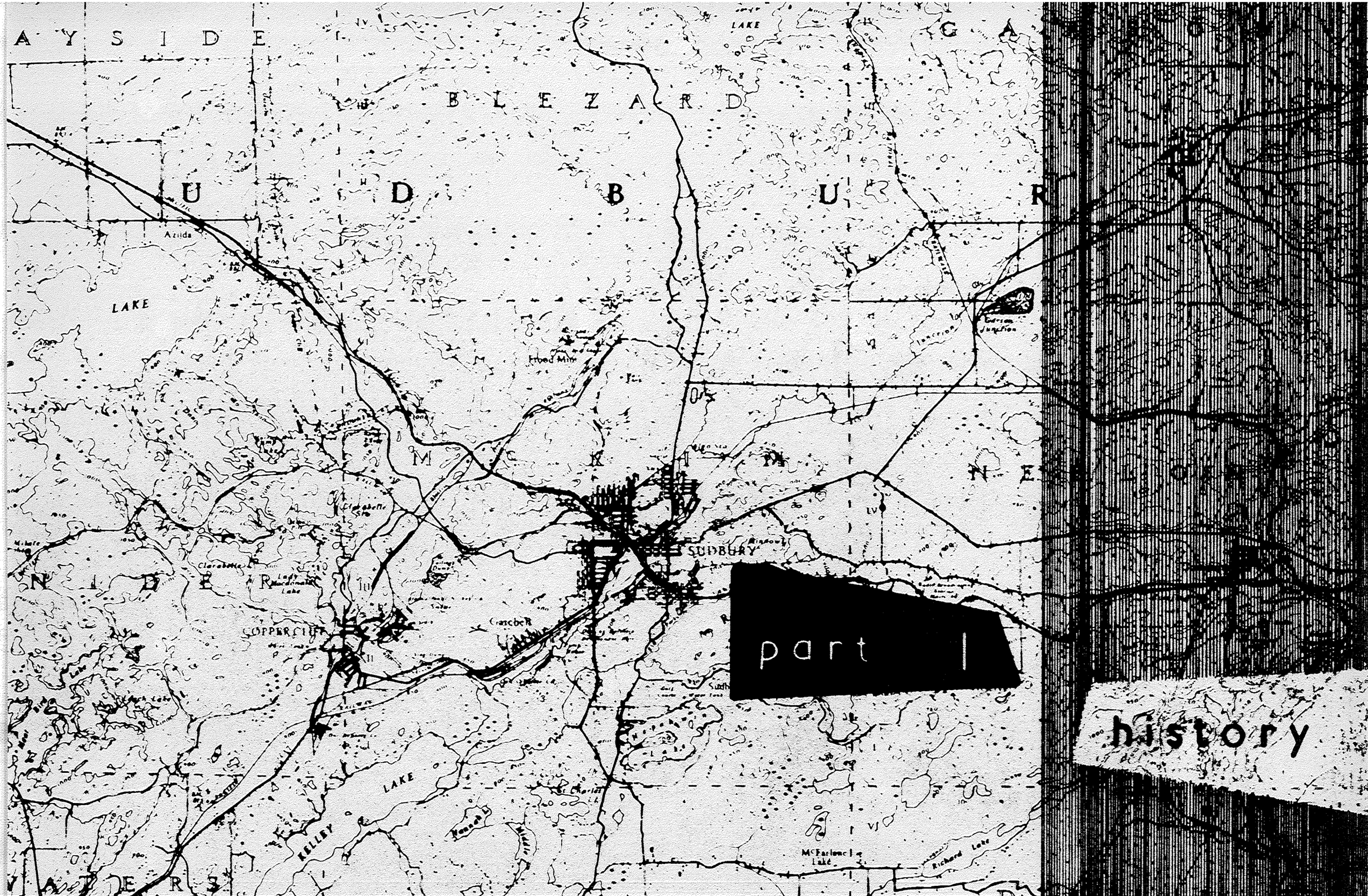
This much we did manage to accomplish, and our purpose in the pages that follow is to show this approach and why this approach. Actually, then, the report is only a mere beginning of the much greater job of preparing a complete solution to the whole problem of land and finance. What is required now is a master plan.

To quote from the "Detroit Master Plan", a master plan

> "is a set of long range, integrated plans and programs, prepared by the municipality and formally adopted by its administrative and legislative authorities, to provide for the physical development and improvement

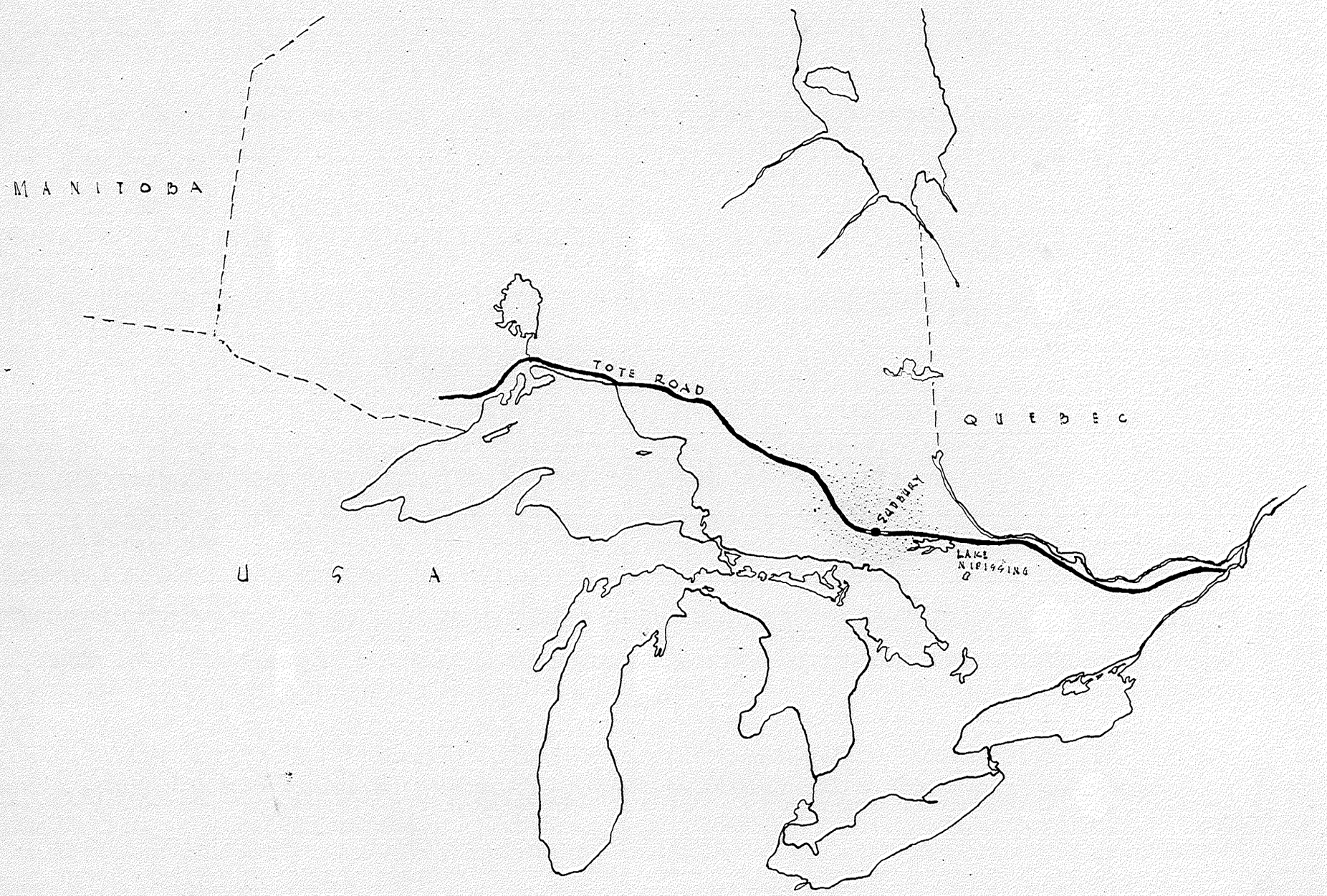
> of the city within its legal limits. Based on careful appraisal of the social needs and economic resources, it furnishes a basic pattern for the guidance of normal change and growth within the city's legal and financial capacity."

It goes without saying that a research and analytical undertaking of such magnitude requires personnel specially trained in the field of urban problems. Thus, though we have tried to give some direction to solving the problem, the next step is the establishing of a town planning staff under a professional town planner as an integral part of the administration to continue what we have only just begun.


A Y S I D E
B L E Z A R D
U D B U R
LAKE
Azilda
LAKE
Elbow Mine
SUDBURY
SUPERIOR
Crescent
Lake
LAKE
KELLEY
McFarlane Lake
Richard Lake
part I
history

THE TOTE ROAD

FIG. 1



SUDBURY'S BEGINNINGS AND REASON FOR BEING

1869 - Confederation and the Building of a Railroad

In the years following Confederation the growing need to connect Eastern and Western Canada resulted in the building of an East-West Railroad. Up to Lake Nipissing the route followed parallel to waterways along which equipment and supplies could be moved. From Lake Nipissing to the headwaters of Lake Superior, the route had to pass through what is now considered Northern Ontario.

No streams could be utilized, but "tote" roads had to be built to act as arteries of supply as the right of way progressed westward parallel to this artery. Along these routes and ahead of the rails construction camps sprang up which grew in size as the rails approached and receded as the rails passed through. In some camps people remained in others they all left, leaving ghost camps. With just such an unostentatious beginning Sudbury began.

FORMATIVE YEARS 1882-1900

Tote Road - Construction Camp Beginning

With the C.P.R. pushing westward it was left to an engineer named Ramsey to locate what was to become the site of the City of Sudbury, just north of a lake later named after that same erring engineer who was supposed to have taken the line south of what was known for years as Lost Lake. A construction camp at first, it was named in 1882 by the superintendent of construction, one James Worthington, and by 1883 it reached a peak population of 1500 as the rails approached the site. After the rails passed through, 300 people remained, making up the nucleus of the Village of Sudbury.

Lumbering - The First Economic Activity

Before the coming of the railroad some lumbering was done in the region but there was some difficulty in taking the logs out due to the lack of a pattern of waterways. The coming of the railroad provided an easier method of removing the timber to mills and thus timber became the first economic activity giving impetus to urban growth with the lumbering interests using the Village of Sudbury as centre of operations.

Railroad Makes Possible New Economic Activity

While cutting through the terrain for rail beds, what had for some time been suspicions of great mineral wealth were laid bare to

those endowed with a prospectors eye, and a flurry of prospecting and staking of mineral properties took place in the years following 1883.

Beginning of Mining

In 1886 the Canadian Copper Company put the first mine of the region into operation at Copper Cliff, a few miles west of the Village of Sudbury. Two years later the first smelter was blown in at the same location. These first operations were on a relatively small scale. The major portion of the ore was copper and nickel, which at the time had not too great a world market.

Mining Dominates Economic Activity

Slowly the industry grew and Sudbury along with it since Sudbury was the first place people came and often resided while taking part in the mining operations just outside of the village. Soon mining supplanted lumbering as the primary industry and when mining prospered, the people of Sudbury prospered.

First Plan

In 1887, the village, still the property of the C.P.R., was surveyed as a townsite by J. L. Morris, a representative of the railroad. It was decided to name the streets running north-south after governors-general, and those running east-west after trees. Thus Elm and Durham, Beech, Cedar, Larch, and Elgin were named and the village centre came into being.

Development of Town Amenities

By this time the village had acquired such things as food and clothing stores, a boarding house, pool hall, barber shop, railroad station and a telegraph office, churches, a court house, jail, and after the C. P. R. relinquished control of the community, taverns and legal establishmentsfor selling liquor.

Sudbury - the Urban Heart

It was natural, then, that Sudbury became the economic and social centre for the whole region, attracting the majority of the population to it. Even with small townsites established around it near the mineshafts, the residents of these towns spent most of their business and leisure time in Sudbury.

Cosmopolitanism

By this time also, Sudbury was already acquiring its cosmopolitan nature. Although most of the population was Canadian born, a

large percentage being French speaking, there were immigrants of British, Ukranian, and Finnish Stock sprinkled in and among the people of this steadily growing frontier town.

First Evidences of Community Spirit

Not only did the newly founded Canadian Copper Company and its Copper Cliff mine give promise of prosperity and employment to the people of Sudbury, it also gave impetus to wider prospecting activities. However, soon the company had acquired all the land it apparently wanted, and the prospectors were left with their staked but undeveloped land. It was the hope of these financially weak prospectors to form a company made up of the Sudburian general public to mine and smelt the ore found on their land. This project was doomed to failure, as were all projects of similar nature whose financial basis was not broad enough to withstand the initial drain on financial resources needed to instigate such an undertaking. However, it displayed a combined spirit in what could be considered a semi-public matter.

Newspaper

In 1891 the first newspaper of the area called "The Journal" made its first appearance.

Political Organization - Growth of Urban Amenities

With such events taking place the people began to feel a sense of permanency in their community and they organized a Township of McKim Council with a voting list drawn up from the property holders in the area. Shortly afterwards, at the end of the year 1892, the Town of Sudbury was established.

The first elections reflected the religious feelings of the town, that of Roman Catholic versus the remainder of the town, but in later years the pattern changed.

Soon after Sudbury became a town the problem of sewer, water, and electric lighting was tackled. The town had trouble in selling its debentures but finally a contracting firm accepted them as payment and work began in 1895.

In the same year a Board of Trade was organised interested in promoting commercial rather than mining activity in the town, and a by-law was passed instituting a Public Library. These facts show the growing recognition by the townspeople that Sudbury was becoming a little more than a dormitory centre for the mining activity operating around it.

Natural Resources of Region Attracts New Developers

1900 saw another vital step in establishing the region's basic economic activity--that of mining--when the Mond Nickel Company bought property and started operations in Denison Township and in what later became the Garson Mine.

By this time the nickel resources around Sudbury were attracting attention of international scope--so much so that in 1901 Thomas Edison became interested in the mining of nickel in the area for use in his electrical equipment. He actually bought property and sunk a shaft in the hope of beginning operations. However, his findings proved unsuccessful, but in later years, this same site was to become the beginnings of the third successful company to locate in the Sudbury District, the Falconbridge Nickel Company.

1900 - WORLD WAR I

International Nickel Company - Increased Mining Activity

At the turn of the century the International Nickel Company was incorporated with headquarters at Copper Cliff in McKim Township. The companies comprising this consolidation were: the Oxford Copper Company, the American Nickel Works, the Society Minerale Caledonienne, the Canadian Copper Company, the Anglo American Iron Company, the Vermillion Mining Company of Ontario Limited, Nickel Corporation Limited, and the Hurlenian Company Limited--most of the principal concerns in the mining, smelting and refining of nickel on the North American Continent, in fact, the Eastern and Western Hemispheres.

With the amalgamation most of the operating and speculative mining properties, smelting facilities and nearby refining processes came under one administration, which, when the demand for nickel was increased, allowed for easier and more efficient expansion of production to meet this demand. This stepped up production affected Sudbury and surrounding area.

Copper Cliff

Thus an immediate effect of Inco was the incorporation of the Town of Copper Cliff, which, since most of the property was owned by the company, became a company town.

Surge of Growth

At the time of its incorporation in 1901, Copper Cliff had a population of 2500, which strangely enough, was more than the Town of Sudbury which only had about 2000. However, the increased activity of the company in the years to follow resulted in a

tremendous increase of Sudbury population while Copper Cliff population remained relatively stable.

Consequently, this period saw increased business activity which was manifest by the appearance of banking concerns and larger and more substantial commercial buildings, as well as the rise of social and cultural facilities such as the Sudbury Boating Club, the Sudbury Golf Course, and the building of the Grand Theatre on the corner of Beech and Elgin, as an "opera house" used by staging companies coming to the town.

Telephones

1902--the Bell Telephone made application to install their equipment and pole lines in Sudbury and was granted permission by the Council.

CPR Divisional Point

1905--CPR made Sudbury a divisional point in its East-West rail system and began construction on the Toronto-Sudbury connection.

Reason for No CNR

At this time there was also promise of the James Bay Railway (later known as the Canadian Northern Ontario Railway, and still later amalgamated into the CNR Railway System) passing through Sudbury. However, the controlling interests of the railway at the time were more interested in laying track into the mining fields northeast of Sudbury and the result was a by passing of the town through Capreol with a shunt line into Sudbury.

Judicial Seat

This surge of growth resulted in the establishment of Sudbury as the seat of the Judicial District in 1907.

Educational Facilities

With such a growth in stature came educational repercussions and in 1909 a High School was built which later expanded to accommodate technical as well as academic instruction.

It is by no means surprising, then, that by 1911, the population of the Town of Sudbury had reached 4100, more than double its population of 1901.

Mond Expands - Coniston - Effect on Sudbury

The Mond Nickel Company began an expansion programme that saw the development of a smelter at Coniston (1913), eight miles east of Sudbury, and the purchasing of Frood and Levack Mine properties.

Traffic Problems

This expansion was similarly reflected in Sudbury's growth trend, and as early as 1912 traffic in the town was recognized as a problem and action taken to curb the speed of vehicles over bridges and through street crossings (not aided by the many railroad crossings). Three years later a public transit system was put into operation, which led to increased activity in street improvements.

Sulphur Fumes

The effects of the sulphur fumes from the smelters had taken their toll on the vegetation in the area and citizens of the town started action for damages against the International Nickel Company. The result was the passing of the Sulphur Fumes Arbritration Act which provided an arbritrator to make awards in future damage contests. To many this action seemed inadequate and the situation is still a sore spot among many of the citizens of the Sudbury Region.

Educational System Growing - Separate and Public Schools

Now that Sudbury had attained a standard of education at the high school level, the people began to look ahead in this field towards preparatory university training. Since a great proportion of the population were Roman Catholic, there was considerable pressure brought to bear upon the relationship of religion and education. It is significant then that in 1913 construction of the Sacred Heart College began, which has since become affiliated with the Ottawa University.

It is also significant to note here that the educational system grew and was established as a duplicate one of public and separate schools throughout the whole district, for the same reason.

Effects of War 1914-1918

By the outbreak of World War I the population of Sudbury had reached 7000. The world conflict had little effect on the activity of the town although world wide repercussions such as a short depression just after the outbreak of hostilities, and patriotic endeavors to assist war widows and so on. Still this period saw the erection of the Federal Building containing the Post Office and local Customs and Inland Revenue Department offices. Then in 1915 new bank buildings and the Nickel Range Hotel were built.

Nickel Established as an Important Material

By far the most important effect of the war was the establishment of the importance of nickel in world production.

Commission for Establishing Extent of Nickel Resources

A Commission of enquiry was set up to investigate the industry in view of making it of greater value to the province, the dominion and the empire. In addition, they were asked to suggest a just and equitable system of taxation, a contentious subject for some years now.

Results of Investigation

The result of the investigation was increased production on the part of the International Nickel Company, the construction of a $4,000,000 electrolytic refinery at Port Colbourne, and the fateful beginnings of the British American Nickel Corporation Limited, financially controlled by the British Government and involving the mining properties of Murray, Gertrude, Elsie, Lady Violet, Whistle, Wildcat, Falconbridge, Blue Ridge, Victor and Nickel Lake.

END OF WORLD WAR I - WORLD DEPRESSION

Slight Decline in Growth After World War I

By 1921 the population of Sudbury was 8600 people. The primary force behind Sudbury's growth slackened temporarily, and with it, some of the impetus to population growth. Though in the ten-year period from 1911-1921 the population more than doubled, still in the early part of that decade, 1911-1913, the population had increased by 2900 while in the remaining eight years of that period, it increased by only 1600.

The reason for this slump is found in the temporary fall in the world nickel demand just after the war.

Result - B.N.A.N.C. Dies - Inco Grows

Although endowed with adequate capital and commercial grade ore, but lacking the managerial ability of the longer established Inco and Mond Companies, the British North American Nickel Company failed, and control of its interests were sold to the evergrowing International Nickel Company in 1925.

Research Stepped up - Wider Scope of Operations

Meanwhile increased interest in nickel during the war had prompted research into new and varied use for nickel, resulting in closer investigation of mining properties in the Sudbury Area. Thus in 1928 Sudbury saw the establishment of a third mining interest in the area when the Falconbridge Nickel Mines Limited put into operation the Vermillion Lake properties and the once Thomas Edison owned properties in Falconbridge Township.

Mond and Inco Amalgamate

This unbalanced three way split of the nickel production field was short lived when, in 1929, for common interests of development, the Mond and International Nickel Companies amalgamated, further unbalancing the control of nickel production into one big company and a relatively small company.

Sudbury Becomes a City - Depression

In 1930, after thirty-seven years of being a town, Sudbury became a city. Though the prosperity of the newly founded city seemed promising, (the International Nickel Company having stepped up production with a new concentrator and smelter, and a CIL nitre cake and sulphuric acid plant at Copper Cliff), still Sudbury could not remain unaffected by the depression gripping the whole world after the fall of the stock market in 1929. Depressed world markets led to the shutting down of many mines and plants throughout the region. Many of the inhabitants so deprived of their livelihood in these surrounding mining towns moved into Sudbury.

Finances at a Low Ebb in the City

Sudbury, like many other cities, had little provision for the relief of those who could not provide for themselves, but during this period a welfare department was set up in an attempt to help those who were destitute.

Although Sudbury is located within a mineral producing area, still there are no mines within its boundaries, and since there is relatively little industry other than mining in the district, the city's tax base is dependent almost entirely on returns from private property. Naturally this return was very low and during this time, such return was inadequate to support the overpowering expenditures brought on by the times.

Province Takes a Hand

Subsequently, in 1934, though help from the province amounted to $85,253 the city was forced to default on its bonds and came

under the supervision of the Ontario Department of Municipal Affairs for six years.

WORLD UNREST - PRESENT

Renewed Interest in Nickel Production

With the advent of Hitler nickel demand increased ultimately affecting the economy of the region. During World War II nickel production reached new highs providing more jobs for more men than ever before.

Union of Miners and Smelter Workers

In the urgency of war a union of workers in the mining and smelting industry was made possible in 1944. Since established the union has played a significant role in the lives of the workers of Sudbury, becoming a strong bargaining and social force in the community.

Present Era - Growth

Since the war the demand for nickel on the world market has increased rather than decreased, as after World War I, and consequently, immediate prosperity for the nickel companies and their employees seems imminent.

Thus, after a temporary levelling off in population growth during the early thirties, the trend over the past two decades has been an ever increasing one resulting in a tremendous growth.

Overflow into Surrounding Townships

So great has been this growth that there is little habitable land left within the city itself. Residential along with some commercial expansion has overflowed into the surrounding Townships of McKim, Neelon, and Garson, which, in the last few years have experienced an overwhelming urban growth.

Growth Adding Emphasis to Planning Problems

As a result a renewed and heavy emphasis has been thrown on the problem of providing adequate commercial facilities and public utilities to serve this growing urban manifestation.

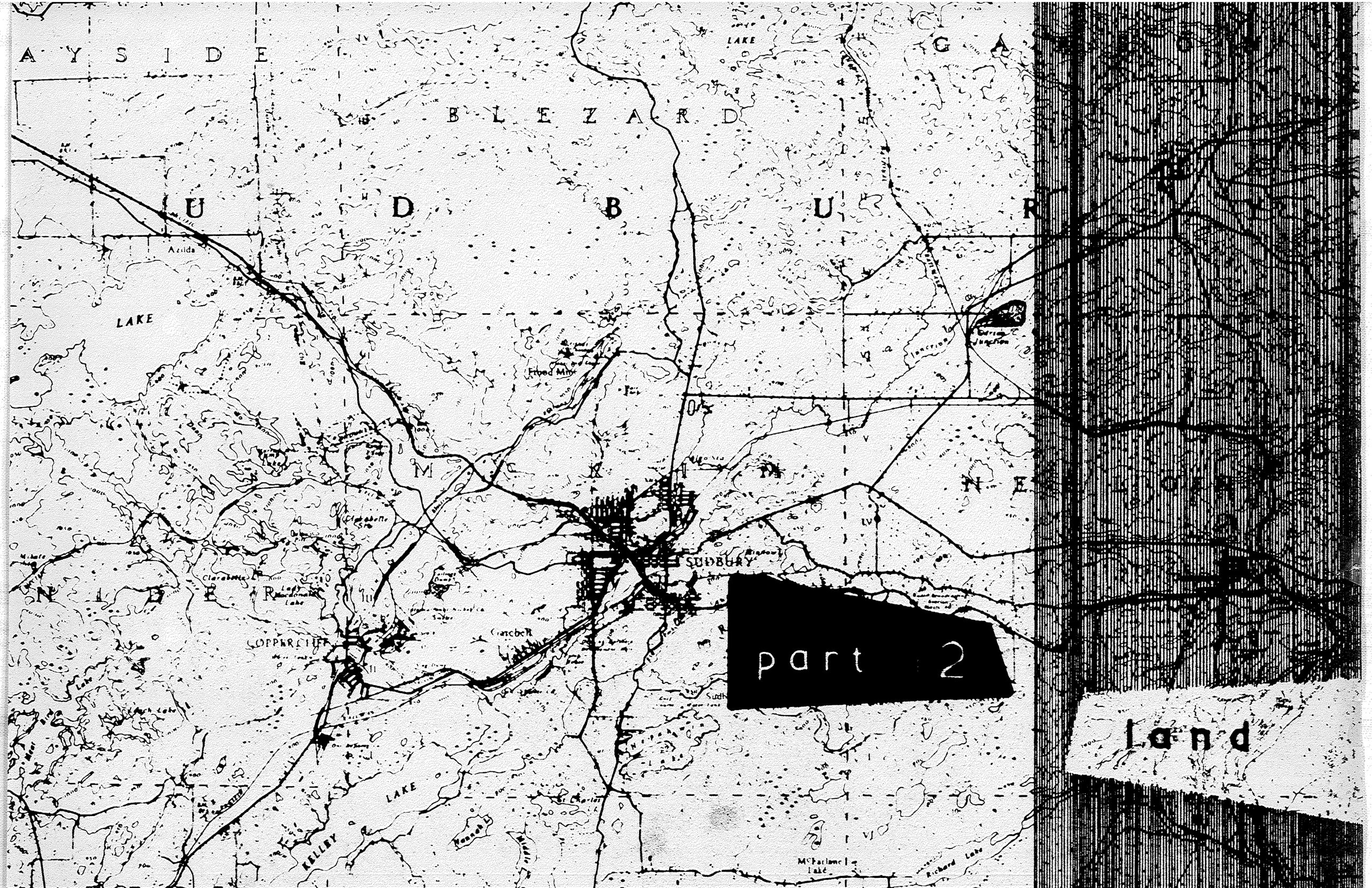
Traffic congestion, difficulty of proper drainage, narrow tax base, insufficient housing, meagre recreational facilities,

haphazard and mixed land uses affecting land values, are only some of the more pressing problems resulting from the unchanging terrain as affected by the economic activity, uncontrolled land activity, and resultant population growth that has taken place in the relatively short existence of the urban district.

1950 Planning Study

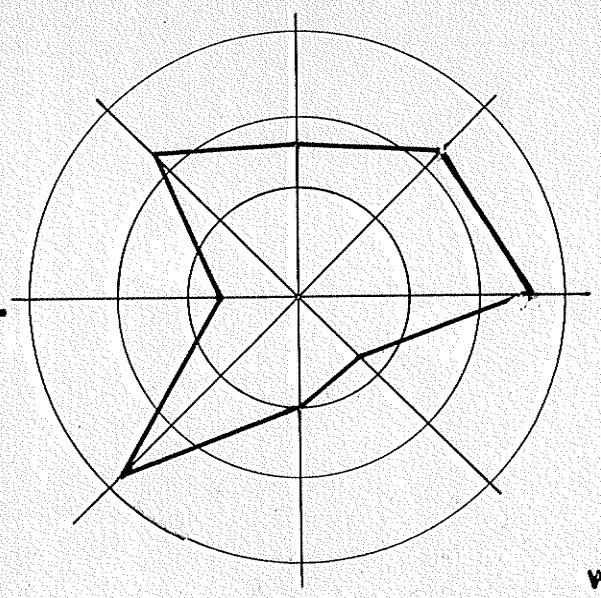
Such were the problems facing John Bland and Spence Sales when, in 1950, they were called in by the city to try and advise them in their dilemma. They conducted a survey and made recommendations, but in the shuffle of Council conflicts, it was not possible to take advantage of these recommendations.

Not that these problems have gone unheeded. The Townships of Neelon and Garson, and McKim have, in their own way, attempted to foresee and guide some of their future growth in an attempt to avert future problems, but, now, in 1955, the overall problems are still there but with an added maturity of five years.

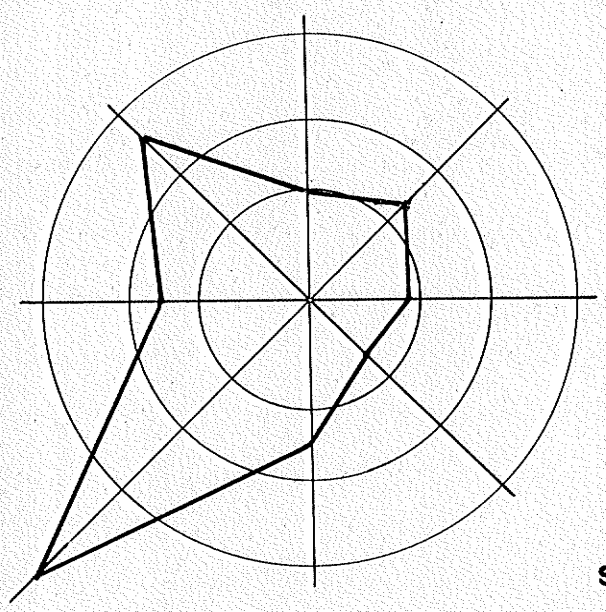

A Y S I D E
B L E Z A R D
U D B U R
LAKE
Azilda
LAKE
Fitted Mtr
SUDBURY
N E
N D E R
COPPER CLIFF
Crackbeck
LAKE
KELLEY
McFarlane Lake
Richard Lake
part 2
land

WIND ROSES

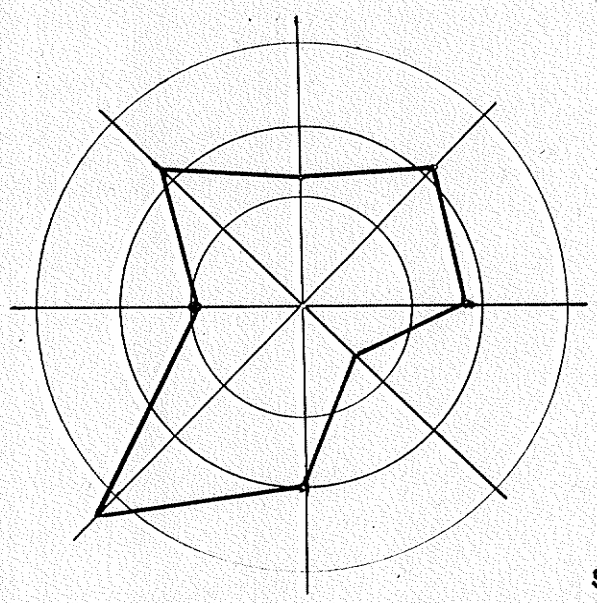
FIG. 2



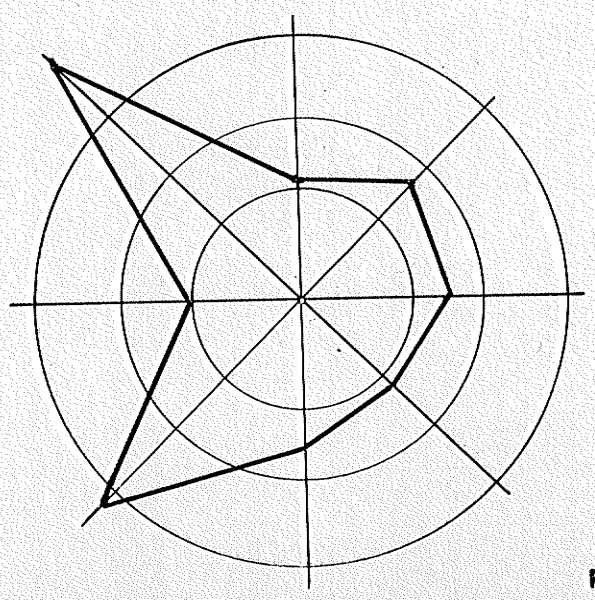
WINTER



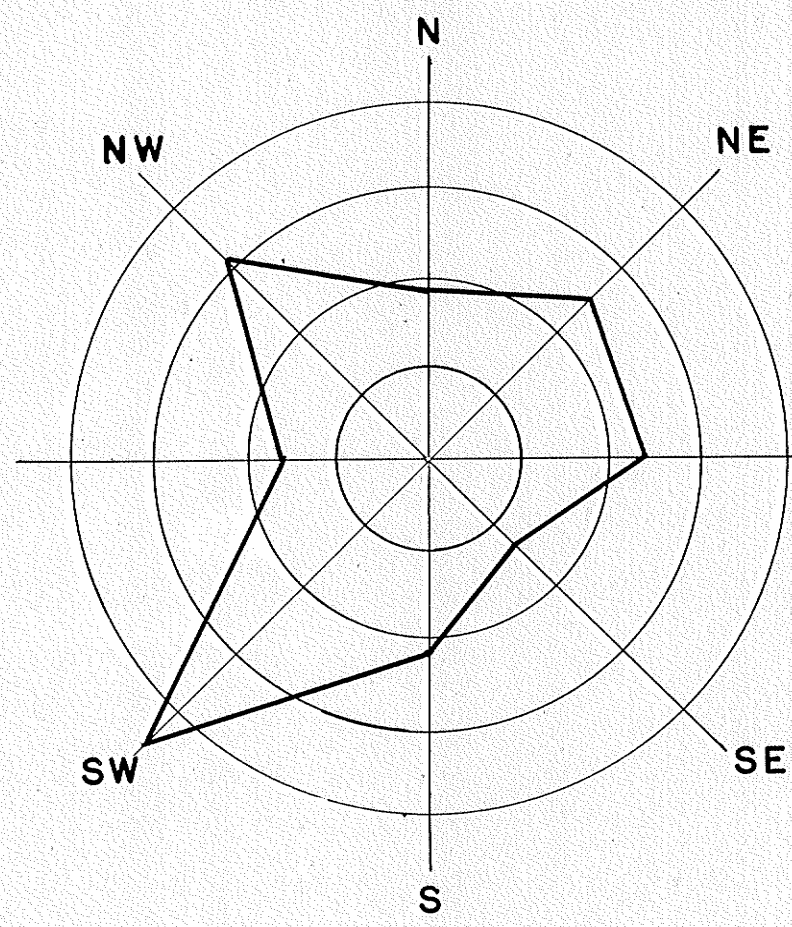
SUMMER



SPRING



FALL



ANNUAL AVERAGE

WIND ROSES FOR SEASONAL AND ANNUAL AVERAGES

LAND

It is the character of land upon which the city is built which molds its forms and conditions its growth.

Geographic Location

Geographically the City of Sudbury is located 46 degrees, 30 minutes North latitude, 81 degrees west longitude. It is approximately 40 miles due north from the north shore of Georgian Bay of Lake Huron and about 210 miles north from Toronto via the new highway.

Climate

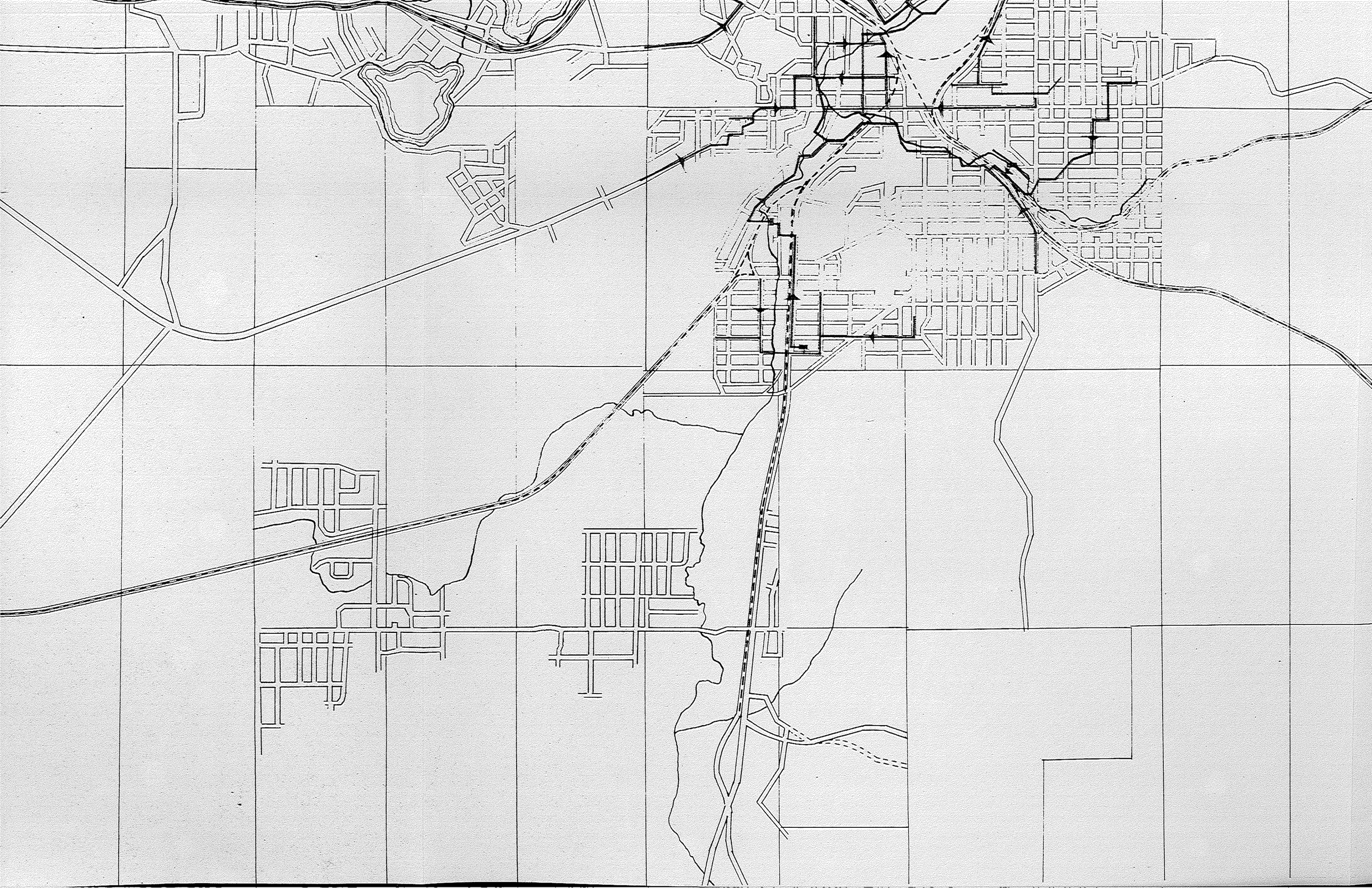
The climate of the region is that of the temperate cold zone. Over a period of five years the mean daily minimum temperature was recorded in February as -0.4 degrees Fahrenheit, and the mean daily maximum was recorded in July as 77.6 degrees Fahrenheit. The prevailing wind blows from the southwest with an annual mean speed of 6.7 miles per hour. The annual precipitation is 28.55 inches with an annual mean distribution of sunshine of 1571 hours per month. The average atmospheric pressure is 16.15 inches of mercury and has an annual mean relative humidity of 77.58 per cent.

Character of Land

The Sudbury region is part of that great land mass called the Canadian Shield which covers practically one-half of Canada. The Shield is a rugged country always undulating and mostly rocky. Though nearly half of the Shield is wooded it has been said that less than 5 per cent of it is fit for extensive agriculture.

"It is the great lake region of the world probably containing more lakes than all the rest of the world together. Its rocks include sedimentary volanic and instrusive varieties of widely different ages, but all Precambrian-Recurrent igneous activity in Precambrian time was accompanied by ore deposition and the Shield is a great store house of mineral wealth."

The surface of the Sudbury area is characteristic of this Canadian Shield. The neighborhoods are nestled in rock depressions which have been filled to a considerable depth with glacial deposits of course sand, gravel and boulders, topped with varved clay and silts. North of the city exists a bleak belt of rocky terrain which constitutes the south rim of the oval shaped Sudbury Basin, "about 38 miles long, by about 17 miles at its greatest width, striking approximately northeast and southwest". The rim of the basin contains "some of the world's richest mineral deposits discovered during the past 60 years".



T.P.

LEGEND

- OUTFALL SEWER
- FORCE MAIN
- PUMPING STATION
- T.P. TREATMENT PLANT
- SPLIT MANHOLE

FIG. 5

MAIN SEWERS
EXISTING

T.P.

LEGEND

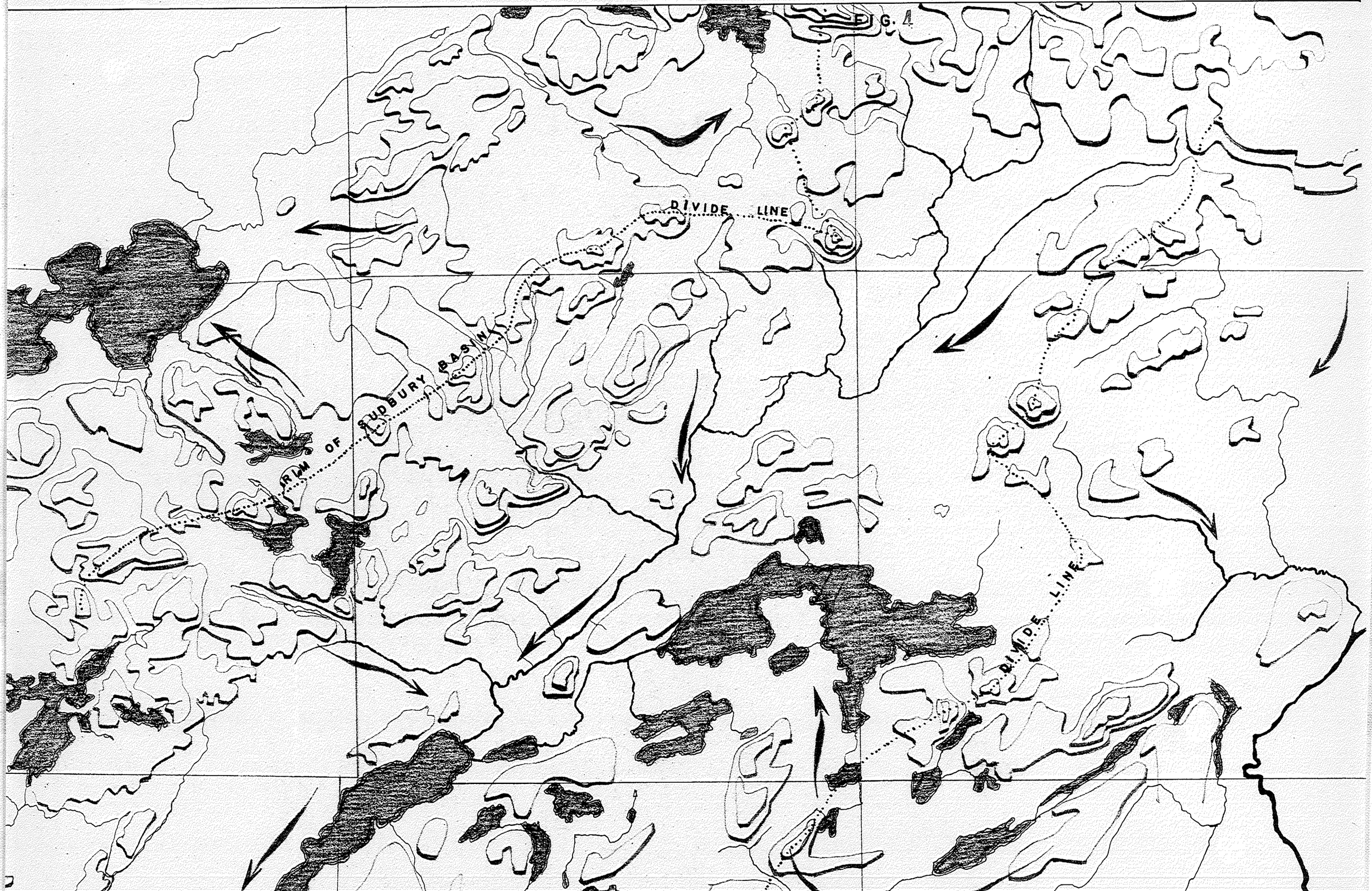
- OUTFALL SEWER
- FORCE MAIN
- PUMPING STATION
- T.P. TREATMENT PLANT
- SPLIT MANHOLE

FIG. 5

MAIN SEWERS
EXISTING

HIGHLANDS & DRAINAGE

FIG. 4



Agricultural Land

Within the basin is found fine flat land cultivated into the more successful farms of the district. These farms are reasonably near the city, providing the city with its milk supply and perishable market garden products. It is highly desirable that their future existence be protected for the benefit of the city and region.

Drainage

Disorganized drainage is another strong characteristic of the Shield region, and so it is in the vicinity of Sudbury. The immediate drainage basin within the region that affects the city and its adjacent land can be seen in Figure . Its basis is Junction Creek that finds its source near the Town of Cerson and from there flows southwest emptying into Kelly Lake. This is the basis of the present sewerage system of the city and it would seem to suggest that it will continue as such for any extended sewerage system to service the present and future developments outside of the existing city limits to the northeast including Minnow Lake and New Sudbury and to the southwest with Lockerby and the surround. Lake Ramsay, the source of the local water supply, has its outfall into Kelly Lake as well and the flow into it is independent of Junction Creek which would preclude any danger of pollution from this source. But a critical situation arises as a possible detriment to the wholesomeness of Lake Ramsay water by the lack of sewerage for the communities surrounding Minnow Lake that has its outfall into Lake Ramsay, and the other settlements around the lake itself. The same holds true for Pike Lake which, we believe, receives the effluent from the nearby sanitorium, which in turn empties into Lake Ramsay.

In this regard it is interesting to note what Horace L. Seymour--Town Planning Consultant of Ottawa wrote in his "Report on a Preliminary Town Planning Survey for the Township of McKim" back in 1940.

> "It should be mentioned, however, that all that area of the Township (McKim) in lots 1-6, Concession I, lots 1-6, Concession II, and lots 13, Concession III and IV, have been set aside by the Department of Health of the Province of Ontario as an area.....within which no person shall wash or cleanse cloth, wall, leather, skin, or animals, or place any noisome or offensive thing or convey, cast, throw, as put any filth, dirt, dead carcass or other noisome or offensive thing, or bathe or swim, or cause, permit or suffer the water of any sink, sewer, or drain to run or be conveyed into the same, or cause any other thing to be done whereby the water therein may be in any way tainted or fouled as the defined area is the source of water supply of the City of Sudbury. This order of the Department of Health was effective the 11th day of September, 1936."

Blezard Valley

WHITSON

LAKE

Garson Lake

NATURAL BARRIERS

Y S I D E

ALE. 1 in. = 1 M.

END

ROCK OUTCROP

SWAMP

LAKE

B L E Z A R D

U D B U R Y

Azilda

Falconbridge

Garson Junction

Sudbury

Frood Mine

Creighton

Copper Cliff

Garson

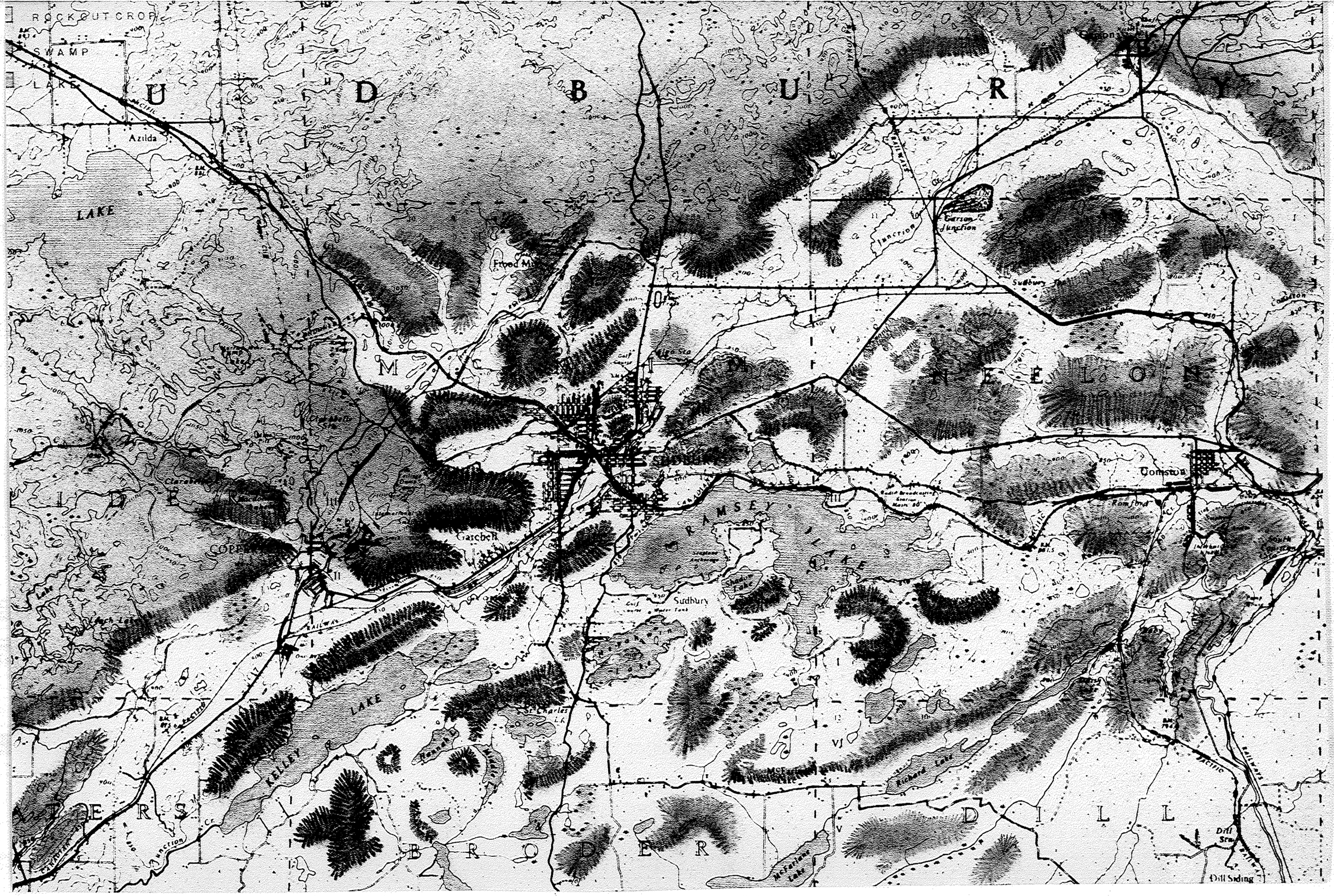
Coniston

Lake Ramsey

Sudbury

Ramsey Lake

Romford


ROCK OUTCROP
SWAMP
LAKE
U
D
B
U
R
Azilda
LAKE
Frood M.
Garson Junction
Junction
Sudbury
Tomstown
Romford
Garson
Sudbury
Clarabelle
Lake
Lake
Lake
Lake
Lake
Junction
Richard Lake
Drill Siding
Drill Siding

The area of land Mr. Horace L. Seymour refers to contains the Minnow Lake settlement, Lockerby and the development along Lake Ramsay.

In the problem of drainage and in the design and planning of sewerage systems, topography is of the greatest importance. This problem extends beyond the existing or future boundaries of the city to embrace the whole region within a drainage basin area. Thus to be effective the future plans of the area must be controlled by natural and not by arbitrary political boundaries.

Availability of Land for Future Growth

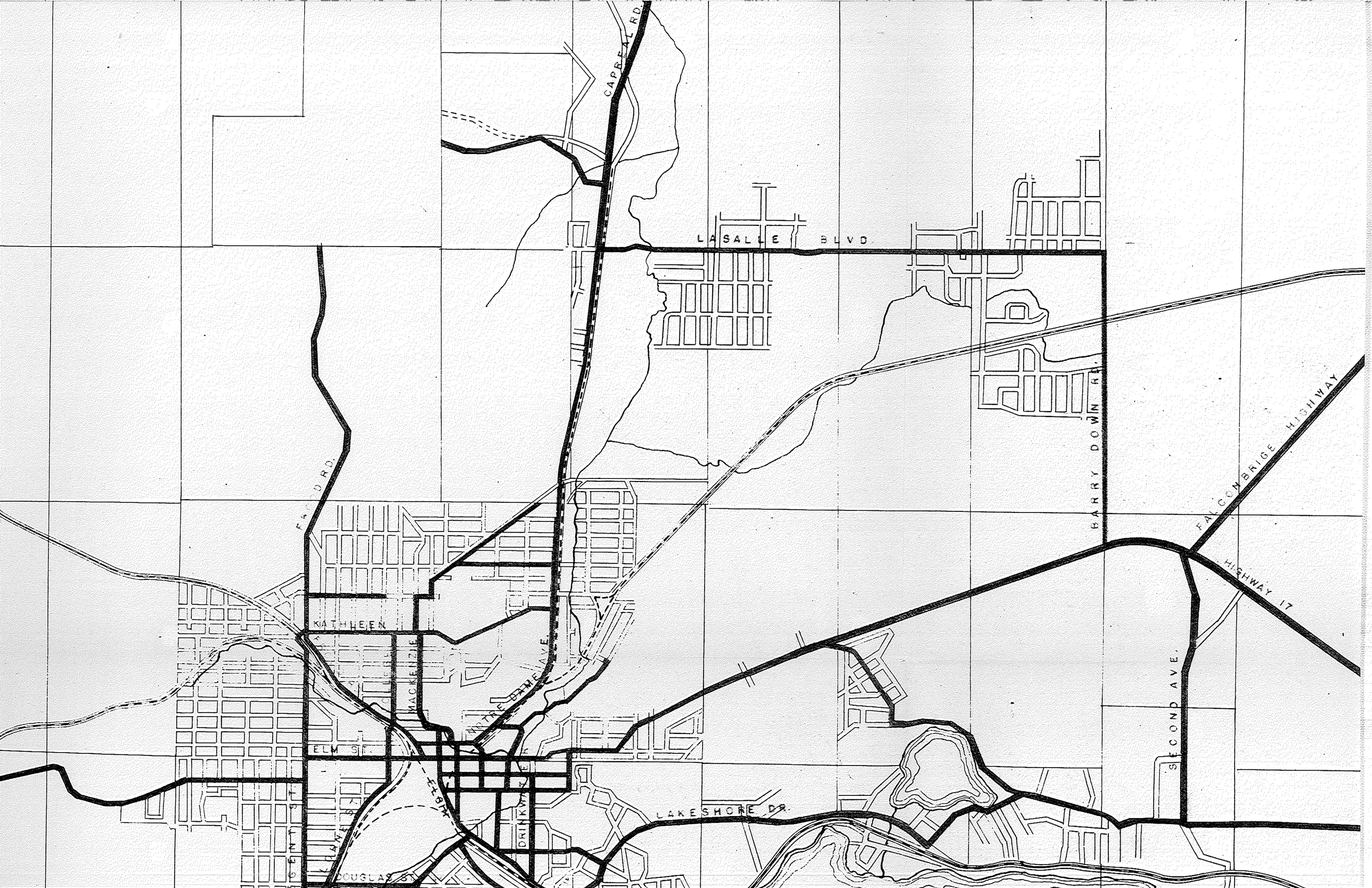
With such land conditions, finding sufficient area for urban development, including suitable industrial sites, becomes a very real problem. Figure shows the approximate location of the rock outcrops, swamps, or lowlands.

Mr. Horace Seymour in his report on McKim in 1940 stated that out of the total 36 square miles making up McKim, only about 1/3 or about 12 square miles was available for development by the Township. This amount was arrived at after excluding 2,710 acres or 4.13 square miles occupied by the city, 15 square miles of lands owned by International Nickel Company and occupied by their company towns, 3 square miles occupied by lakes (Minnow, Ramsay, Pike(Shadow), and Nepahwin(Trout), Robinson, and part of Kelly) and ½ square mile taken by the Golf Clubs, and Bell Park along Ramsay Lake and about 21 square miles for low or marshy land and rock formation.

Messers John Bland and Harold Spence Sales in their report of 1950 concluded that within the very same area only 8 square miles, approximately, could be utilized for future growth. This amount included 5.5 square miles around Carson Road (La Salle Boulevard) to the north of the city and 2.5 square miles around Minnow Lake and the north shore of Lake Ramsay. They also pointed out that usable land existed about Richard and McFarland Lakes and some area about Long Lake. A glance at Figure would also suggest that promising land exists northeast of the city out toward the town of Carson.

Street System

The street system gives direction to the movement of goods, services, and people around and within the city, and like topography, is part of the framework establishing its pattern of development. To develop an economical, efficient and safe circulation system, it is necessary to identify these channels of movement in terms of the particular functions imposed upon them, depending upon the character and volume of traffic they serve.


CABREAL RD.
LASALLE BLVD
BARRY DOWN RD.
FALCONBRIGE HIGHWAY
HIGHWAY 17
SECOND AVE.
FAIRLAWN AVE.
KATHLEEN
MACKENZIE
NORTHERN AVE.
ELM ST.
ELGIN ST.
LANE ST.
DRINKWATER
DOUGLAS ST.
LAKESHORE DR.


CAPREAL RD.
LASALLE BLVD
FAIRVIEW RD.
LEVACK RD.
KATHLEEN
MACKENZIE
NOTRE DAME AVE.
ELM ST.
MAIN ST.
ST. ANNE'S
DRINKWATER
LAKESHORE DR.

FIG. 7

MAJOR THOROUGHFARES
EXISTING
SUDBURY & McKIM

COPPER CLIFF RD.

LONG LAKE RD.

FIG. 7

MAJOR TH

EXISTING

SUDBURY &

ROADS

FIG. 6

TO LEVACK

TO CAPREOL

FALCONBRIGE

GARSON

STOBIE

FROOD

MC KIM

MURRY

NEW SUDBURY

BARRY DOWN

HIGHWAY 17

TO NORTH BAY

SUDBURY

MINNOW LAKE

CONISTON

COPPER CLIFF

GATCHELL

LOCKERBY

REFINERY

IRON SMELTER

BURWASH RD.

NORTH

At least four major weaknesses can be found in the existing pattern which has, as its main characteristics, the predominance of the gridiron system, and broadly speaking, a convergence of its main streets; Notre Dame, Frood Road, Lorne Street, Elm Street, and Elgin Street, into the centre of the city.

The Provincial Highway No. 17 running east-west (Figure 7) is allowed to bisect the city. Aside from the fact that causing the highway to run through a built-up area severely reduces the efficiency of an arterial route, it adds to the congestion in the down-town area, and creates hazards by permitting the admixture of relatively high speed through traffic with the slower moving local neighborhood traffic along Copper Cliff Road, Lorne, Elm, Lloyd and Kingsway Streets.

Considering the regional highway pattern, relating the places of work (the mining and smelting towns) to the city and the suburban residential areas, we find a lack of a coherent plan connecting the neighborhoods (and particularly those presently developing) to each other, and directly to the various industrial areas in the immediate vicinity of the city without necessitating the convergence upon the city centre.

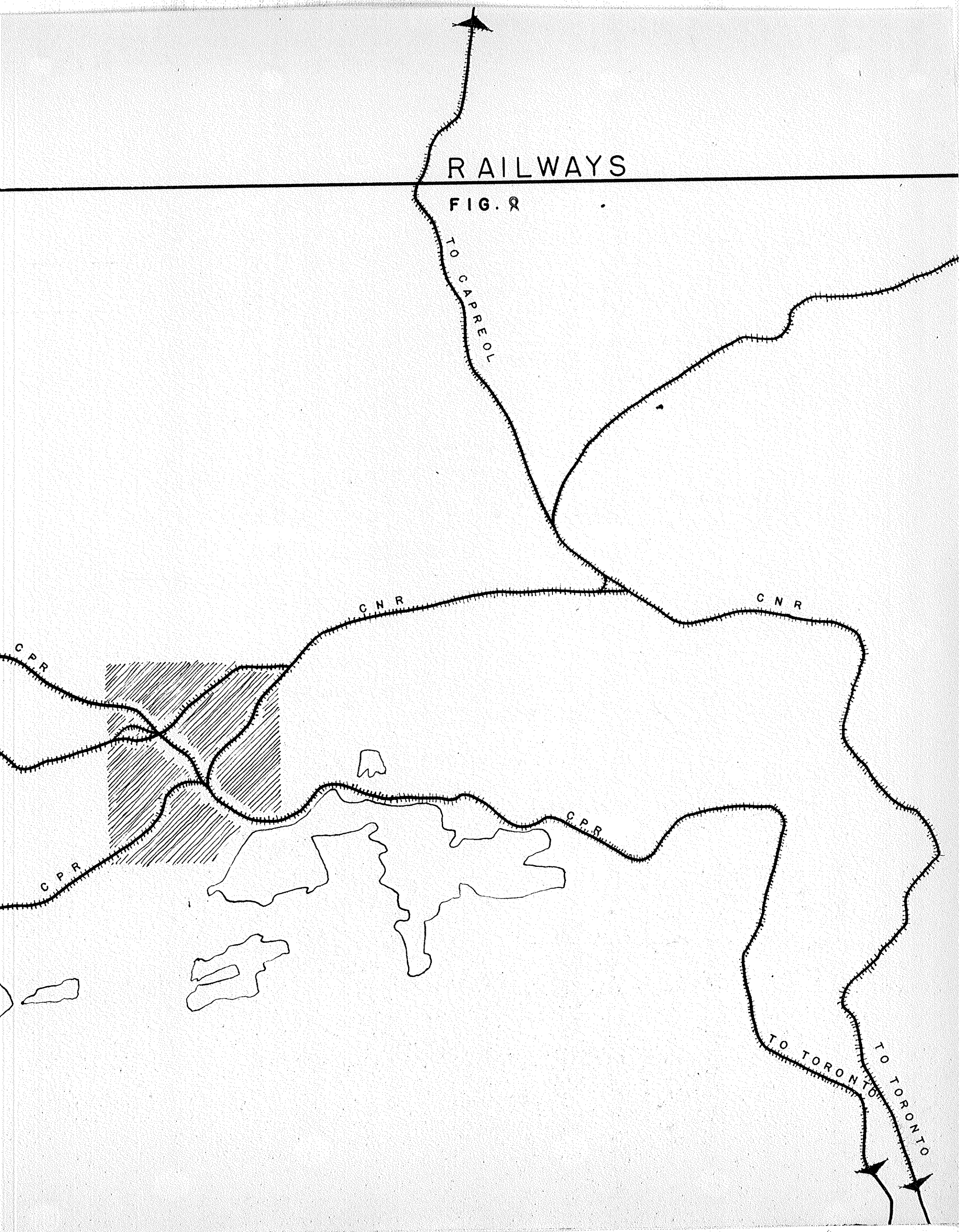
Although Regent Street is now partially fulfilling this function, by diverting some of the heavy traffic of workmen from the Copper Cliff smelter and refinery, (which will undoubtedly increase with the beginning of operations at the new iron plant) Murray and McKim Mines to the south and north of the city, a further extension must be made to connect the neighborhoods of Minnow Lake, Barrie Down, and New Sudbury, and roads leading to Coniston, Garson, Falconbridge and Stobie.

Superimposing the gridiron pattern upon the strong natural forms of the terrain has caused higher cost in land construction as well as encouraging through traffic on residential streets and constant interruption of traffic flow along through streets by frequent intersections of minor streets.

There is a lack of classification of streets according to their function, with the exception of recognizing major streets (Figure 7) which indicates some attempt to distinguish between residential streets and more or less through streets. There seems to be a lack of a strong definition of the hierarchy necessary for a proper road system. For instance the American Public Health Association Committee on the Hygiene of Housing recommends the following classification of street types, which might be adopted by the Sudbury area as standards:

RAILWAYS

FIG. 8



Residential Service Streets - providing direct access to residential structures; serving only comparatively small number of dwellings.

Neighborhood Feeder Streets - connecting service streets to each other, to community facilities and to minor traffic arteries; serving only neighborhood traffic.

Minor Traffic Streets - connecting feeder streets to major streets and to district centres. Preferably outside or bounding the neighborhood serving district traffic.

Major Traffic Streets - connecting cities and major districts of a single city, serving large volumes of comparatively long distance, fast moving traffic (including highways, freeways, etc...).

Railways

The railway is another important feature of the city's pattern (Figure ℟). The lines in Sudbury were laid out in typical fashion; without regard for possible future urban expansion or its direction. As the city grew outwardly from the point of origin, about the station, the railway yards eventually found themselves situated within the centre of the city in the densely built-up area.

Sudbury is on the main trunk line of the Canadian Pacific Railway with the east-west bound train cutting the city diagonally southeast-northwest. The Canadian Pacific Railway trunk line bound southwest to Sault Ste. Marie, finds its origin in Sudbury also, cutting the southwest half of the city in two again.

The Canadian National Railway has its main east-west line bypassing Sudbury with its terminal at Capreol, about twenty miles north of the city. A line branching from the trunk line bound south to Toronto at Sudbury Junction services the city cutting the north-east half of the city diagonally in two.

To aggravate the situation there are railway links between the Canadian National and Canadian Pacific Railway yards cutting the city as well. One of theserms through the centre of the city, and, as it was pointed out by Messers John Bland and Spence Sales in their report to the city in 1950, "the development of the central area of the City of Sudbury is critically impaired by the link connecting the Canadian Pacific and Canadian National Railways". Some attempt has been made by the local authorities to have the link removed, but no results are apparent as yet. The other railway link cuts through the neighborhoods on the south of the city.

As the result of this haphazard growth around the railways, Sudbury is cut up into six sectors. The streets which connect one neighborhood to another are severed causing numerous grade crossings and dead end streets terminating at the railway line, which, in general, complicates the local traffic problem severely. At least one neighborhood, that of "Little Britain" in the northwest corner of the city, is completely cut off from its adjacent residential areas by railway lines, and the existing Provincial Court House and Registry Building are severed from their proper relationship to a possible development of a civic design in the centre of the city by the east-west trunk line of the Canadian Pacific Railway.

Land Use

The land use pattern is one of our fundamental patterns (others being the topographic pattern, the population distribution pattern, the land value pattern) utilized in trying to build up a picture of the area. Based upon this picture we are able to make certain observations from which come our proposals forming our concept of what we hope the future picture of the area will be.

A more direct purpose of the land use map is to define the different districts of the urban area, such as the residential area, multiple family area, central business area, industrial area, wholesale area, etc... This is done by predominance of a land use category or categories in any one area.

Overall Pattern

Thinking of the overall pattern we find one large urban mass, the present City of Sudbury, with four distinct residential masses located around it. The large urban mass is cut into four parts by railway lines that converge at the Canadian Pacific Railway yards in the centre of the city.

Immediately northeast of the yards lies the central business district, surrounded on all sides by high density development of either a multiple family dwelling or a boarding house nature. Together these areas make up what could be called the "central area".

Around the central area to the limits of the urban development are what could be called the residential areas of the city, with the four residential masses already mentioned located to the northeast, east, south, and southwest of the city.

In general the land use pattern shows multiple family and boarding house uses to be scattered throughout the city in quite large proportions, with perhaps more such high density uses to the north (east of Frood Road, and north of Sacred Heart College on both sides of Notre Dame Avenue), however, the general pattern still remains--an urban mass cut in four by railways--a central area surrounded by residential development.

Central Business District

The central business district according to our land use pattern, is described by Beech Street, Frood Road, and Lisgar Street to the north of Elm Street; and Elm Street, Lisgar Street, and Elgin Street to the south of Elm Street. This represents the heavy core of business with the more important shops, offices, banks, theatres, and places of entertainment. However, this core has a spine in Elm and Durham Streets along which the most important commercial establishments are to be found. It is actually from this spine that the present business district grew and continues to grow.

The central business district thus described has an appendage growth along Borgia Street between Louis and Beech Streets. This is actually an old commercial area developing because of the market place and the Canadian National Railway Station across the street, however, the buildings are old and becoming derelict, and should be better maintained or completely eliminated.

A similar situation exists across from the Canadian Pacific Railway Station along Elgin Street where the commercial development opposite the station is beginning to deteriorate.

If we consider Borgia Street as part of the central business district, we relate both railway stations quite nicely into the central area. We also relate the market place, which, although in a sad state of repair at the moment, could become a very pleasing feature of the central area.

Boarding House and High Density Area

Surrounding this complex central business district are areas of high density, or what appears to be high density. Thus that area to the northeast of the central business district, excepting Borgia Street, but including all of the Notre Dame Avenue area (Ignatius, Xavier, Louis); Notre Dame Avenue to Young Street between Louis Street and Elm Street is a well developed multiple family dwelling area.

To the south of this, on the south side of Elm Street, still adjacent to the central business district, between Lisgar-Minto and Drinkwater Streets, appears what seems to be a rooming house district, interspersed with multiple family dwellings. This area extends all the way from Elm Street down to Elgin Street.

Not directly adjacent to the central business district, but on the west side of the railway yards is another high density area, bounded by the lane north of Pine Street, Alder Street, and Lorne Street. Though this area contains a few light and heavy

industrial concerns, such as creameries, bakeries, a foundry and a brewery, there is much evidence of multiple family living, indicating high density growth.

Industrial Areas

Except for the few industrial developments in the centre of the city on Canadian Pacific Railway land (oil storage, concrete mixing plant and others) there is no extensive industrial development of any significant proportions in the present city or within the whole planning area, for that matter.

At the northeast corner of the present city straddling the Canadian National Railway there are two industrial concerns of some size, and to the southwest of the city just south of Gatchell is another industrial site, but these are isolated and could not be considered as tending to spread. The fabricating plant and concrete block plant to the northeast are contained by rock outcrop, while the creosote plant south of Gatchell is within railroad property and has not shown signs of expansion for the past thirty years.

Residential Areas

Outside the bounds of the present city there are four spots of residential growth known locally as New Sudbury to the northeast, Minnow Lake to the east, Lockerby to the south and Gatchell to the southwest. These have their own shopping, education and religious facilities to service their local needs.

Of the four Gatchell is the most concentrated and well developed, but of course, it is also the oldest of the developments.

Lockerby to the south is quite sparse and spready in its development. Situated around Trout(Nephawin) Lake as it is, there are remnants of summer camp uses along the lake shore, but the trend appears to be toward more permanent residential development.

Minnow Lake to the east is more developed as a residential area than Lockerby, but it too has some summer camp development along its lake shore and that of Ramsay Lake. This area seems to be growing quite rapidly and, with the promise of services, is fast becoming a desirable residential area.

New Sudbury on the northeast is the youngest of all four developments but showsthe most promise of developing into quite an extensive area since here is found the better land of all the new developments. Though local improvements are not immediately

LEGEND

CLASS	DOLLARS/FT. FRONTAGE – 120' DEPTH
A	800 – 1000
B	700 – 800
C	600 – 700
D	500 – 600
E	400 – 500
F	300 – 400
G	200 – 300
H	50 – 200
I	20 – 50
J	8 – 20
K	0 – 8

UNASSESSED BY LOCAL ASSESSMENT

RS/FT. FRONTAGE – 120' DEPTH

– 1000

– 800

– 700

– 600

– 500

– 400

– 300

– 200

– 50

– 20

– 8

BY LOCAL ASSESSMENT

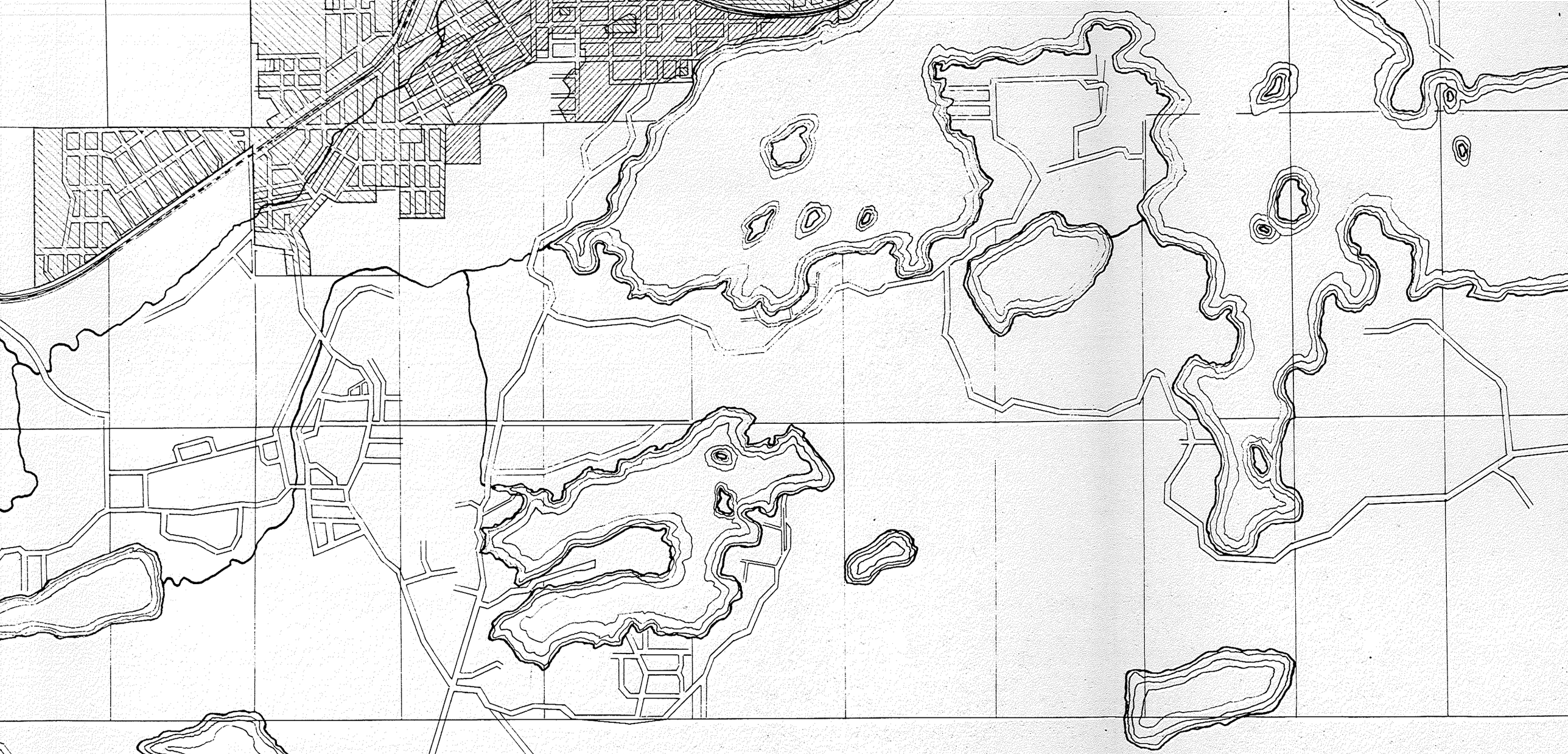


FIG. 10

LAND VALUE
EXISTING
SUDBURY & McKIM

FIG. 10

LAND VALUE
EXISTING
SUDBURY & M

forthcoming, there is enough land available here to accommodate the bulk of Sudbury's growth within the next two decades.

Within the present bounds of the city all the available land around the central area of the city is used for residential purposes. The railroad cuts the city roughly into four parts, and it is the periphery of these four quadrants that is used for residential purposes. Interspersed throughout these areas are multiple family, boarding house, local shopping, and other uses, but the predominating use of this peripheral area is residential.

Green Areas

In the whole area the two largest areas designated as green areas are the two golf courses at the northern and southern ends of McKim Township. Though there are other areas which appear to be green at sight, there is less of a guarantee they shall remain as such, and thus cannot be considered as green areas but vacant land. However, even if we do consider these as green areas, at the present time they are found only at the extreme edges of major urban development. Within the built up urban area there are painfully few green open spaces. These few that do exist act only as infrequent breathing pores in the myriad of urban land uses and block outcrop.

This need not be the case. The outcrop areas, unsuitable for little else other than parks, could, with some effort, be developed as green areas, and the whole city set in a park like atmosphere with green areas readily accessible to almost every portion of the urban development.

Summer Camp Development

Besides the summer camp development at Wirnow Lake and in Lockerby, there seems to be a more extensive summer camp development to the east of Lockerby along Ramsay Lake. Such a summer recreational area so close to the urban mass seems advantageous, but there should be some control over its extent of development. If allowed to develop too greatly there arises the danger of pollution of Ramsay Lake, which means pollution of the source of water for the urban area. Thus there should be some effort made to keep the development sparse enough to avert this danger.

Land Value

The land value pattern helps to substantiate the general land use pattern. In the central part of the city the land values are highest. The central area thus described, in fact, is of a smaller area than that described by the land use pattern. Just outside

and surrounding the central area there is a thin band of lesser value land than the central area, and surrounding this again, the land is of a still lesser value, growing generally less in value the further it is removed from the central area, regardless of whether the land be of a high or low density nature. Thus in general the high density land in the north is the same value as that of the low density land in the south.

This pattern demonstrates a very interesting phenomena about land values. The value of land can be based primarily upon two bases--demand and utility. In the central area, though the land has to be utilized, it is still the demand which is the most important factor in determining the value of the central area land. Outside the central area we find the land value dropping and the utility of the land taking on a growing importance in the determination of the land value, although the demand for the land still plays a very significant role. Thus topography has its influence on the value of land as can be seen by the low value attached to rocky and swampy land.

Stabilized Land Use and Land Value

Without a comprehensive development or zoning plan the use and value of the land is in a state of continual change. Not only does this create problems of municipal finance through the fluctuations in assessment of land, but it also affects patterns of traffic, since traffic generates directly as a result of the land use pattern; threatens the health of existing residential neighborhoods, since disrupting uses have the opportunity of causing nuisances, and health and traffic hazards to the neighborhoods; and affects the condition of housing and other types of buildings, since one use is allowed to encroach upon another without check.

Stabilization of land use and land value patterns through firstly a development then a zoning plan, would help considerably in controlling the fluctuations of these two important factors of land, and allow planners and developers to guage and assess more accurately the development of any part or the whole of the urban and suburban area.

This, of course, means planned development. Development administered by a planning body, which, equipped with a logical and comprehensive zoning by-law, can guide growth to its full maturity as envisioned by the development plan.

WHITSON

Gerson

LAKE

A Y S I D E

B L E Z A R D

U D B U R Y

Azilda

LAKE

Creighton Mine

Gerson Junction

SUDBURY

COPPER CLIFF

Creighton

LAKE

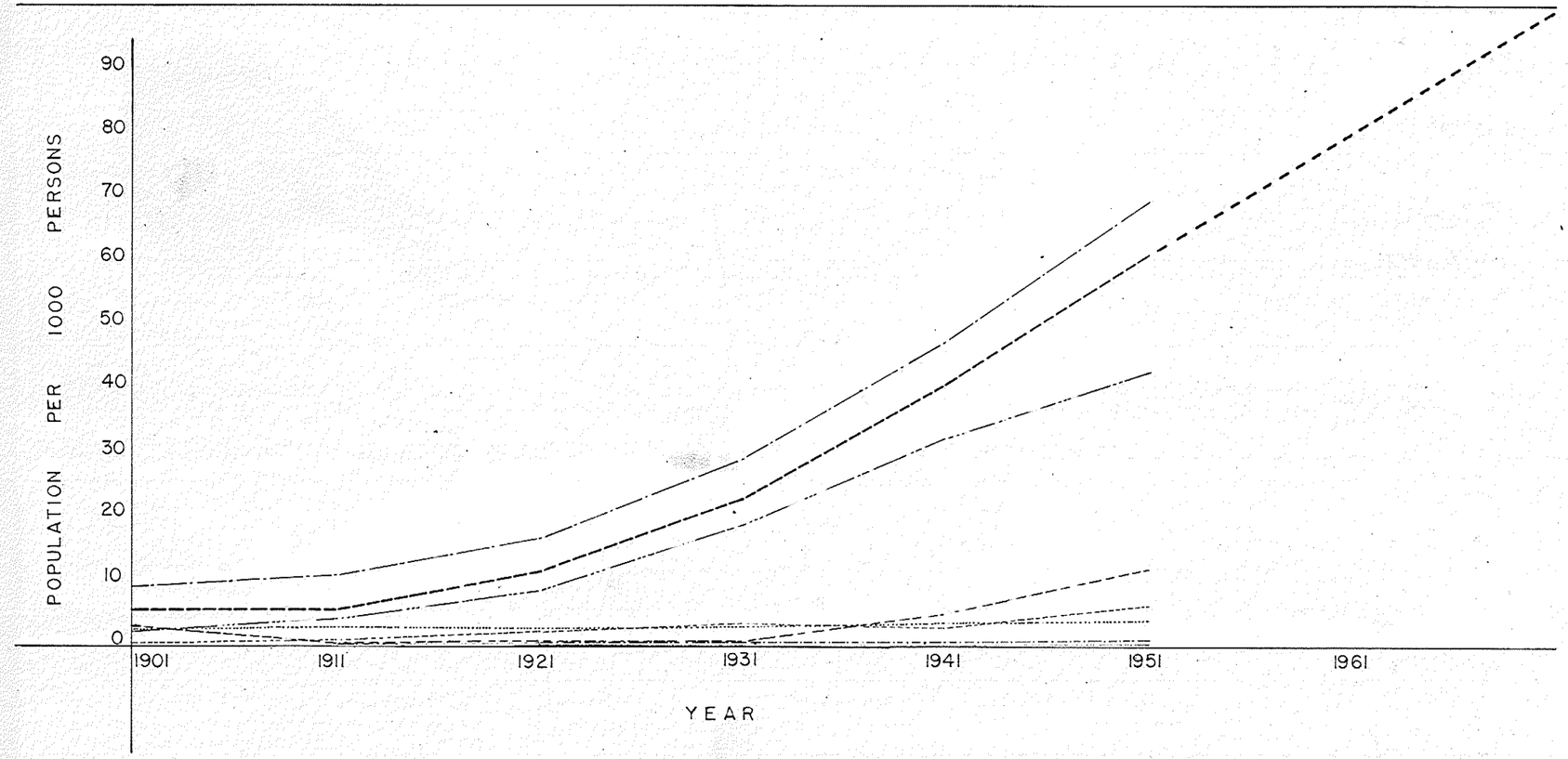
KELLEY

McFarlane

part 3

People

SYMBOL	TOWN	1901	1911	1921	1931	1941	1951
	SUDBURY	2027	4150	8621	18518	32203	42410
	COPPER CLIFF	2500	3082	2597	3173	3732	3974
	CHELMSFORD		550	561	725	905	1210
	CONISTON			286	286	240	260
	FROOD MINES				173	70	109
	BLEZARD	474	456	503	523	533	826
	McKIM	3012	310	440	533	5105	11783
	WATERS	129	227	455	524	772	991
	RAYSIDE	820	865	952	1067	962	1357
	NEELON GARSON	245	1082	2238	3618	2977	6438
	SUDBURY - McKIM - NEELON GARSON	5284	5542	11299	22669	40285	60631
	TOTAL	9207	10722	16367	28854	47259	69098



POPULATION GROWTH

POPULATION GROWTH

Area Considered

In our attempt to define the Sudbury City and District Planning area we used, as one of our bases, the Financial Post Business Year Book which lists the following as affected by the business activity of the City of Sudbury.

Cities and Towns of:	Sudbury	Townships of:	McKim
	Copper Cliff		Neelon-Garson
	Chelmsford		Blezard
	Coniston		Waters
	Frood Mines		Rayside

It follows that these same locations are also affected by the economic and cultural activities of the City of Sudbury. Thus we had some gauge as to the extent of its sphere of influence. This was our starting point.

The population over the past fifty years for the listed towns and townships are shown in Figure

Growth Considered

It can be seen from the charts that, with the exceptions of the City of Sudbury, Township of McKim, and the combined Townships of Neelon-Garson, the remaining towns and townships have relatively small populations and exhibit relatively stable population trends.

Some reasons for this pattern seem to be:

Topographic Factors

To the north, northwest, and west of the existing city lies the south rim of the Sudbury Basin; a foreboding, widely outcropped area, most unsuitable for urban development, while to the northeast, east and south of the existing town lies land much more suitable, at least, more acceptable, to urban and suburban growth.

Distance from Hub of Commercial and Social Activity

Those areas not immediately adjacent to the hub of growth, namely the existing city, did not receive very much, if any, of its overgrowth, since in general, the tendency of expanding populations is to remain as close to the centre of activity as possible.

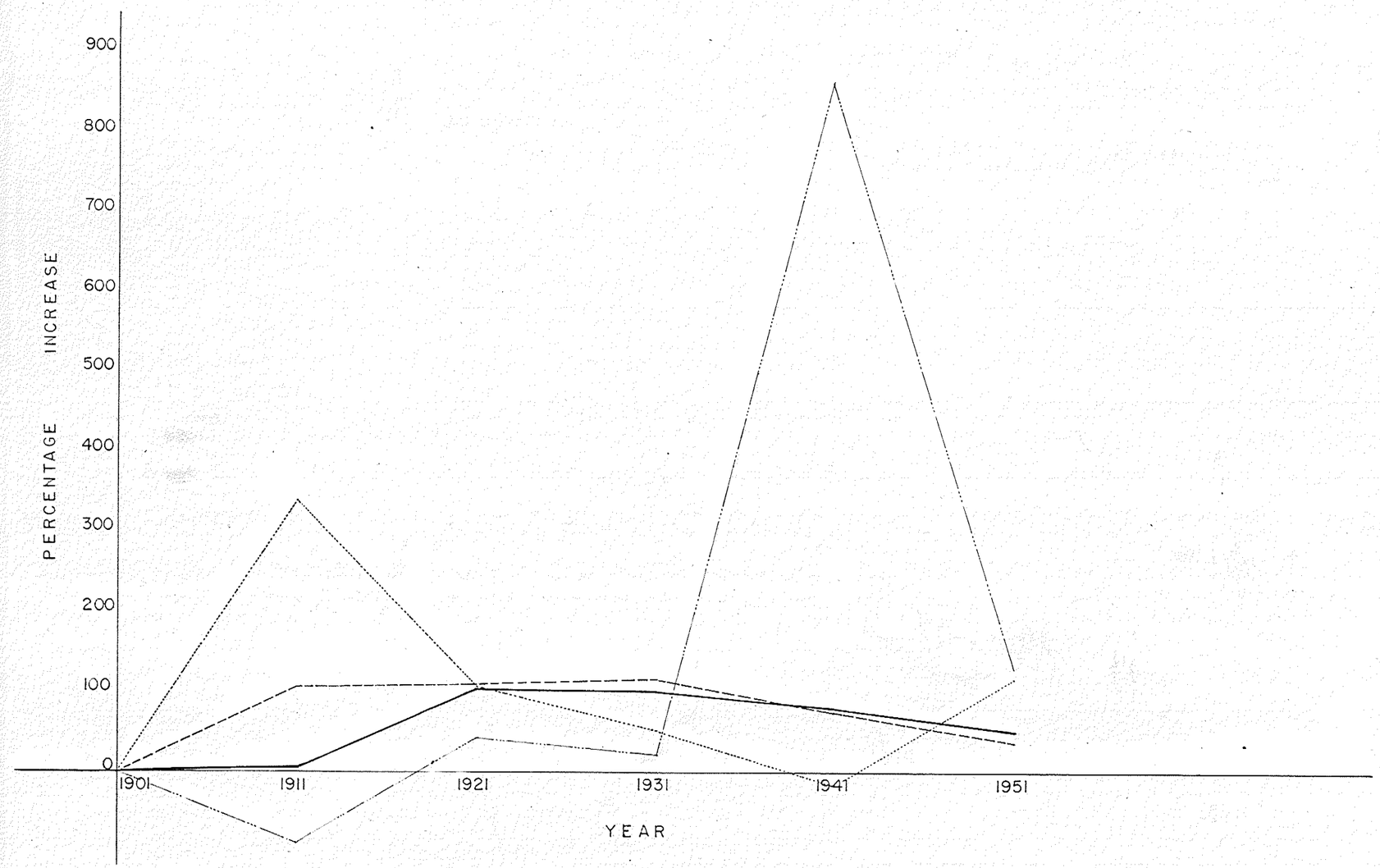
Policy of Company Towns

The apparent policy of the mining companies to restrict the size of the company town communities.

Pattern of Mining Development Within Past Few Decades

A great deal of the basic economic activity of the district, that of mining, has taken place to the north and northeast of the City

SYMBOL	TOWN	1901-1911	1911-1921	1921-1931	1931-1941	1941-1951
- - - - - - - -	SUDBURY	105%	109%	115%	74%	37%
——·——·——	McKIM	-90%	42%	21%	860%	130%
·····	NEELON GARSON	340%	107%	62%	-17%	116%
———	SUDBURY- McKIM NEELON GARSON	4.6%	104%	101%	78%	50%



RATE OF INCREASE

of Sudbury (Garson, Frood, Stobie, Falconbridge), and when the city was expanding, this might have had some influence in drawing Sudbury's growth in that direction.

Path of Existing Highways

Lineal development along existing thorofares is usually followed by a mass growth when the pressure of population on land becomes critical. Thus with the major arterial routes of the whole area going in a general southwest-northeast direction, urban growth naturally followed these lines of least resistance.

Location of Smelter

With a smelter to the southwest of the city the land to the northeast was less affected by fumes and therefore more suitable to residential development.

Thus, in studying population growth of the urban district, we chose to deal with Sudbury, McKim, Neelon-Garson Townships only, accepting the remaining growth as negligible for this purpose, at least within the scope of time we deem as a planning period (about 20 years).

Early Summer Camp Locations

Early summer camp locations (Ramsay, Trout (Nephawin), Minnow) were easier developed into permanent dwellings than establishing altogether new areas.

Rate of Increase

Overall

For this area as a whole, it can be seen that its rate of increase is fairly steady and has been for the past three decades, and though it appears to be dropping slowly, economic factors would suggest this trend will continue at least for the next twenty years.

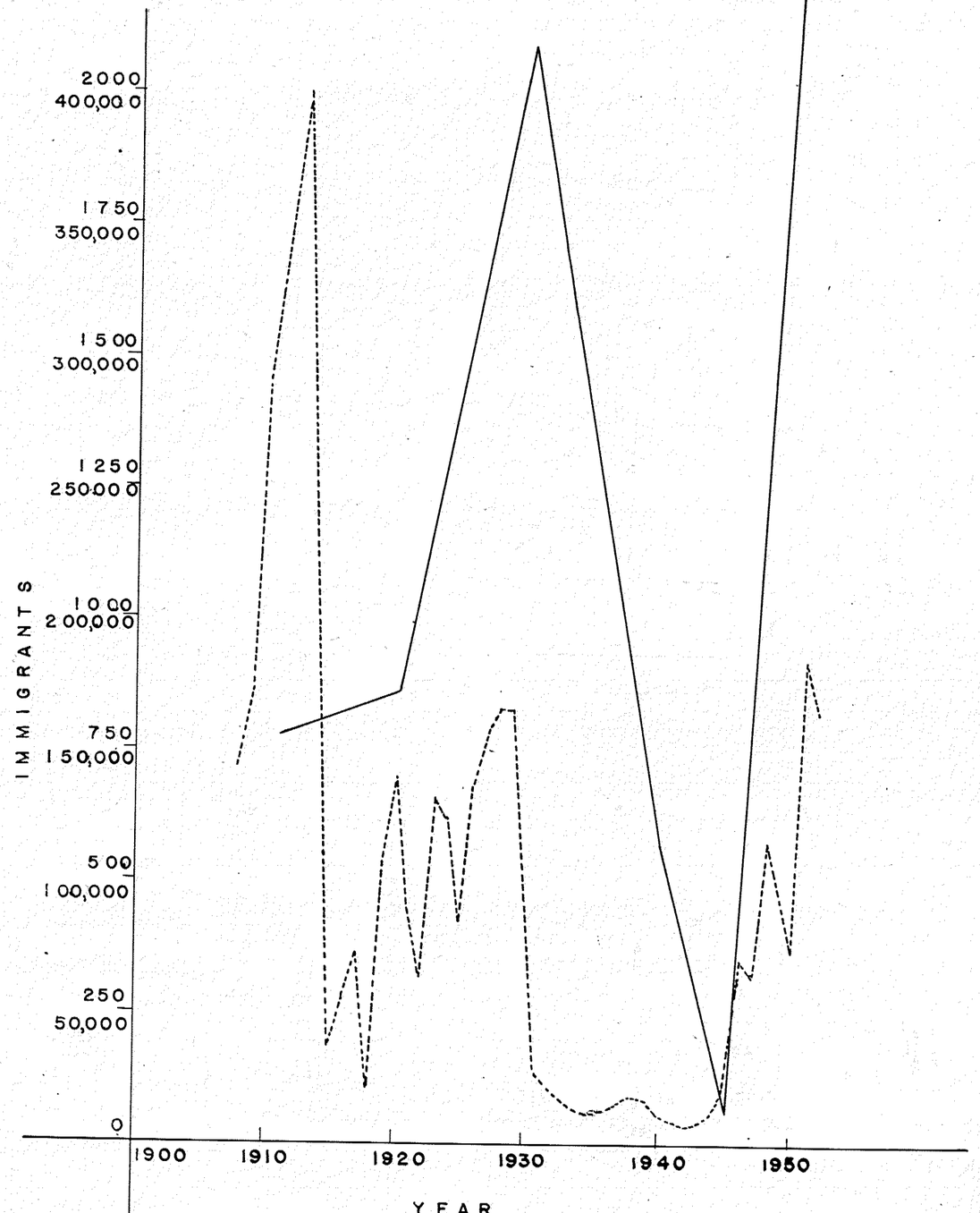
Parts - Population Growth Pattern

Analysing the rate of growth of this area by its parts we find that though there has been a fairly steady rate of increase, it is composed of four peaks, the fourth one not fully reached as yet.

Preliminary Peak (around 1911)

This is actually a composite peak made up of two positive and one negative peak. The two positive peaks are for Sudbury and Garson; the negative peak for McKim. The peaks are explained by the rise in Canadian Immigration during this period giving the whole area a significant impetus in population growth. The negative peak of McKim is explained by the fact that before this period the people of Sudbury were counted as citizens of McKim. Thus when both were counted separately, and since many more lived within the bounds of

YEAR	CANADA	SUDBURY
1908	143,326	
1909	173,694	
1910	286,839	
1911	331,288	772
1912	375,756	
1913	400,870	
1914	150,484	
1915	36,665	
1916	55,914	
1917	72,910	
1918	41,824	
19	107,698	
20	138,824	853
21	91,728	
22	64,224	
23	133,729	
24	124,164	
25	84,906	
26	125,982	
27	158,886	
28	166,783	
29	164,993	
30	104,806	2,096
31	27,530	
32	20,591	
33	14,382	
34	12,476	
35	11,277	
36	11,643	
37	15,101	
38	17,244	
39	16,994	
40	11,324	563
41	9,329	
42	7,576	
43	8,504	
44	12,801	
45	22,722	112
46	71,719	
47	64,127	
48	125,414	
49	95,217	
50	73,912	
51	194,391	2,261
52	114,498	



IMMIGRATION

Sudbury at the time, the accounted population of McKim dropped considerably.

First Peak (Sudbury 1931)

We find that for the next two decades the population growth of the area is fairly concentrated in Sudbury reaching a peak about 1930. During this period, except for immediately after the war, the nickel industry was expanding and Sudbury along with it. Also, the Canadian Immigration trend (Figure 13) seems to rise steadily until about 1929 when it dropped off drastically during the depression and World War II.

Second Peak (McKim 1941)

The next two peaks seem to be reperoussions of the first, and McKim being immediately adjacent to Sudbury, it seems natural that it should receive the first influence of its rapid growth. Even with an economic slump during the depression, a general prosperity in the nickel industry is evident in the decade between 1930-1940, the slump being balanced by first, the slow rise about 1936 and then the forced prosperity brought on by the World War of 1939. Thus in the years approaching 1940 the problem of available land versus population seems to make its first appearance. Had the growth near the end of this period been gradual, perhaps the problem would not have appeared so emphatic. However, increased production just prior and during the war forced a growth upon Sudbury it could not withstand and it overflowed into the adjacent Township of McKim, thus accounting for the phenomenal 860 per cent increase from 1931-1941.

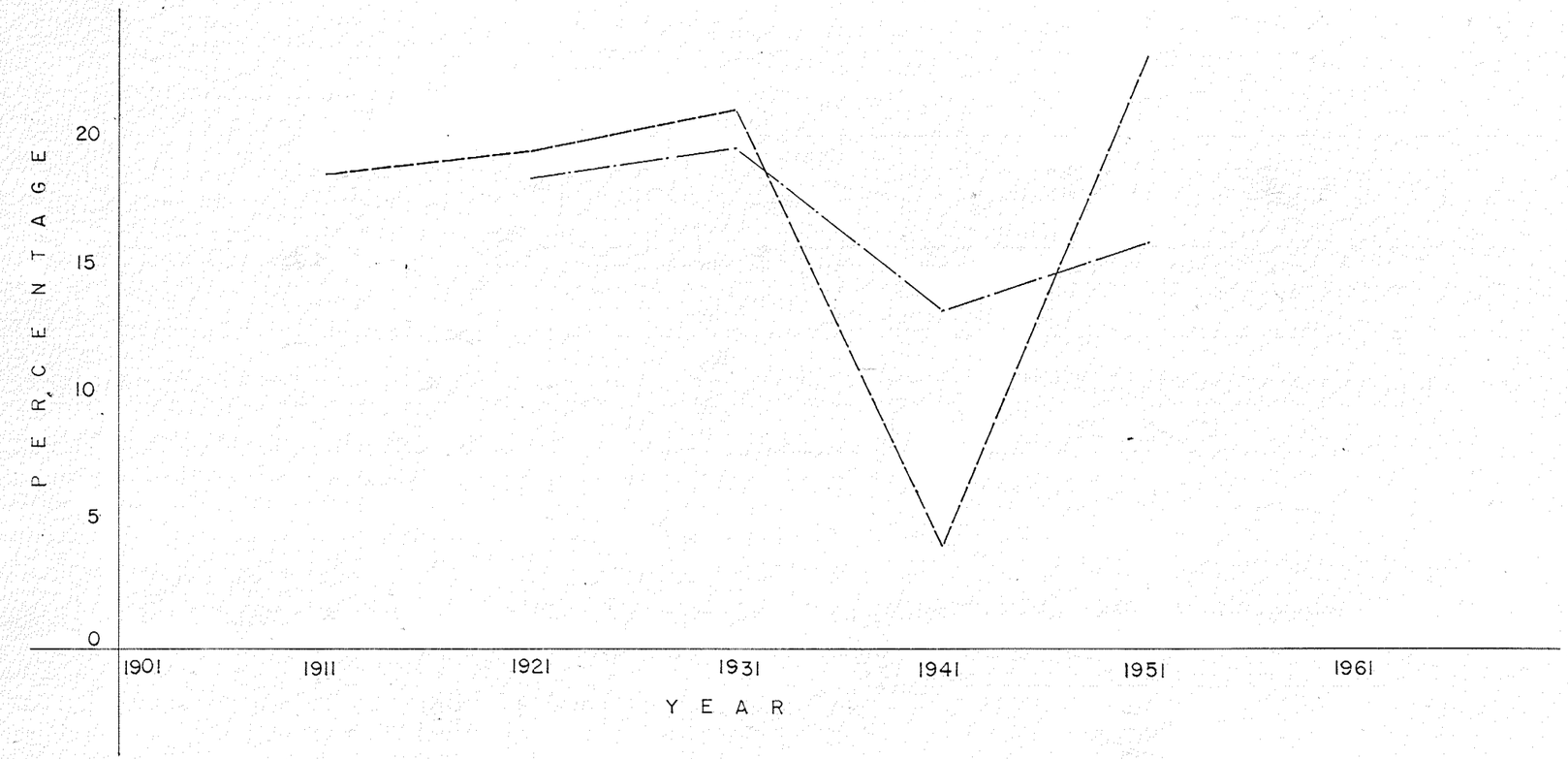
Third Peak (Neelon-Carson 195?)

Just as Sudbury overflowed, so di McKim, but not in so drastic a manner. This third peak of growth of Neelon-Carson is actually a reperoussion of the first growth peak of Sudbury, but with a time lag due to the partial removal of Neelon-Carson from the area immediately adjacent to Sudbury. Continued prosperity after World War II has added impetus to this third growth which, from appearances, has not reached its full height, as yet.

Summing up these patterns they would seem to indicate that the area, as a whole, will continue to grow at a fairly steady rate, and if this growth were to be unguided by some planning control, it would take place rapidly in Neelon-Carson Townships, at a slower rate in McKim Township, and at still a slower rate in the existing City of Sudbury.

However, it should be remembered that comparison on the basis of rates of increase does not quite complete the future trend pattern as far as actual numbers of people are concerned, since the rate of increase of a small community will be much greater than the rate

PERIOD	PERCENT OF INCREASE	PERCENT OF TOTAL POPULATION
UP TO 1911	18.6 %	
1911 - 1920	19.0 %	18.4 %
1921 - 1930	21.2 %	19.5 %
1931 - 1940	4.1 %	13.3 %
1941 - 1951	23.1 %	15.7 %



IMMIGRATION EFFECTS ON SUDBURY POPULATION

of increase of a relatively larger community with the addition of equal numbers of people to both. Thus though the rate of increase for Neelon-Garson could be many times more the rate of increase of McKim, in actual numbers of people the increase would be much less. And this is just about the way we see it happening, with planning control.

The population graph, when extended, shows a population for the planning area of about 100,000 for 1971. At present there are roughly about 60,000 people in the area. That means an increase of about 40,000 people, almost as much as the present population of the City of Sudbury.

Returning to our seven possible reasons for initial development, we conclude that a great deal of this population will settle in what is presently known as the Township of McKim, since studies reveal only very little land left in the existing city and a good deal of suitable land adjacent to the existing city in the present Township of McKim. Thus the influence of the central core of the city will help to settle the areas now locally called New Sudbury, Lockerby, Minnow Lake, and a portion of the present Township of Neelon, in that order of weight in numbers.

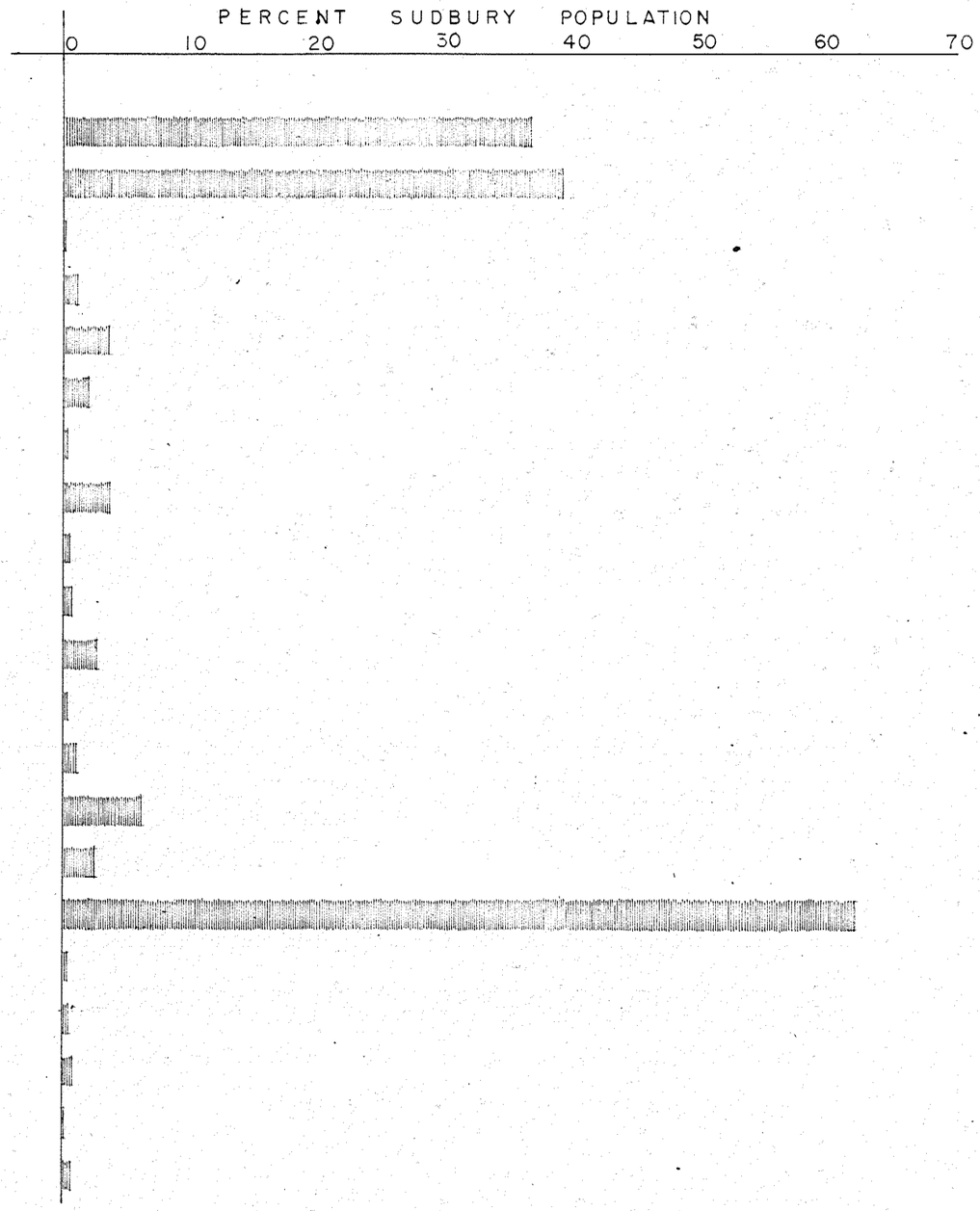
Effect of Immigration - Figure 14

As has already been shown, the Canadian Immigration policy has affected the growth of Sudbury. Sometimes it has been the dominating force of its growth, at other times, only a contributing force.

Thus in 1911 it could be considered quite a dominating force in the growth of Sudbury, while in the period between 1920-1930 it might be thought of as a contributing force. During the depression and war years its affect was negligible but immediately following World War II its influence again becomes a contributing factor; perhaps even more so than is immediately apparent from Figure 14 since they deal with the City of Sudbury only. They show the city to have a total of about 6,600 immigrant population, but the Sudbury Office of the Department of Citizenship and Immigration reports that up to 17,000 immigrants have been absorbed in the immediate Sudbury area between 1947-1953, which would suggest that this great influx of population has probably gone into the residential, mining, and smelting areas around the city, following the pattern of growth already discussed.

The result of this immigration influx over the years is significant in the relative numbers they contribute to the total population as seen in Figure 14 , and the cosmopolitan nature of the Sudbury District population can be attributed, partly, to this fact. Never less than 13 per cent and reaching a high of nearly 20 per cent of the total population around 1930, these people contributed significantly to the many facetted cultural complexion and growth of the area.

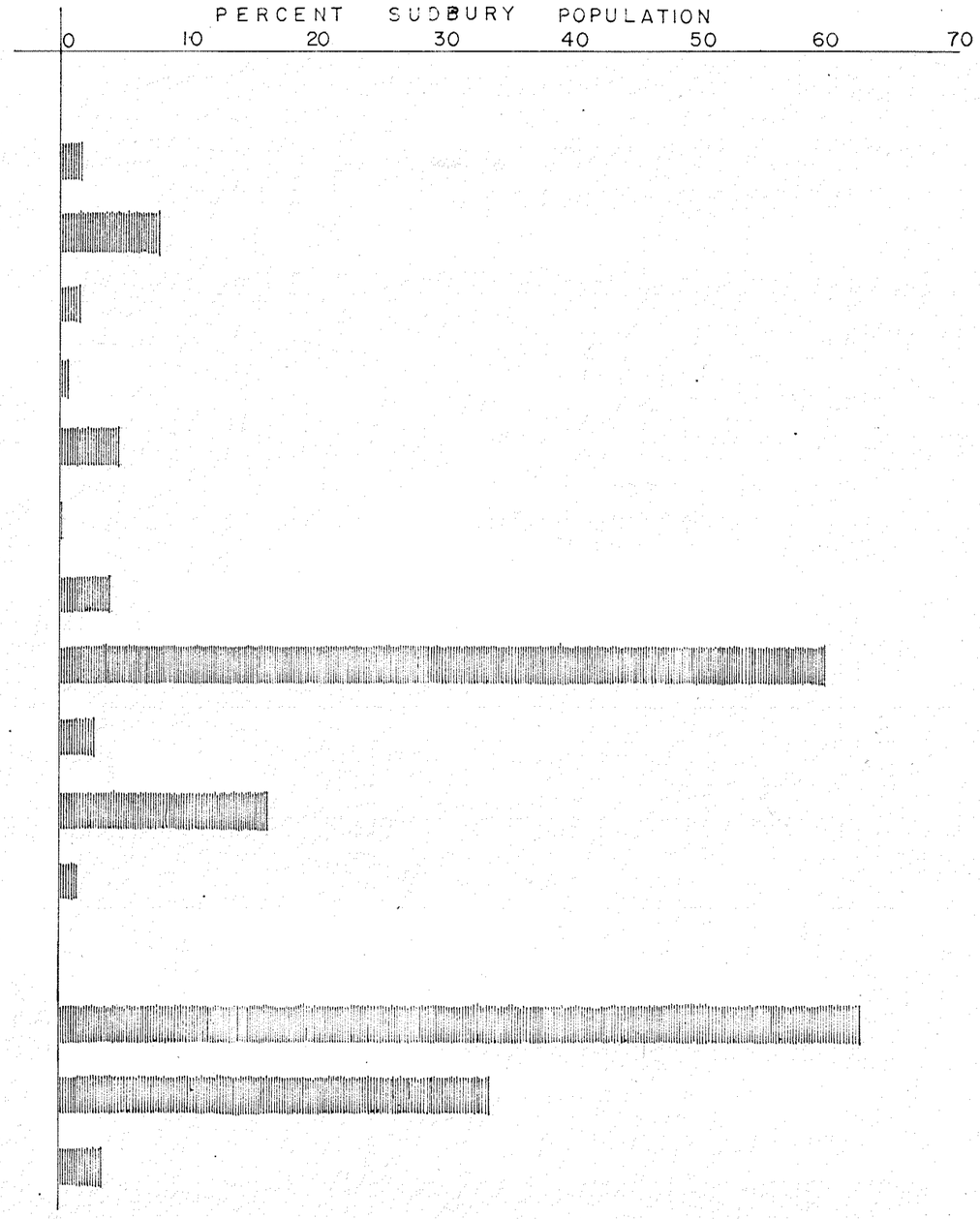
ORIGIN	TOTAL	%
ALL ORIGINS	42410	100.
BRITISH ISLES	15502	36.6
FRENCH	16060	38.9
AUSTRIA	67	0.016
CZECK & SLOVAK	431	1.02
FINNISH	1478	3.48
GERMAN	845	1.99
HUNGARIAN	140	0.33
ITALIAN	1502	3.54
JEWISH	172	0.46
NETHERLANDS	284	0.67
POLISH	1127	2.66
RUSSIAN	143	0.34
SCANDANAVIAN	389	0.92
UKRAINIAN	2571	6.07
OTHER EUROPEAN	1079	2.55
TOTAL EUROPEAN	26288	62.1
CHINESE	141	0.33
OTHER ASIATIC	156	0.37
TOTAL ASIATIC	297	0.70
NATIVE INDIAN	69	0.016
OTHERS	254	0.60



ORIGINS OF SUDBURY POPULATION

FIG. 15

RELIGIOUS DENOMINATIONS	TOTAL	%
ALL DENOMINATIONS	42410	100
BAPTIST	747	1.76
CHURCH OF ENGLAND	3210	7.69
GREEK ORTHODOX	716	1.69
JEWISH	184	0.45
LUTHERAN	1971	4.55
MENNONITE	7	0.01
PRESBYTERIAN	1687	3.98
ROMAN CATHOLIC	25366	59.8
UKRAINIAN GREEK CATHOLIC	1152	2.72
UNITED CHURCH	6880	16.2
OTHERS	490	1.16
ROMAN CATHOLIC	26518	62.5
PROTESTANT	14495	34.2
OTHERS	1397	3.3



RELIGIOUS DENOMINATIONS OF SUDBURY

Origin - Figure 15

The charts illustrate a dominance and fairly even split between English and French speaking peoples in the area. There are also significant numbers of Finnish, Italian, Polish, and Ukranian speaking peoples in the present city, all of which tend to retain a good deal of their own cultures. The fairly significant immigrant population serves to strengthen this tendency, and consequently, there are scattered concentrations of these ethnic groups throughout the populated area. Since the immigration growth of Canada, which seems to exert proportional growth on Sudbury, appears to be quite high and increasing, this characteristic of the area will probably remain unchanged and these areas may even grow in size as the area increases in population. It seems improbable, however, that new ethnic group areas will develop since, as a rule, new immigrant population usually settles in already developed ethnic areas, if the new immigrant population is of a low income bracket and little acquainted with English. The new areas are usually populated by second generation immigrant stock (generally more assimilated into what can loosely be called the "Canadian Culture", and less loyal to parental traditions) and Canadian born population from other parts of Canada. Simply stated, as a rule the newer areas are populated by people of a specific income bracket primarily, and secondly because of ethnic group considerations.

The establishment of new ethnic communities within the development pattern, then, seems a slim possibility. Therefore, we are not considering any special kind of community in the future plans for guided urban development.

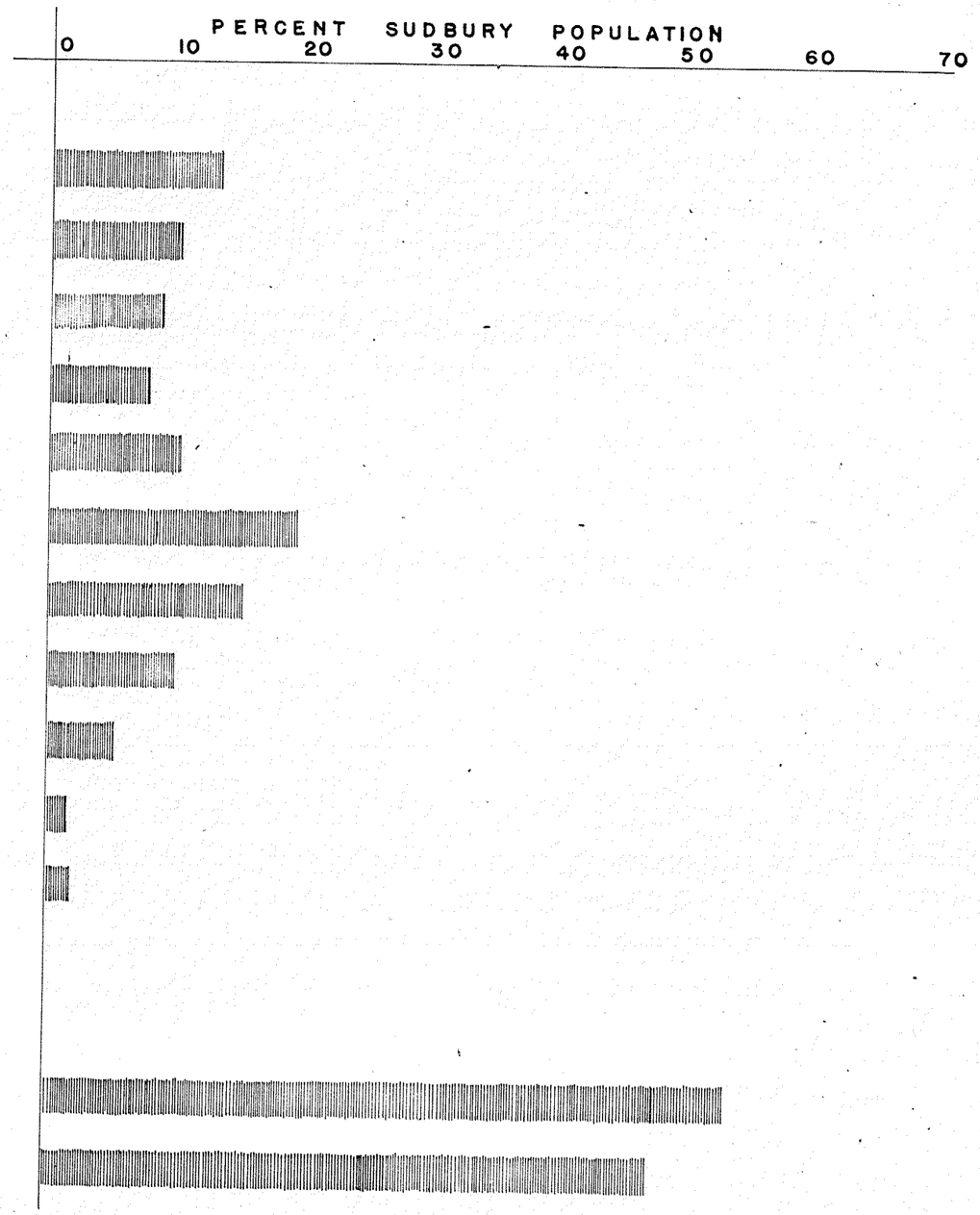
Religious Denomination - Figure 16

Ethnic groups and religious groups have a close relationship although religion may be considered in more general terms. Figure shows a heavy dominance of Roman Catholic population as compared with a very significant Protestant population, as well as other religious groups in the area. The result of this kind of population has been the establishment of a pattern of separate and public schools throughout the district.

The large Roman Catholic population and strength of the separate school system would seem to indicate that this duplicate school pattern will remain as the system of education in the area. This would suggest that any new residential development should then be provided with both public and separate school space. However, we feel this practice to be quite extravagant since new areas developing would have, through natural selection of the inhabitants, a predominance of either a public school or separate school children. (We say natural selection because we cannot foresee planning control so extensive as to guide this sort of selection.)

AGE GROUPS	TOTAL	%
ALL GROUPS	42410	100
0–4	5462	12.9
5–9	4201	9.9
10–14	3544	8.4
15–19	3239	7.6
20–24	4186	9.9
25–34	8038	18.9
35–44	6316	14.9
45–54	3877	9.6
55–64	2107	5.0
65–69	685	1.6
70–+	758	1.8

MALE & FEMALE PROPORTIONS		
MALE	22541	53.1
FEMALE	19869	46.9



AGE GROUPS & SEX PROPORTIONS

OCCUPIED DWELLINGS		SINGLE DETACHED	SINGLE ATTACHED	APT'S & FLATS
TOTAL	9450	3885	1060	4525
OWNED	4435	2935	570	930
RENTED	5015	920	590	3595

HOUSEHOLDS IN OCCUPIED DWELLINGS SHOWING TYPE OF HOUSING

NUMBER OF PERSONS PER ROOM FOR OCCUPIED DWELLINGS

HOUSEHOLDS

	TOTAL	0–0.5	0.6–1.0	1.1–1.5	1.6–2.0	2.1–2.5	2.6	AVERAGE
SUDBURY	9450	2310	4960	1935	875	185	185	1.0
OWNED	4435	745	2385	895	300	–	–	0.9
RENTED	5015	565	2575	1040	579	130	130	1.1

CROWDED CONDITIONS – MORE THAN 1.0 PERSONS PER ROOM

Thus we are unable to predict what kind of school should be placed in any new area, although we do know that adequate school space for at least one school should be the minimum allotment for each neighborhood. This will be our policy for our proposed pattern of development.

Age Groups and Sex Proportions - Figure 17

Figure 17 shows the greatest portion of the population to be relatively young. The largest age group in the existing city is the 25-34 years old age group, and the average group is younger still--20-24 years. Other statistics, however, show the male/female ratio as 113/100--the highest number of males to females of any city of comparable size in Canada. The reason for this marked number of more men than women is of course economic. The young men of the district can easily be absorbed in the basic industry, while there are not so many employment opportunities for young women.

Thus, though the population is young, indicative of growth, its unbalance is not sociologically desireble for a city basing its modes of living on family life. With more men than women the proportion of married men will be smaller, the birth rate potential of the area lower, and the amount of vice activity higher than with an even number of men and women. Attempts should be made to induce more women to remain in the community, however, this is more fully discussed later.

Households - Figure 18

From Figure 18 it can be seen that most of the population live in either single, detached houses or flats and apartments, with at least 7 per cent more people living in apartments. Analysing it further it is evident that the owner population live in the single detached homes while the tenant population live in the apartments.

These rental apartment dwellers seem to be living in crowded conditions, on the average of 1.1 persons per room, but taking the existing city population as a whole, 2,995 households or 31.7 per cent of the population live in crowded conditions.

In recent years the fringe areas of the existing City of Sudbury have provided some housing to counterbalance this overcrowding, but at their outset, these areas were limited in adequate communal facilities which only recently, are being installed to some degree. In this regard the planning activity of McKim Township has played a significant role.

However, this has not solved the major portion of the housing problem, and with the prospect of an increase of 40,000 people in the next 20 years, the situation is far from getting better or even stable. More balanced residential areas are needed very badly to

NUMBER OF CHILDREN										
TOTAL 0	1	2	3	4	5	6	7	8	9	10+
9978 2741	2674	2194	1139	584	270	147	90	44	21	24

SUDBURY FAMILIES BY NUMBER CHILDREN

TOTAL PERSONS	AV. NO. IN FAMILY	CHILDREN AT HOME BY AGE & ACTIVITY				
		TOTAL	UNDER 14	14–24 TOTAL	AT SCHOOL	WORKING
9978 36462	3.7	16621	12373	4248	2028	1907

SUDBURY FAMILIES BY ACTIVITY OF CHILDREN

FAMILIES

alleviate the crowded conditions in the city; and these new residential areas must develop in the form of neighborhoods on available land, in an orderly manner, and related to the present business, social, and cultural core of the area.

A simple explanation for these overcrowded conditions is not possible within the scope of this study, since there is no housing survey of similar results available upon which to base observations and draw definite conclusions. Whether the people living in crowded conditions are financially incapable of remedying their situation, or whether good residential land is at a premium in the area, might be two of many reasons for the existence of Sudbury's housing problem. However, recognition of the fact that a housing problem does exist, no matter what its reasons, is of prime importance to any further development or redevelopment that is to take place, since poor and crowded housing conditions are not conducive to healthy, stable, communal life and growth. It would seem logical, then, that every effort should be made to carry out full investigations into the roots of the problem with the view of reaching a possible solution.

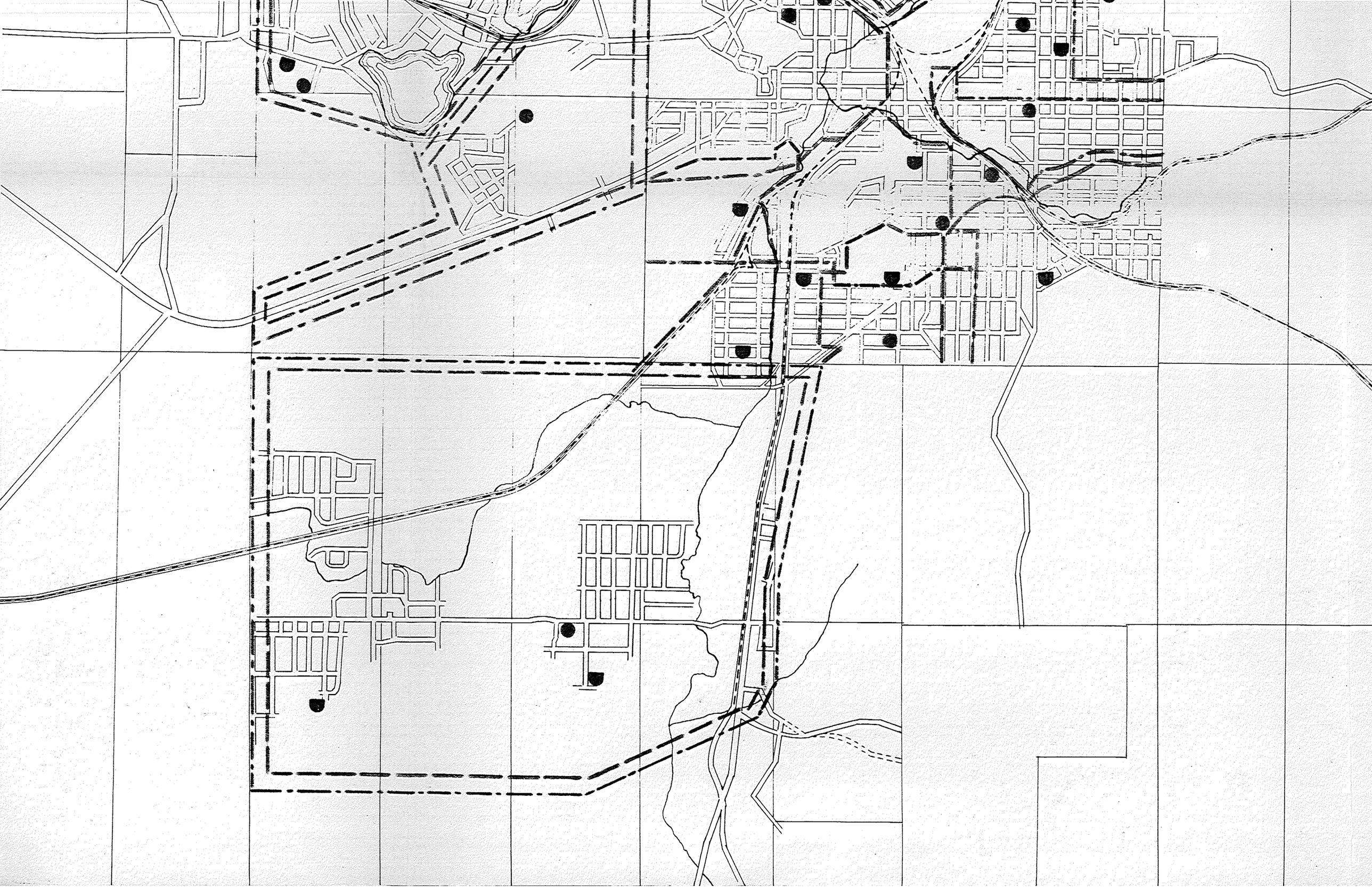
Families, Children and Schools

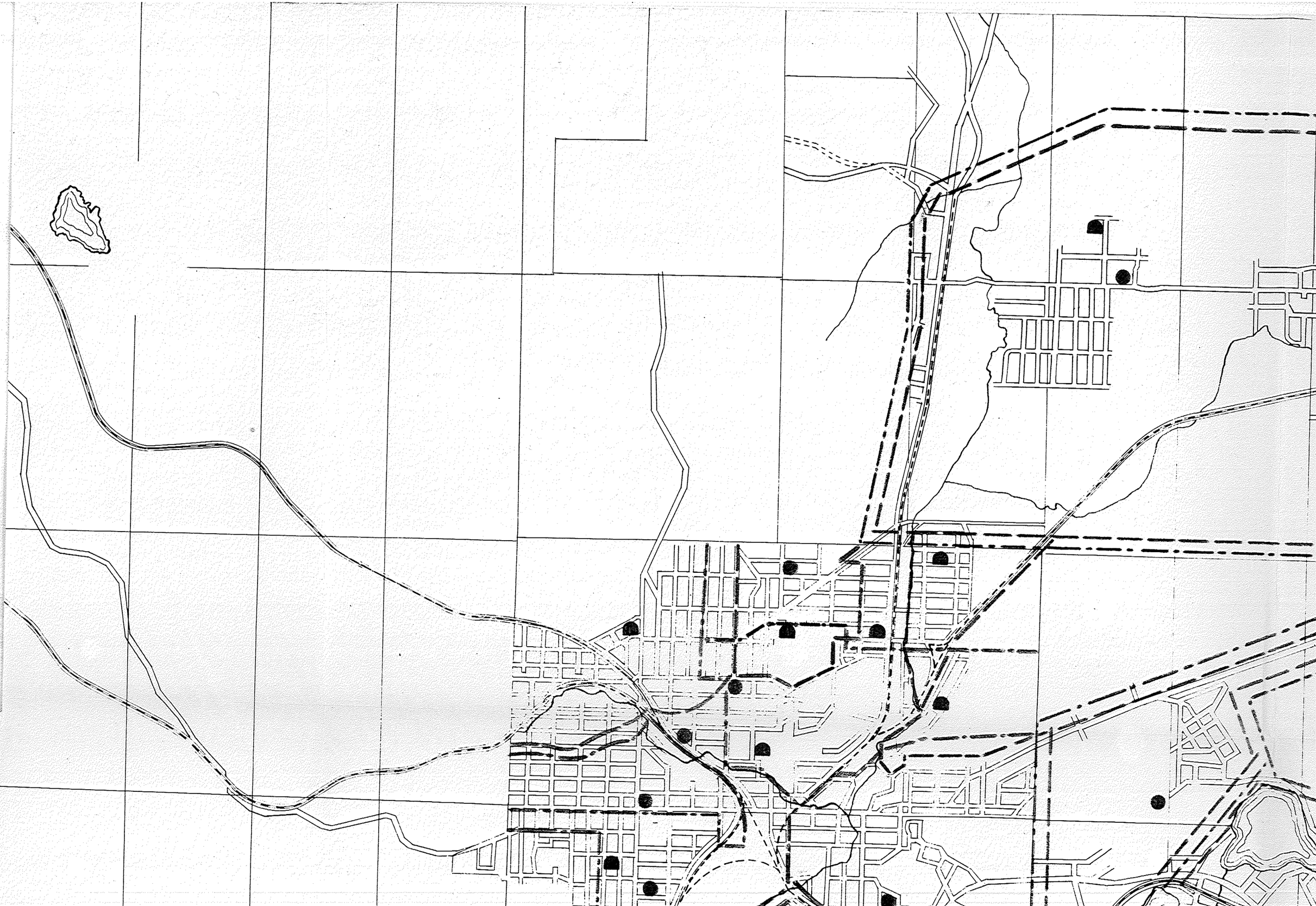
From Figure 19 it can be seen that 84.5 per cent of Sudbury's population is involved in some sort of family living and that 72.5 per cent of these families have children, thus creating a potential school population, the magnitude of which can be seen from the same figure.

At present there are 19 primary schools and 4 secondary schools in the City of Sudbury itself. Of the 19 schools 9 are public schools and the remaining 10 are separate schools. These are fairly well distributed throughout the city. With some exceptions each area has both a separate and a public school, demonstrating the duplicate system resulting from the very heavy Roman Catholic population of the region.

The developed fringe areas also demonstrate this pattern with separate and public schools located in the Minnow Lake area to the east, Gatchell to the southwest, and Lockerby to the south, as well as further east in Neelon-Garson. With development in the fringe areas of a pocket and lineal nature due to the topography, the population of the schools in these areas must be transported to school by bus.

The expectation of the City of Sudbury School Board is that the school population of the city will not increase greatly within the next 20 years and perhaps only one more primary school will be required in that period. This seems logical since the rate of growth





LEGEND

SEPERATE SCHOOLS

PUBLIC SCHOOLS

SEPERATE SCH. DIST. BOUNDARY

PUBLIC SCH. DIST. BOUNDARY

FIG. 20

SCHOOLS & SCHOOL DISTRICTS EXISTING

SUDBURY & McKIM

LEGEND

SEPERATE SCHOOLS

PUBLIC SCHOOLS

SEPERATE SCH. DIST. BOUNDARY

PUBLIC SCH. DIST. BOUNDARY

FIG. 20

SCHOOLS & EXISTING

SUDBURY

of the city, according to our analysis, seems to be dropping off. However, the rate of growth of the whole planning area seems to be very rapid, taking place in a pattern already described. Here again, we find another advantage of an incorporated single administrative system, this time for schools.

The effect of the growth anticipated would necessarily mean an extensive school building program to provide adequate educational and recreational facilities for this growth. If, in the initial process of growth, the first schools were so located to serve the whole planning area, rather than only the existing politically severed districts, a more efficient school system would result. Thus, rather than locate a new school in Sudbury and a new school in the adjacent fringe area, one school might be strategically placed to serve both the marginal and fringe area of the existing city. Later development would naturally follow the dictates of population needs without municipal barriers. In other words the school districts should be administered on a planning district basis, rather than a municipal basis.

High Schools

The high school level of education would also be more efficiently handled on a planning district basis rather than a municipal basis. At present people in the areas surrounding Sudbury, and the people of Sudbury itself, attend the high school and technical school in the city, making it very crowded. The existing Townships of McKim, Neelon and Garson are planning a new high school to be located in Neelon. This will help take some load off the Sudbury High School, but it still does not solve the problem of transportation from every point in McKim Township and every point in Neelon-Garson Combined Townships, to school.

Under a planning district school system the children of a natural area, that is, one unbroken by political boundaries but defined by topographic and traffic features, could attend a high school with less transportation costs and less traffic hazard than if they had to travel across a whole township to go to school.

More high schools are going to be needed in the future. If the school system is handled on a planning district basis, these future school or schools can be intelligently placed, and financed, since the whole area will be using and financing them. Otherwise, the possibility of duplicate service within the politically severed parts of the area, if adequate school service is to be given the future population, would likely result.

University

In recent years the question of establishing a Northern Ontario University in the region has arisen. There are many who feel that

SUDBURY & McKIM

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SUDBURY & McKIM

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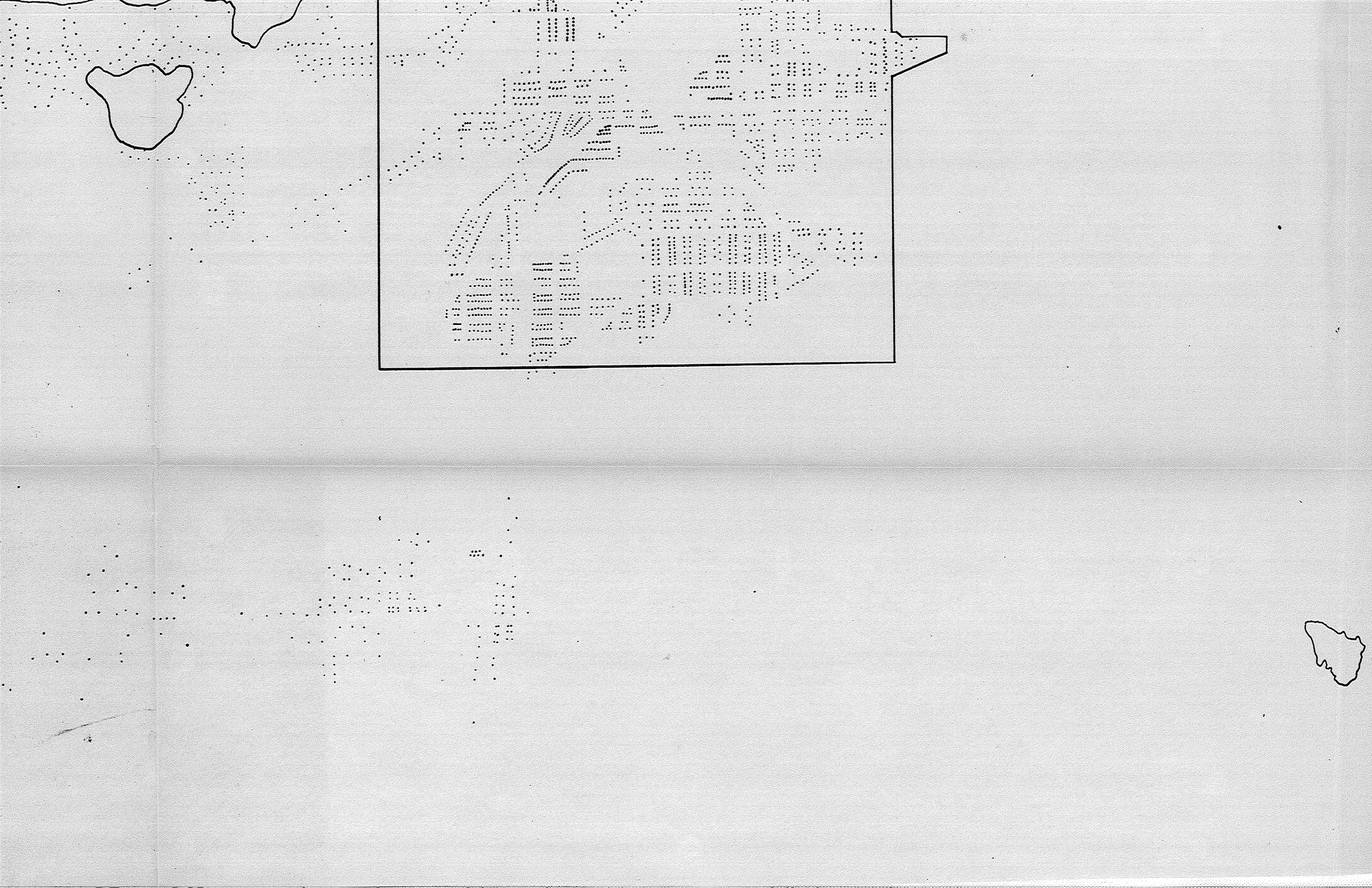
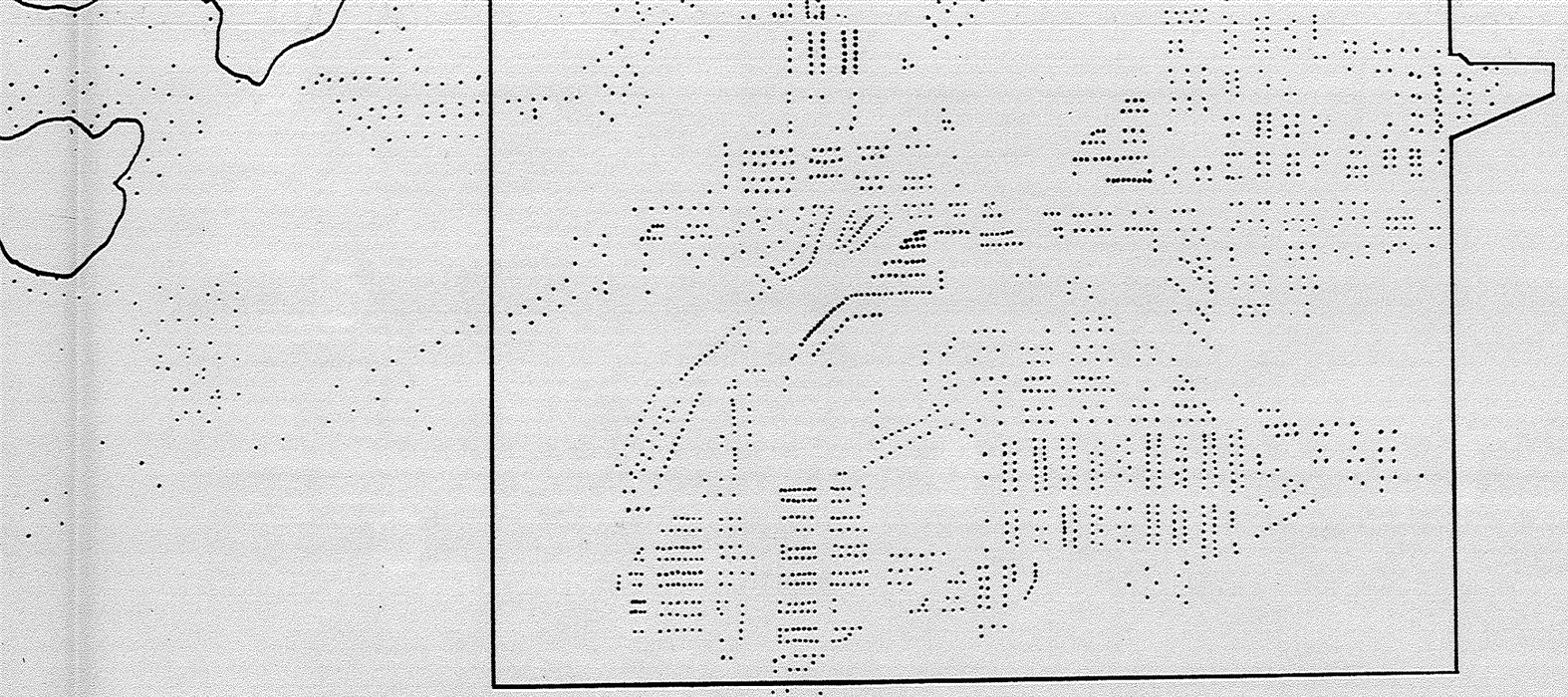




POPULATION DISTRIBUTION.

ONE DOT REPRESENTS TWENTY PEOPLE

POPULATION DISTRIBUTION.

ONE DOT REPRESENTS TWENTY PEOPLE

the future of Canada lies in the mineral potentials of its Canadian Shield. Present world trends of technology would seem to support this argument, and for this reason, the establishment of a university in the region would be an advantage, both to the nation and the region. Analysis indicates there would be an adequate population base for such a seat of learning; the problem of siting it remains.

Since a university campus would require a considerably large tract of land, placing it within the present bounds of Sudbury seem out of the question, but, having it within the future confines of the city might be very desirable, both from a cultural and an aesthetic point of view. Given enough land and connected and fed by the cultural activity of the urban area, it would exist and grow like any other newly developing community in the area.

Population Distribution

The pattern of population distribution displays the same characteristics as the distribution of schools--in fact---the school pattern is a direct result of the population pattern. The city itself is populated in pockets between rock outcrops, each pocket connected by lineal growth in the narrow valleys between rock.

The fringe development is the same. (Strings of growth along highways connecting small pockets where topography allowed more intense growth to take place.) Each of the pockets is fairly dense in population as in the central city, but taken as a whole, the fringe area is quite sparse.

This, to some extent, indicates the type of growth possible in the future. The city, densely populated, cannot expand outside its boundaries as a balloon expands while filling with air. The topographic barriers restrict its growth and squeeze its expansion through constricted outlets until space is found to allow this expansion to become a mass rather than a thin line. As the area grows this process will continue and the result will be a central mass with many little masses grouped around the central core.

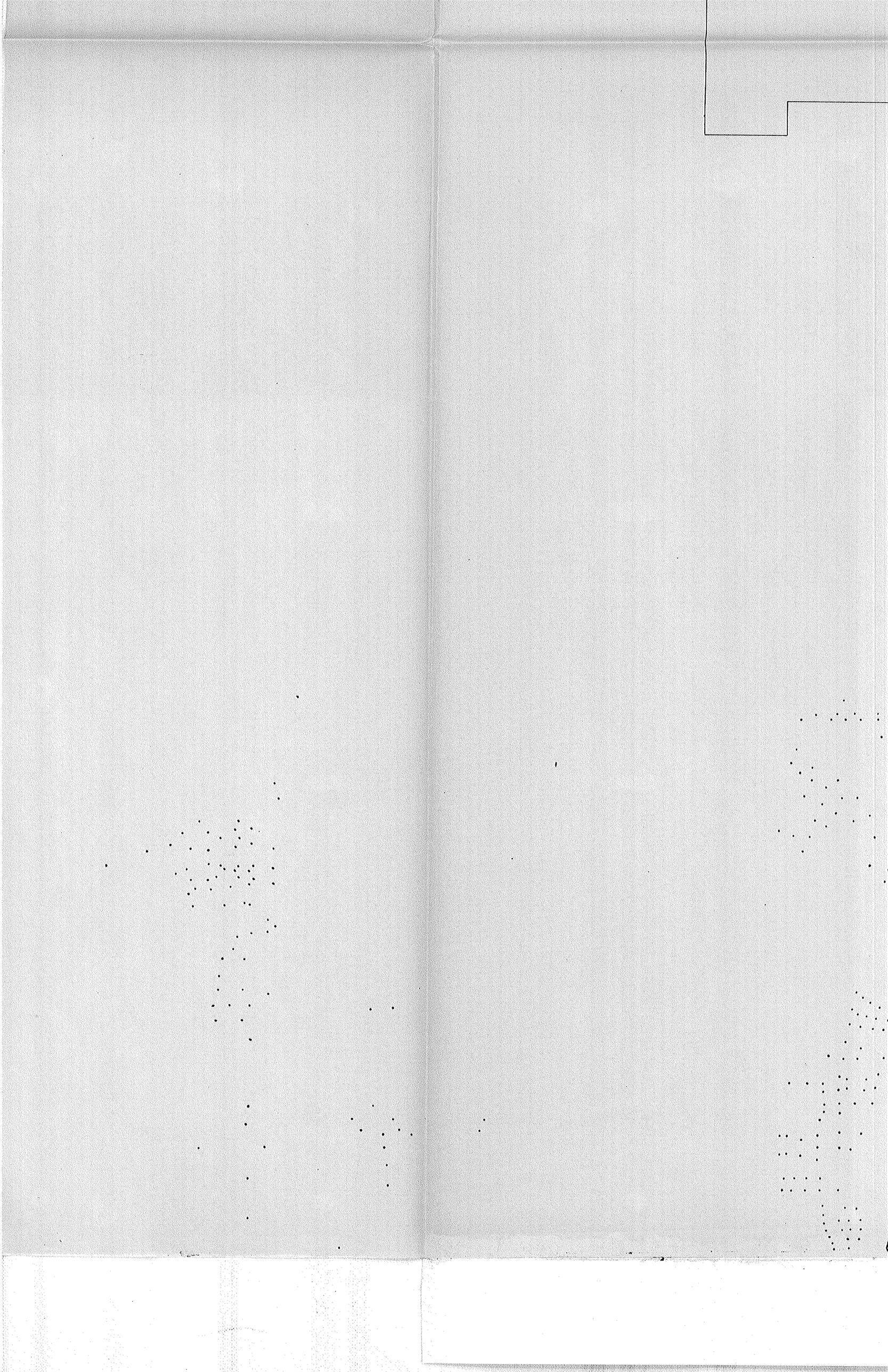
In no sense is this pattern any less urban than a heavy central concentration with a gradually less dense growth at its marginal and fringe areas. In both cases the central core is common to all people in the whole area. In both cases the central core is the life blood of all social, cultural, and commercial services of the whole area. The difference lies in the fact that the fringe is not a slowly depleting mass, but a number of coagulated masses in the same relationship to the central mass, and must be considered, from a planning point of view, as one thing rather than as many things.

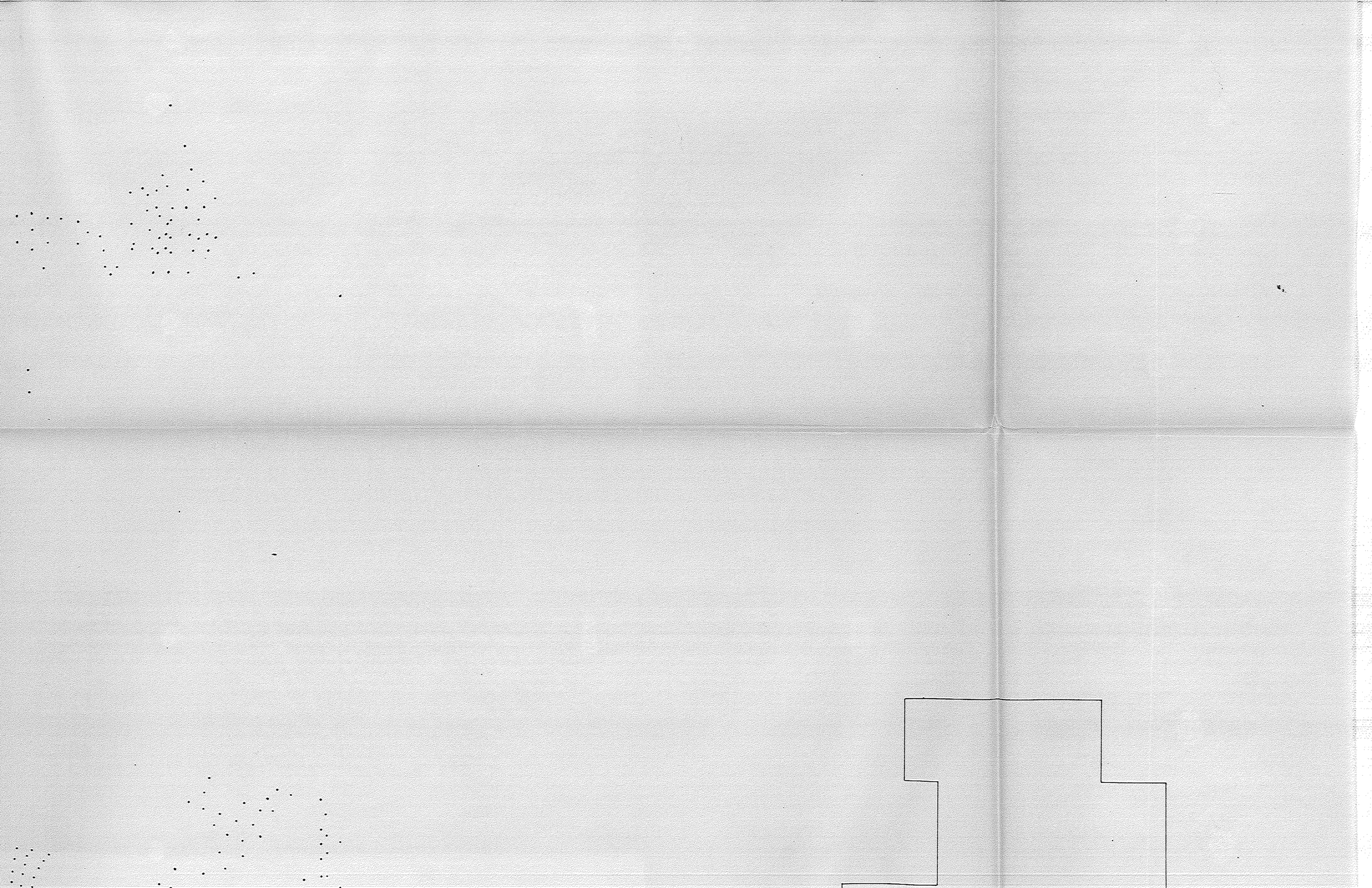
NEELON

22

NEELON

22





POPULATION DISTRIBUTION

ONE DOT REPRESENTS TWENTY PEOPLE

POPULATION DISTRIBUTION

ONE DOT REPRESENTS TWENTY PEOPLE

part 4

economic base

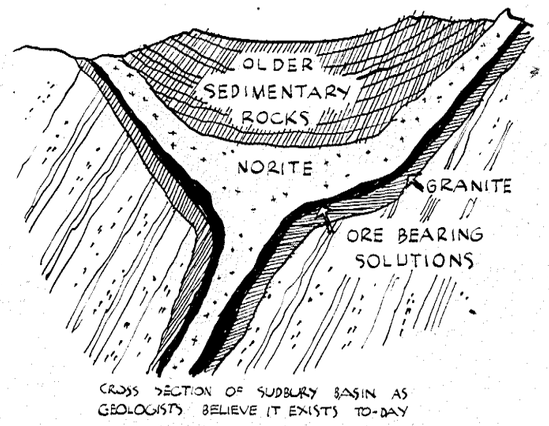
	CITY		DISTRICT	
	MALE	FEMALE	MALE	FEMALE
EXTRACTIVE	5765	57	14628	246
AGRICULTURE	13		1435	95
FORESTRY & FISHING	10	3	2145	65
MINING	5651	54	11,048	86
CONSTRUCTION	1228	27	2875	48
TRANSPORTATION	1022	141	3283	222
MANUFACTURE	2728	197	7746	400
NON-SMELTING	994	180		
SMELTING & REFINING	1734	17		
SERVICE	3257	2614	6941	5765
TRADE	1383	830	2414	1437
FINANCE	217	181	287	250
PERSONAL	1481	1583	1061	1261
TOTAL			2844	2790
ELECT., GAS & WATER	176	20	335	27

LABOR FORCE BY INDUSTRY

FIG. 23

GEOLOGICAL MAP

FIG. 24

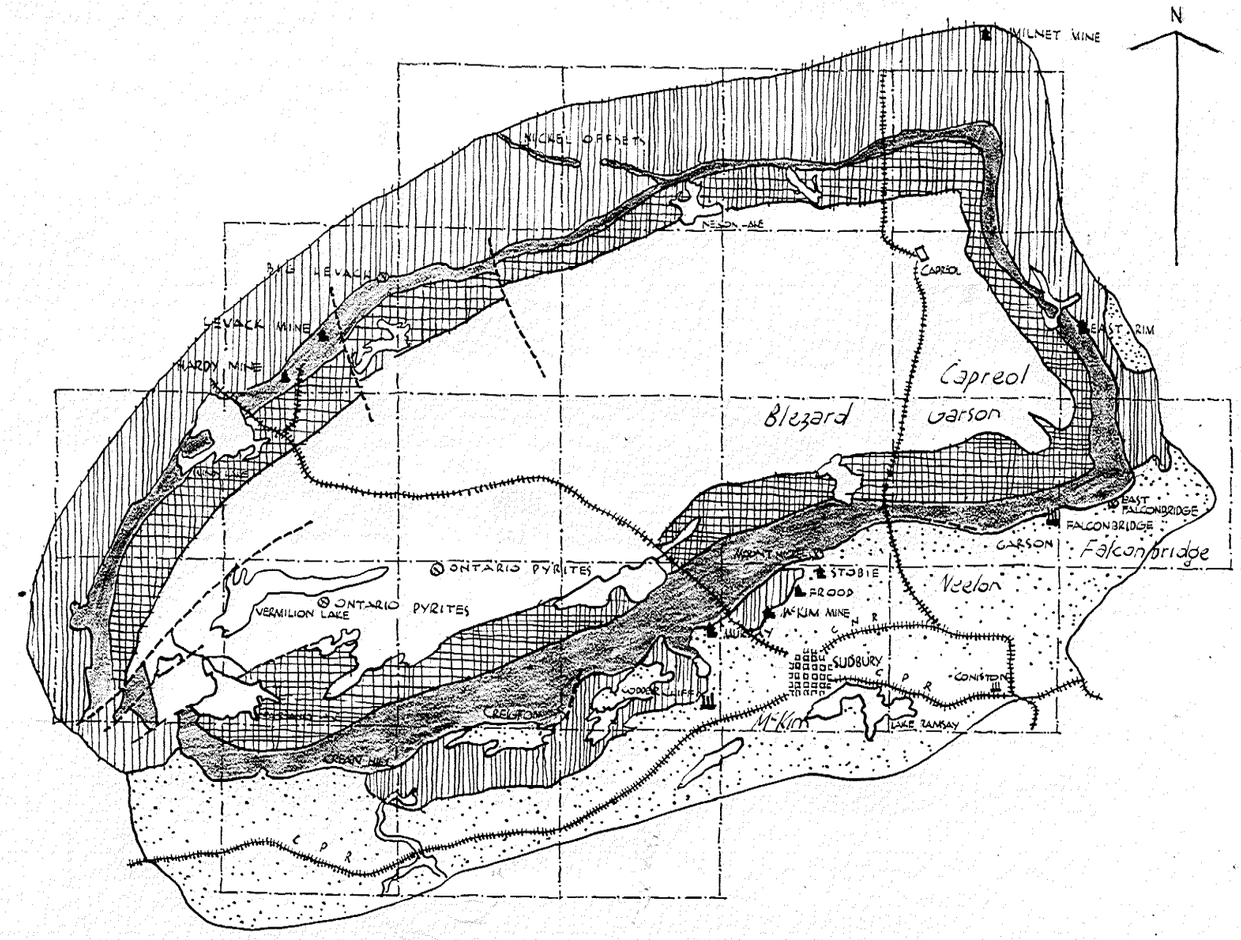


CROSS SECTION OF SUDBURY BASIN AS GEOLOGISTS BELIEVE IT EXISTS TO-DAY

L E G E N D

- SEDIMENTARY ROCK
- MICROPEGMATITE
- TRANSITION ZONE & NORITE & QUARTZ DIORITE
- GRANITE
- FOOTWALL COMPLEX
- FAULTING & SHEARING
- RAILWAY
- PRODUCING MINE
- SMELTER
- ACTIVE PROPERTY

0 1 2 3 4 5 6 7 8 9 10
MILES



THE SUDBURY BASIN

The economic base accounts for the existence of the community and predicates its future potentialities. Recognising the economic activities that are the primary supports of the urban community therefore, is of basic importance to planning.

THE EXISTING ECONOMIC STRUCTURE

From figures showing the distribution of the gainfully employed persons (in industrial occupations) for the area, a rough pattern of its economic life can be established. In 1951, the year of the last census, we find that out of a total of 17,224 persons employed 5,651 or approximately 33 per cent were directly engaged in mining. The smelting and refining of non-ferrous metals accounted for 1,751 employees or approximately 10 per cent of the total labor force. Combining these percentages we have 43 per cent of the employees in the city dependent upon the mining industry for their livelihood. Nineteen per cent of the labor force are also employed in service activities--a secondary source of employment essentially providing services for those who work in basic industry. It is by extending primary employment in extractive, manufacturing and related industries that increases the flow of income and supports additional employment in service industry. Other types of work may be considered unimportant because of the inconsequential number they employ . It can safely be concluded then, that the economic base of the community is its mining industry.

The International Nickel Company, the largest producers of nickel in the world and fifth among the copper producers, dominates the economic scene of the region. Within a radius of 30 miles of Sudbury it owns 130,000 acres of mineral lands, in which operate five underground mines: Frood, Stobie, Creighton, Levack, Garson and Murrey. Inco also owns and operates a concentrator and smelter in Copper Cliff, a smelter in Coniston and a concentrator in Creighton.

Mining within the same Sudbury Basin is also the world's second largest producer of nickel-copper metals--The Falconbridge Nickel Mines Limited. It owns and operates Hardy, Fecunis Lake, Mount Nickel and Longvack mines, and a smelter and mine in Falconbridge. Smaller companies producing within the area are East Rim, Milnet Mines, and Nickel Offset with Ontario Pyrite involved in the commercial production of sulphur as well as nickel and copper.

The mining operations presently are active and fruitful, the immediate economic future for the district is a bright one,

> "The proven ore reserves of the two major mining companies in the Sudbury Basin were reported at an all time high at the end of 1953, that of International Nickel Company of Canada Limited being 261, 541, 259 tons as compared with 256, 355, 903 tons at the end of 1952. That is, these companies are developing greater reserves each year than their current production. That the Sudbury Basin is far from fully developed is shown by the major discoveries continually being made, such as Fecunis Lake strike made by Falconbridge Nickel Mines Limited in 1952. This ore body is considered potentially as important as the Frood Mine which was first developed in 1928.
>
> Current production at Inco is presently in excess of 13,000,000 tons per year. The tonnage of this one company alone is greater than the combined total of all the gold mines in Canada. However so vast is their proven reserves that such reserves alone would carry their present production for more than twenty years. The demand for nickel is now diffused throughout all industry and thus its demand is protected from seasonal variations or economic variation affecting anyone part of industry. Due to metalurgical developments the iron content of Sudbury ore will be recovered. Inco is now building a $17,000,000 iron ore reduction plant which by 1957 will produce one third of Canada's high grade iron ore and give employment to an additional 1200 men in the Sudbury District." (1)

The boom of all this mining activity is reflected in the income of $3,431.00 for the average individual in the community as against the national average of $3,290.00. This places Sudbury within the list of top ten highest income cities in Canada.

WEAKNESS IN PRESENT ECONOMIC STRUCTURE

The basis for this prosperity is the mining industry, a precarious base upon which to formulate far reaching plans for urban growth and a development of a healthy, self-sustaining community.

Four major problems arise from the existing economic structure to challenge the physical planner:

Exhaustibility

One of the main characteristics of mineral land is the exhaustibility of the resource. "The mine has only one crop and as the yield is removed, the value of the land, in so far as it is dependent on the mineral, decreases." (2) The income of a mine is therefore limited and its consequent exhaustion means depopulation to the community. Without a successful antidote to counter this inherent characteristic of the mining industry the ultimate results will be a degenerate community with its remains a mere shadow of its former glories.

Land Use Conflicts

Mining requires relatively little space to operate; thus it would seem that no conflict with other land use would arise, but, the operation of the smelters to process the mineral through the years (particularly in the early stages of production and the primitive methods used) causes destruction of agricultural and forest land within the region and marginal areas. The virgin timber in the beginnings was cut down, with no regard to future growth, to make mine pit props and for the roasting of the ore. The new green life that struggled to replace it was checked off by fumes from the smelters.

The eroded desolate terrain still surrounds the villages of Coniston and Copper Cliff to startle the newcomer that enters the city from east and west. In place of the green belt that community planners so desire to surround and define the community, Sudbury has its black belt.

Effect on Population

The nature of the work involved in mining and related operations of smelting and refining require those who are physically fit and capable to do manual work of a heavier type and under extreme conditions. We find therefore the area of such limited scope of work attracting and holding a population that is predominantly male and youthful. The undesirable unbalance in population composition due to the dominance of one economic activity is readily seen by the statistics. The Dominion Bureau of Statistics of 1954 show a total labor force of 20,455 with 93 per cent of these to be male employees. (3)

The male members of the labor force who are incompatible with the demands of the prevailing industry and a large portion of the female members are forced to leave the city to seek employment elsewhere. The immediate need exists to provide for the normal distribution of talents by developing a varied economy with a wide range of occupational employment.

The predominance of one type of work isalso reflected in the control by one large company over a large portion of the employees of the district. From a sociological point of view this would be considered an undesirable and unhealthy situation for the proper development of the community. The need then is not only for a diversification of employment, but also of industrial concerns.

Tax Base

The municipal government under usual conditions depends upon industry to carry a large portion of the financial burden of the

community by yielding a tax surplus that supplements the deficit of residential taxes. Sudbury is in that peculiar position in which the bulk of the industrial activity finds itself outside its jurisdiction located in company townsites. The local government of the city with which industry is contiguous and the townships within which it is located are powerless to tax this potential source of revenue.

> "It (the city) eke out a precarious living with the paternal but austere assistance of 'provincial grants in lieu of mining taxes'. In fact Sudbury is unique in its misery. It is unable to sustain itself as other communities; it is unable to assess or tax any single part of the production facilities of the industry which has been responsible for its existence from the beginning." (4)

Combined with this lack of a broad tax base the city and neighboring communities are further plagued with their ill-founded site on rough, rocky terrain, aggravating the situation by causing exaggerated costs for installing public services such as sewerage and waterworks.

> "Due to the physical characteristics of the land in which it is built the city needs more money than do comparitive municipalities in the South. The funds it can and does raise are utilized in bare essentials. It is a city in the richest part of the province, but it's creeping along like a proud but poor relative." (5)

The topography of the city and the lack of taxable industry within its bounds have caused a high tax rate. With population increasing and the need to extend services, construct a new garbage disposal system, abate pollution of the community water supply, construct new roads, schools and administrative buildings, the future would seem to hold no relief to further burdens. The alternative to a higher tax rate to increase tax revenue, would be to increase the tax base. Although as the community grows, the tax base increases proportionally, the increased revenue from this means will only be sufficient to offset the additional services needed if the new construction is predominantly non-residential in nature. The city is so overcrowded now that no adequate land is available for the siting of industry within its limits and would preclude any possible change from its present function as a residential town, unless a policy of extending its bounds was instituted to provide for industry and thus ensure itself a wider industrial tax base. This would seem to be the inevitable solution if the city is to grow in stature.

However, the immediate solution to this problem would be to involve the present industry to accept and fulfill its obligations to the community, either by annexation of the company townsites contiguous to the city and containing taxable industrial properties, or by an establishment of a metropolitan government for the area whereby the existing local governments would function within their jurisdiction, and the cost of communal service and education borne by all concerned for their mutual benefit.

THE NEED FOR INDUSTRIAL PLANNING

The relationship between physical planning and industry cannot be stressed too strongly. Without knowledge of economic potentialities of the area no satisfactory physical plan can be prepared. If, on the other hand, such plans are prepared, the future economic development may and almost certainly will render its proposals worthless. In the last analysis it is the economic activity that determines the volume and trends of population for which housing, public utilities, and amenities must be provided. From this point of view the economic worth of the region must be analysed and understood. For Sudbury, based as it is on an exhaustive industry, the need of such a study is of paramount importance.

A good case can be made, we think, for the establishment of a regional industrial planning board, made up of business, labor, and industry, and local and provincial governments. The representatives from the province would be needed to provide adequate guidance and relevant information about probable economic and industrial developments that would fit into an over all national or provincial pattern. The possible functions of such a board would be:

- to gather relevant economic and industrial data.
- to determine an economic policy and possible alternative policies for a development plan.
- to advise on the practicability of plans for future development.

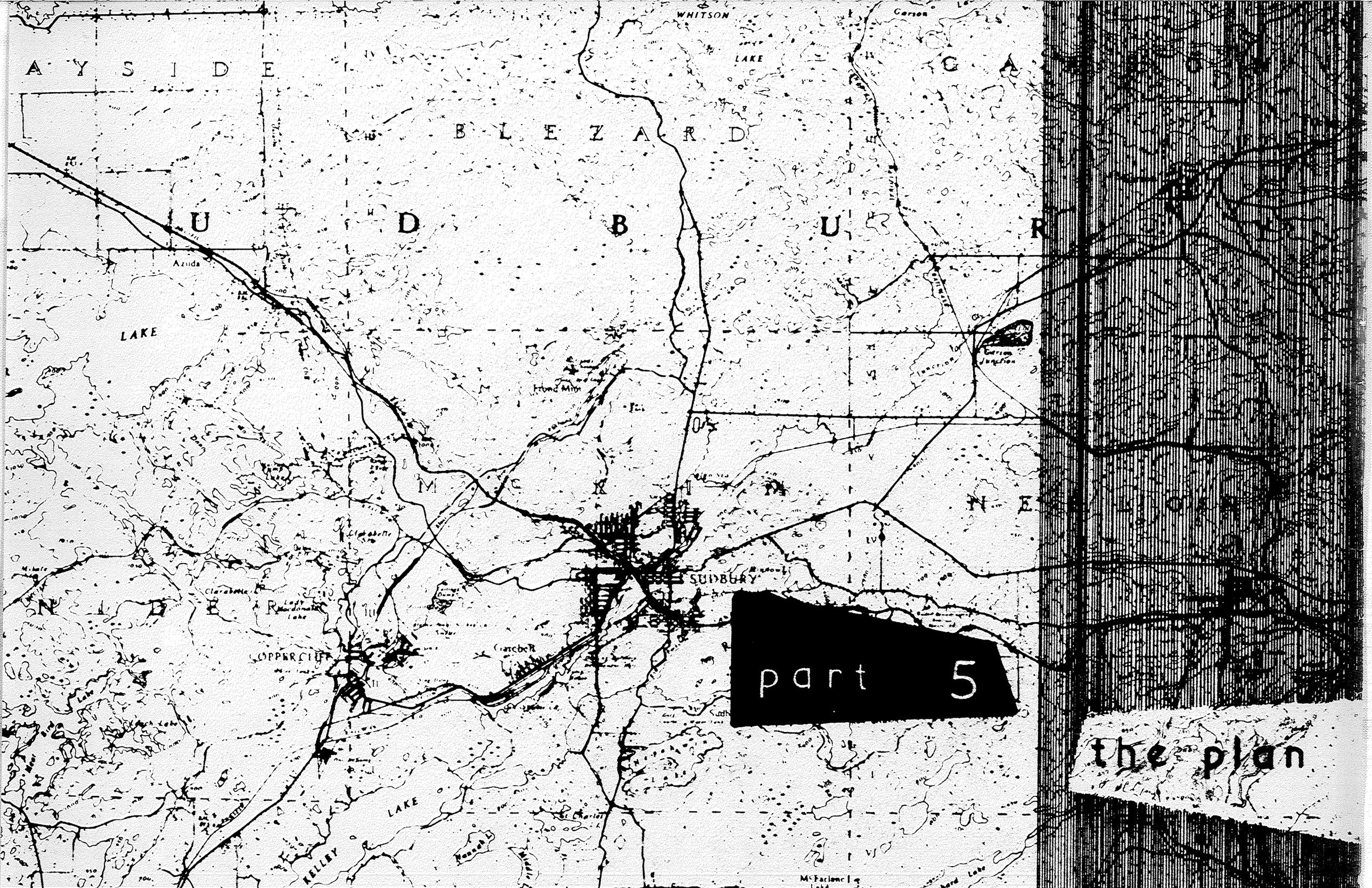
Such a task would, of necessity, have to be done with an academic disinterestedness to be of any value. For instance, it could be found that the immediate Sudbury region may outlive its economic influence with the depletion of its mineral resources and may not possess sufficient assets to justify the introduction of new industries. In such a case a recommendation for a reduction in population by a gradual process in stages as it was deemed necessary should not be hesitated upon. Whatever planning undertaken under such circumstances would be done with this problem in mind. Obviously an attempt to keep the community intact by injecting industry into such an unsuitable area would be ultimately doomed to failure, unjustifiable and costly to the general community.

For our own part we accept the premise that Canada's future lies in her northland and Sudbury, as a part of it, will grow accordingly. Our confidence in the Sudbury region is inspired by the potential wealth held in its vast hinterland to the north, and by the strategic position that it holds in relation to railways, highways, and the now developing St. Lawrence Seaway. An arterial route and railway about 40 miles long could connect this "gateway to the north" to Georgian Bay and the Seaway and along its route to the centres of Eastern Canada, to the open sea, and thence to the great ports of the world.

THE INDUSTRIAL PROGRAM

The possible program for the gradual industrialization of Sudbury could begin with industry complimentary in use to both the labor supply and the by-products of the new dominant mining operations. The surplus female labor supply could be absorbed from the outset in what perhaps could develop into a shoe or textile industry in Northern Ontario. Such was the case in the Pennsylvania Anthracite mining centres where the "wives and daughters of miners constituted a surplus labor supply" and were absorbed by the silk mills that migrated from the New York Metropolitan Area. Another instance is the development of a shoe and textile industry in New England to absorb the surplus female labor with the men occupied in farming, fishing, lumbering and ship building. (6)

A steel and chemical industry could possibly compliment the nickel processing industry, and with these new beginnings gradually develop an independence through the years. Thus they could replace mining as the new economic base of the city and the immediate region to service the evermoving frontier of mining operations.



part 5

the plan

The preceding four parts, under the broad headings of History, Land, People, and Economic Base, has been an attempt to discuss the past and present conditions affecting the urban life of the Sudbury Region and the possible potential problems and developments arising from them. In summary, then, the following are the essential statements of each part as they affect our planning approach.

History

Sudbury grew because of the mining activity taking place around it. Always dependent upon this basic economic activity its urban development has been haphazard and disorderly, reflecting the sporadic prosperity of the mining industry. Throughout its life there has been a lack of official, positive, overall policy guiding development towards logical and farsighted conclusions. Consequently, there is a great need for planning activity by local authorities that leads and performs rather than waits and restricts.

Land

The strong character of the land should influence the future urban expansion following the pattern of existing suitable land within the dominant rocky terrain. It should also be consolidated within one drainage basin, and by an efficient road system and highway bypasses. This would suggest the need to unify the activity of land utilization with the area by overall regional planning transcending existing municipal boundaries.

Population

The present population trend indicates a possible increase within the span of the planning time of 20 to 25 years to about 100,000 people--40,000 more than the present number of persons within the considered planning area. Therefore the projected plan should house and supply the necessary communal services for this increasing population that will insure a happy and healthy living environment. Envisioned as a regional centre it should also provide adequate cultural, educational, and administrative facilities to create a complete and self-sufficient community, appropriate for its size and status in the national economic life, yet preserving its essential character.

Economic Base

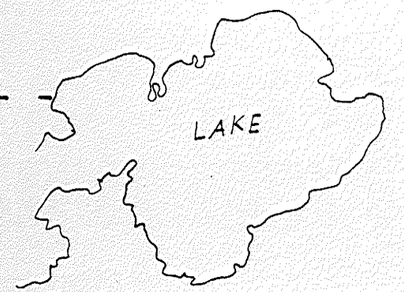
The community's need for a broader tax base as well as a more balanced social structure requires a variety of available work and industrial concerns, which in turn, necessitates the inclusion of an adequate, serviceable industrial site within its jurisdiction,

THE CONCEPT

FIG. 25

1 1/4 1/2 3/4 0 1 2 3 4 5

SCALE 1" = 1 M.



LEGEND

- NEIGHBORHOODS
- OPEN GREEN AREAS & GREEN BELT
- CITY CENTER
- WHOLESALE AREA
- INDUSTRIAL AREA - EXISTING
- INDUSTRIAL AREA - PROPOSED
- RING ROAD & MAJOR THOROFARES
- HIGHWAY BY-PASS
- RADIAL ROAD

LAKE

L E G E N D

- NEIGHBORHOODS
- OPEN GREEN AREAS & GREEN BELT
- CITY CENTER
- WHOLESALE AREA
- INDUSTRIAL AREA - EXISTING
- INDUSTRIAL AREA - PROPOSED
- RING ROAD & MAJOR THOROFARES
- HIGHWAY BY-PASS
- RADIAL ROAD

Garson

Frood Mine

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

SUDBURY

Coniston

COPPER CLIFF

RAMSEY LAKE

Shadow Lake

Nepahwin Lake

KELLEY LAKE

NORTH

and so located as to allow for future expansion and minimize industrial nuisances and hazards to other land uses adjacent to it.

THE BROAD CONCEPT

Simplicity, Sympathy, Practicability

Governed by such a program, our approach is to achieve a city plan structure, simple in organization, sympathetic to the lay of the land, yet within the bounds of practicability, proposing few drastic changes of the existing urban pattern.

The present city concept as a commercial core with residential fringes is dissolved, and replaced by an orderly grouping of neighborhood sub-centres, independent within their limited needs, but still vitally connected with the central area which retains its present function of providing urban facilities unattainable in other than high concentrations of population.

Circulation Pattern

The main feature of the plan is its outer ring road which acts as the principal traffic route connecting the neighborhoods, the industrial site and regional main roads leading to the mines, smelters, and rural areas to each other and to the trunk highway by-passes to the south which allow traffic from the north and east on Highway No. 17 and from the south on Highway No. 69 to continue west without passing through the urban developed areas.

This ring road is defined by Regent Street, extended south to meet Highway No. 69, and extended north to meet the proposed extension of La Salle Boulevard. It then travels east along La Salle Boulevard to meet the Falconbridge Highway, thence south via the highway and Second Avenue in Neelon Township, intersecting Bankcroft Drive, thence westward along Bankcroft Drive, Bellvue Avenue, Lakeshore Drive, Howie Crescent, then by overpass, across the tracks along Elizabeth Street to John Street, Wembley Drive, intersecting Regent Street, across the Department of Lands and Forests property, along McLeod Street, and either under or over the tracks to meet Copper Cliff Road.

Wherever possible the neighborhood units were so defined that the fast through traffic of this ring road would pass between these built up areas rather than through them with the ultimate thought in mind of eliminating the fronting of buildings on this major traffic road. Within each neighborhood there would be the "main street" serving the principal buildings of the residential unit and lesser residential streets serving groups of living units.

The lesser feature of the plan is the inner ring road circumscribing the city centre and connecting it to the outer ring road by radial roads.

This inner ring road is defined by Elgin Street extended north across C.P.R. property to meet Frood Road. Along Frood Road to College Street, thence north to Baker Street, thence east along Baker to Montcalm Avenue, then skirting along the rock outcrop behind the houses on Xavier and Vercheres Streets to Jouges Street, which intersects with Notre Dame Avenue. Thence south along Notre Dame to an overpass crossing the C.N.R. tracks meeting Louis Street, down Louis Street to Young Street to Elm Street, then following Junction Creek to Drinkwater Avenue, then south to rejoin Elgin Street.

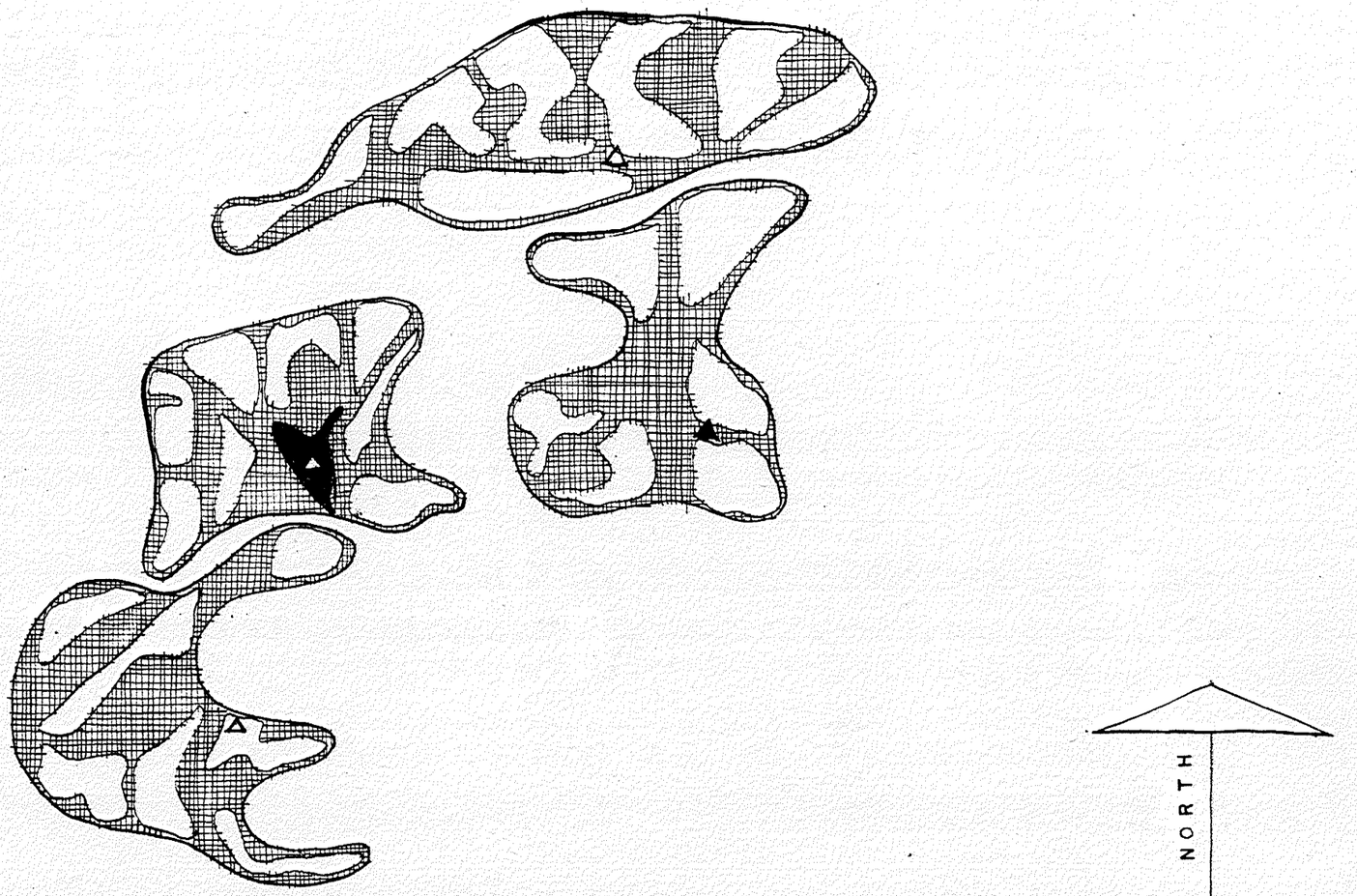
The radial roads are Notre Dame Avenue feeding to the north, Kingsway or the present Highway No. 17 up to the junction with Falcombridge Highway feeding east, Elgin Street south of the city centre, College, Mabel, Ethel, and Henry Streets feeding north and west to meet Frood Road, Elm Street to the west of the city centre, and Lorne and Douglas Streets feeding to the southwest.

The outer ring road, the inner ring road, and the radial roads are the major roads of the circulation system. The remaining roads would collect traffic throughout the neighborhoods and feed onto these major routes. Therefore these major routes should have traffic flow priority over all other roads in the system.

Residential Areas

The neighborhood concept proposed has been generally accepted by planners as a sound basis for the development of residential areas. It is considered the minimum planning unit within which the number of family units involved can economically provide for themselves the communal facilities to satisfy their daily needs, such as the elementary school and kindergarten, play area and the corner store. Thus, within the larger city organism, physically self-contained residential units are created that are small enough in scale to become a point of reference to its inhabitants, and to be conducive to community living and neighborliness. It has been shown that such a neighborhood population would be about 5,000 persons and cover an area ranging from 50 to 250 acres, depending upon the density. A half mile walking distance is considered the limit that a child should go to an urban school, that is to say if the elementary school was located in the geographic centre of the neighborhood, the extreme limits of the neighborhood boundary could be one mile.

FIG. 26



In the practical application of this ideal the boundaries of these neighborhoods were more dependent upon the topographic barriers, railways and the major traffic routes that were created than upon the limits of the school districts. At the same time, in the attempt to service some areas with elementary schools, particularly in the developed areas, the defined neighborhoods were forced into undesirable conditions, such as straddling the major ring road, exemplified by one of the neighborhoods in Minnow Lake, and existing schools finding themselves situated adjacent to a major thorefare, illustrated by schools fronting on Regent Street.

By such means of neighborhood definition the plan evolved contains twenty-nine neighborhoods, with the major portion of the new development taking place in the area known as New Sudbury, some between Ostobell and Robinson Lake, and some in what is presently Neelon Township. The remaining neighborhoods are merely clearer definitions of existing residential growth, intact or else slightly more developed.

Though all neighborhoods would not be of the same density (those nearer the centre being of a higher density than those on the periphery) we would estimate about an average of 3,500 persons per neighborhood. This would mean the plan could provide for a total population of more than 100,000 people, which is within range of the total population predicted for the area within the next 20 to 25 years.

Residential Areas

Taking the neighborhood concept one step higher, the neighborhoods, as designated, can be grouped into larger units making communities, whose bases are the secondary schools, which is one step higher, in the educational hierarchy, than the elementary schools of the neighborhoods. Thus from 29 neighborhood units we derive four community units, very roughly located in the New Sudbury, Minnow Lake, Central City, and Lockerby Areas. More specifically the New Sudbury Community would contain seven neighborhoods, namely, Neighborhoods No. 1-7. The Minnow Lake Community would contain six neighborhoods, namely, Neighborhoods No. 8-13. The Central City Community would contain eight neighborhoods, namely, Neighborhoods No. 14, 17-23. The Lockerby Community would contain eight neighborhoods, namely, Neighborhoods No. 15, 16, 24-29, (Figure 25).

Speaking of communities immediately involves a consideration of secondary schools, and since secondary schools need a greater population to support them than do elementary schools, the problem of "time sequence of development" arises. That is, in what order should the areas considered be developed? In terms of communities we would suggest the following stages of development:

The Central City Community is already developed to the point where no new secondary school is required.

First Stage

A secondary school is already proposed for the Minnow Lake Community, therefore, develop it first, and build the secondary school as a high school. Since Neighborhood No. 7 is already developing, include it as part of the Minnow Lake Community during this first stage of development, and allow its secondary school students to attend the Minnow Lake High School.

Second Stage

The second stage of development should take place in the Lockerby Community, and in about 5-10 years, a new high school should be built in the area, located as shown on the map (Figure 26). Prior to this the secondary school students of this area could attend the Central City High School.

Third Stage

The third stage of development should take place in the New Sudbury Community in Neighborhoods No. 1-6, and in about 15-20 years, a new high school should be built in the area, located as shown on the map (Figure 26). By this time the Lockerby High School would have been in operation for some years so that prior to the building of the high school in New Sudbury, secondary school students in Neighborhoods No. 3-6 could attend the Central City High School, and secondary school students in Neighborhoods No. 1, 2 and 7 could attend the Minnow Lake High School.

With the completion of this last high school Neighborhood No. 7 would become part of the New Sudbury Community. If school board officials so desired, the secondary school in the Minnow Lake Community could now become a Junior High School (up to Grade 12), and those students wishing to complete their high school but living in Neighborhoods No. 8 and 9, could attend the New Sudbury High School, and those living in Neighborhoods No. 10-13 could attend the Central City High School. This might be done since the Minnow Lake Community would now have the smallest number of neighborhoods, and consequently, perhaps the least population, which might not be sufficient to support a high school.

Thus, after 20-25 years the residential areas of the development plan would reach full maturity as four distinct communities.

Industrial Area

A substantial section of land on the leeward side of the city near Sudbury Junction has been designated as the location for future heavy industry, with a peripheral band of light industrial development fronting onto the highways. The area is well served by highway, railway and power, and is directly connected by radial road to the city centre. The land is fairly flat and enclosed on the northeast limit by a rim of rock outcrop, and although portions appear to be swampy, its advantageous location in relation to existing highways and railways would merit seriously considering it as an industrial site.

The centrally located Canadian Pacific Railway yards enclosed by Lorne Street, Douglas Street, Riverside Drive, and Elgin Street, has been designated as a light industrial area, containing wholesale and warehouse concerns, as well as permitting inoffensive service industry.

More effective esthetic and commercial use could be made of the C.P.R. land fronting the inner ring road on Elgin Street by allowing wholesale firms to be established along this area now being used by spur tracks feeding into the C.P.R. freight shed located on Elm Street. This freight shed could be moved to an area of lesser commercial activity without disadvantage to its operation; and the tracks realigned to service the new development facing Elgin Street.

The present location of the Creosote Plant is retained but further industrial development in that area is confined within the Canadian Pacific Railway yards.

Other industrial concerns of significant size and operation scattered throughout the city, such as the foundry, the brewery, the fabricating plant, the concrete block plant, etc..., would be non-conforming uses within their present location, and allowed to remain where they are for the life span of their buildings, but encouraged to move to more desirable industrial sites provided in the northeast.

Green Areas

Parks and playgrounds are allotted throughout the city following the basic pattern of the rock outcrop within the built-up area. An attempt was made to achieve a continuity of greenery linking the neighborhoods, the town centre, stadium, secondary school sites, university campus and the lake fronts. Here, within a parkway reserved for pedestrians only, meandering footpaths, and bicycle tracks lead to the major meeting and play areas of the city. The rocky hillsides developed as landscaped parks would not only

provide potential summer adventure and hiking haunts, winter excitement and slides for the young at heart, but for those more inclined to passive activity, the pleasure of just walking in attractive, natural surroundings.

Within the neighborhoods themselves would be found smaller, more intimate green areas containing playground and tot lot space closer to the home and mother's watchful eye.

University Site and Stadium

The university campus becomes part of this green area system, but strategically located as to be readily accessible to all parts of the city by car or public transit. The site itself is actually a park with the buildings of the university placed in it. As the university grows, more and more of the site will be used for campus development, the rest remaining as park to carry through the broader concept of green areas.

To the north, and connected to the university campus by a green band that follows the creek behind the old folks home, is the proposed stadium. Thus the university campus acts as a link between the stadium and the other interior recreational areas found in the green areas next to the campus, such as the ski jump. In this way maximum flexibility is achieved in staging large or small scale sport meets, exhibitions, fairs, midways, and particular kinds of celebrations, in that, with little effort, the stadium facilities alone, or the stadium and university facilities together, or the stadium, university, and public area facilities all together could be utilized to meet any kind of situation.

By radial road (Notre Dame Avenue) this whole development is directly connected to the city centre, so that it really becomes an offshoot of the central area activity. It is also situated on the ring road near the geographic centre of the whole urban development, which means that when any event is occurring, people do not have to travel out to one place, but travel in to one place to take part. Dispersal then becomes quicker, easier, and more efficient, since it is outward, in many directions, from one spot, rather than in one direction, from one spot, as is often the case.

Town Centre

The town centre for Sudbury will be more than a focal point for a city. As the district capitol and "gateway to the north", it becomes a focus for an entire region. The character of this area should express an order and beauty inspiring a fitting urban spirit.

Such a city heart performs many and varied functions. Here is found the main shopping and business centres, public buildings for civic administration, education, entertainment, government departments, hotels, banks and other establishments catering to particular tastes.

As a gathering place for festive occasions and official ceremony and announcements, a civic square or space, created by the grouping of main civic, administrative, cultural, and social buildings, is required.

The present market place enhanced with adequate space and proper relation to the civic and shopping areas would be a potential core of lively activity and exchange between the rural and town folk, adding color to, and becoming a necessary part of the town centre.

The area designated as the town centre is described by the inner ring road, as already discussed. Generally no through traffic would be allowed in the central area, but ample parking facilities would be provided off the ring road, convenient to the three major functional components of the town centre--the civic square, the market place, and the shopping mall. Those who work or desire to shop or transact business within the area would walk to their destination from these parking places.

The elimination of through traffic in this area would be during the busiest times of the day. Truck service to the shops, business, and market area would be regulated before and after the busy intervals.

Planning Control Area

Through a process of analysis we arrived at a city plan for the Sudbury area that solves certain problems revealed by the analysis, and covering a certain area. Not wishing to tie the boundaries of this extended city down to any legal description, we prefer to allow the limits to be half a mile beyond the proposed urban development, including the industrial site, as indicated on the development plan.

To consolidate all urban growth within the city, and discourage the wasteful effect of scattered residential development in rural areas just outside its boundaries, a planning control area of about a five mile depth is proposed as a green belt completely surrounding the city, and helping to define it.

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