ROYAL COMMISSION

ON

CANADA'S ECONOMIC PROSPECTS

FINAL REPORT

NOVEMBER, 1957

FINAL REPORT

To His Excellency the Governor General in Council,

MAY IT PLEASE YOUR EXCELLENCY,

We, the Commissioners, appointed as a Royal Commission in accordance with the terms of an Order in Council dated 17th June, 1955, to inquire into and report upon the long-term prospects of the Canadian economy, that is to say upon the probable economic development of Canada and the problems to which such development appears likely to give rise:

Beg to Submit to Your Excellency the Following Final Report.

TABLE OF CONTENTS

1

INTRODUCTION: THE PROSPECTS BEFORE US

WHAT WILL be Canada's economic potentialities over the next twenty-five years and what must we do if they are to be fully realized? Essentially, those are the questions we have been asked to consider and to which answers are suggested in this report. It will be seen that our inquiry has involved making forecasts of future economic growth, identifying and analyzing the problems to which it is likely to give rise, and offering suggestions as to how they might be met. In the opening chapters of the report the background is sketched in against which Canadian economic growth will take place — the background provided by the world environment, by our relations with the United States, by the changing nature of international trade and by our recent economic development. The next group of chapters contains a discussion of population growth followed by a number of chapters outlining the probable future growth of particular industries or sectors. The following chapters deal with broad aggregates, consideration being given first to productivity and estimated output, and then to estimates designed to illustrate probable changes in the structure of the economy. Separate chapters follow on the supply of capital and foreign investment and on some special regional problems in the Atlantic Provinces and the North. In the final chapter we discuss the role of government policy both in maintaining economic stability and in promoting economic growth. The purpose of this introduction is to indicate the spirit in which we have approached our task, some of the methods we have used in going about it and a number of our broad conclusions.

The Hazards, Uses and Methods of Forecasting

At the very outset a word of warning is necessary. Fortune-telling has never been held in high repute in the community; and it is as hazardous when carried out under the most respectable auspices as when practised in a back street and in a manner liable to attract the attention of the police. We flatter ourselves that with the aid of a large and able staff we have been at some pains to try to discipline the forecasts we have been asked to make and to give them some scientific quality. We have examined economic experience in Canada, and to a lesser extent in other countries, over the last two or three decades to discover trends that might be projected into the future to give some idea of what the next quarter century might hold for Canadians. We have also borne in mind the comparative

stability of the ratios between some of the grand economic variables that will be changing over the years that we have to survey; and we have had constructed for us some models or orreries in which these slowly changing ratios might be seen to hold together the moving planets of the economic universe. But we should not like the reader to be deceived by any occasional impression of assurance or coherence that he may receive from these pages. We are well aware that we have not found it possible to compose our forecasts into complete consistency. We are even more conscious that the degree of certainty and consistency that our forecasts may from time to time suggest can be misleading. The fact is that a four-dimensional space-time continuum is a very slithery medium in which to plot the paths of even a few economic stars of the largest magnitude. The trend lines that we have projected into the future have had to be bent this way and that, and we know that guesses and intuitions have as often swayed our hand as any clear analysis or any clear apprehension of coming economic developments. The probability is therefore overwhelming that the future will not be obliging enough to conform to what we have predicted.

For all that, we have not been abashed by the task we have been given nor disposed to underestimate its importance. Decisions are constantly being made by governments and individuals, by businesses and trade unions, that involve forecasts of the economic future. Sometimes these forecasts are quite unconscious. More often, perhaps, they are untested, unco-ordinated or based on inadequate knowledge of the facts. No doubt the gaps and errors in our own appreciation of Canada's economic future will be only too evident. But we have at least received assistance on a massive scale to prevent us from falling into ignorant or unexamined conclusions. We have already mentioned the indispensable help that we have received from our staff, which has been assembled from government departments, from universities, from international organizations, from business and from organized labour. Canadian universities in particular have made considerable sacrifices to lend us some of their best younger economists. In addition, business institutions and trade unions, as well as government departments, have been generous in agreeing to prepare studies at our request. Moreover, we have received briefs from no fewer than 330 organizations and individuals; and many of these submissions involved painstaking and imaginative effort on the part of their authors to share with us their views of what might be expected in the next few decades. From the acknowledgments that appear in an appendix to this volume it will be seen that the assistance we have received would warrant the claim that this has been a national undertaking. It is chiefly because our own views have been broadened and corrected from so many sources that we have not been overcome by diffidence. At the very least, it can be said that, just as any decision is often better than none, so any explicit forecast is better than one that is taken for granted. It provokes

thought. It challenges opposition. It stimulates other attempts to penetrate the future. But we would be failing in due gratitude to those who have given us the advantage of their knowledge and experience if we were to rest our case so modestly. We know that our forecasts will be proved mistaken in detail, and no doubt in more than that. We also know that the discussion to which we hope the publication of this report will give rise will serve to improve its conclusions. But we may perhaps reasonably believe there is some probability that the results of such a broad enquiry are less likely to prove unfounded than any that would have been possible without so much assistance as we have received.

The core of our mandate has been, in the words of the Order-in-Council establishing the Commission, to report on "the probable economic development of Canada and the problems to which such development appears likely to give rise". More particularly, we have been asked to consider

"a) developments in the supply of raw materials and energy sources;
b) the growth to be expected in the population of Canada and the changes in its distribution;
c) prospects for growth and change in domestic and external markets for Canadian productions;
d) trends in productivity and standards of living; and
e) prospective requirements for industrial and social capital."*

That is a tall order, since there are few subjects that would not have some bearing on the economic future of a country like Canada with a comparatively mature and complex economy. In order to make our task more manageable, we have tried to focus our attention on subjects that seemed to us to be of primary interest and importance. What our choice has been and whether we have chosen well or ill, may be judged from the tenor of the following report. We should, however, explain that a few of the subjects we have not touched on or have passed over lightly were so treated not because we thought them unimportant, but rather because there were existing arrangements for giving them full consideration elsewhere.

We have also limited our responsibilities by making a few fundamental assumptions about the future. In the first place, we have assumed that a global war will be avoided. Such an assumption would seem obligatory for anyone with faith in the human species. In any case, it seemed to us pointless to consider what Canada's economic prospects would be in a world laid waste by radioactive dust. We have also assumed that, although there will continue to be cyclical business fluctuations, the recurrence of a major depression such as that of the 1930's need not be anti-

* The full text of the Order-in-Council establishing the Commission is printed in Appendix A.

cipated. That assumption may be too optimistic, but at later points in the report we offer some grounds to explain why we consider it not unreasonable.

There are also assumptions of a more technical and rather more arbitrary character that we have been obliged to make for the purpose of formulating statistical projections. For example, we have assumed that over the next twenty-five years there will be no change either in the general price level or in price relationships. Obviously that is completely unrealistic to expect. The stresses and strains to which the economy will be subject will be absorbed in large measure by changes in relative prices; and almost certainly there will also be changes in the general price level. But we know of no method by which long-range price changes can be forecast with the slightest degree of confidence.[1]* In a few cases we have thought it possible to identify probable changes in the relative price of some commodities and in these cases we have tried to specify what we anticipate the changes will be. For the most part, however, our projections are based on an assumption of constant prices, so that usually projected dollar magnitudes may be taken to reflect our expectations concerning changes in the volume of output or consumption. In the same technical vein, we have also assumed that there will be no major changes in the economic policies either of the Canadian or other governments. That assumption is, of course, equally unrealistic but, in our opinion, equally necessary. If the United States were drastically to reduce its tariff or if Canada were to enter into an agreement with the United Kingdom to establish a free trade area, the volume and pattern of our exports would clearly be different from what we have projected. But it seemed to us that our task would become quite unmanageable if we were to try to allow for every contingent change in the policy either of the Canadian or other governments that might seem to fall within the bounds of possibility. For the purpose of making projections, therefore, we have deliberately assumed that present policies will remain substantially unchanged.

That is not to say that we have considered ourselves precluded from making suggestions for changes in present Canadian policy. On the contrary, we have interpreted the mention in our terms of reference of "the problems to which economic development appears likely to give rise" as an invitation to consider alternative policies where this seemed appropriate. In some cases, we have ventured to put forward fairly specific suggestions. In others, we have contented ourselves with indicating the direction in which solutions are likely to be found. Perhaps in most cases, however, our chief contribution has been to try to make the problems we foresee swim in a perspective of the future. Seen in that way, we hope they may prove easier to solve.

---

* So far as possible we have tried to avoid footnotes. Where they are necessary, they are marked by an asterisk. References, as distinct from footnotes, are marked by a superior number in the text and will be found grouped together following chapter 20.

A Nation Apparent

There is a nearer perspective, though, that deserves attention first. It is simply Canada and its people here and now. We have travelled back and forth across the country holding hearings in every province, and have paid visits as well to Labrador and New Quebec, to the Yukon and Northwest Territories. It is an austere experience to fly all day from Ottawa to Edmonton and then to set out the following morning to fly another thousand miles to Whitehorse. Space enters the bloodstream. As you breathe it in, it is absorbed into a heightened awareness of sheer distance, the senses are dilated and seem to move in another element. This is an immense country. Even in the East it takes a day to fly from Ottawa to St. John's, Newfoundland. In the West, the distances are even greater. The Mackenzie River flows twice as far as even the St. Lawrence and the system of rivers and lakes of which it forms a part stretches for over 2,000 miles.

A vast country. A harsh country, too. When we flew one July afternoon towards Makkovik on the Labrador coast where interesting showings of uranium have been found, the snow was still on the ground. Then a cold front rolled in from the north and we had to turn back. If we had reached our destination we would have found that the camp site had had to be changed because the site established the previous year was now under 16 feet of snow. If Canadians have difficulty in thinking of themselves as the city dwellers that they demonstrably are, it is partly because of the wilderness that stretches toward the Northern Lights, a wilderness from which the settled areas have been won and which will continue to dwarf whatever encroachments are made on it.

It is still an empty country and, in spite of the population growth that we anticipate, will remain relatively so. In the whole of the Northwest Territories with its 1,300,000 square miles there are no more than 15,000 people; and the military bases, mining camps, trading posts, and administrative centres are hardly more than pin-pricks in the surrounding bush and muskeg and barrens. There will be important economic developments in this area in the years to come. But it would take the ruthlessness of a Peter the Great to plant any large centres of population there. Even much further south the population is very thinly spread. The farming areas in Saskatchewan, for example, have been losing population steadily and in many districts it is now so far between one farm home and another that it is difficult to provide all the services and amenities that are required. These great and thinly settled stretches are all held together by air services and by the steel vertebrae of the continental railways. But because of the difficulty of the country there is still no good road across Canada and almost all Canadians motoring from Eastern Canada to the Prairies have to dip down through the United States. In the northwest part of Ontario,

particularly, the terrain is extremely rugged and there the wilderness comes right down to the border.

For, unlike the United States, Canada still has a frontier. It is perhaps unwise to stress that fact too much since it can draw attention away from the problems of social organization in the cities and towns where most Canadians live. It can also cloud the importance for economic growth of the technological frontier. That is perhaps the chief cutting edge of the economy and anything that can be done to enable Canadian industry of all kinds to profit from technological change will probably yield larger dividends than deliberate efforts to press the physical frontier further north, although that may be highly desirable on other than economic grounds. Yet the wilderness remains a partner in the venture. That fact alone is bound to lead to significant differences between economic development in Canada and in the United States.

The riches of this vast realm are widely spread. The central feature of the country is the Laurentian Shield covering most of Quebec and Ontario, spreading over northern Manitoba and Saskatchewan, and stretching up through much of the Northwest Territories. Formed by the cooling of ancient heats, glaciated, eroded, granite-hard, pitted by boulder-beds, muskeg, beaver-meadows, scribbled over by an almost indecipherable scrawl of lakes and rivers, this is the forbidding treasury from which most of Canada's mineral wealth is extorted — nickel, copper, lead, zinc, gold, silver, cobalt and, at its outer edges, uranium. To the west lies the sickle-shaped granary of the southern Prairies curling up from the south-eastern edge of Manitoba through the middle of Saskatchewan and Alberta, including the grazing country to the southwest and, circling it, the dark brown and black soils regions that produce the finest hard northern wheat. Off the Atlantic coast are the fisheries which Lord Bacon described as being more valuable than all the mines of Peru, while off the Pacific Coast are salmon runs plentiful enough to supply one of the four large-scale salmon industries that are possible throughout the world. For almost every province the forest is an important resource, from British Columbia, where the lumbering industry is still supplied by monumental Douglas fir, to Newfoundland, which still has some of the finest black spruce stands on the continent. Water-power is also widely spread; and, as the limits of accessible horsepower are approached, great new energy sources have been discovered. Perhaps the most spectacular resource development in recent years has been the finding of large fields of oil and natural gas in Alberta and the other western provinces. Only less spectacular has been the development of iron ore deposits in Newfoundland, Quebec and Ontario. These are perhaps our most important natural resources. But that does not end the tale. If the Laurentian Shield is our principal source of minerals, the Cordilleras on the West Coast are not far behind, and there are valuable deposits too in New Brunswick. The Prairies produce almost half

of the commodities that are marketed from Canadian farms; but it is also a great asset to have good farm land near our largest cities in Eastern Canada. Then there is asbestos in Quebec, British Columbia and Ontario, gypsum in Nova Scotia, and the large deposits of potash that have recently been discovered in Saskatchewan.

It is perhaps as well that our travels have taken us chiefly to the principal cities of Canada since they contain the larger part of our most essential wealth — our people. It is also there that one can see most clearly the increasing diversification of the Canadian economy. New resource development has made Canadian production more balanced and rounded. But the growth of secondary manufacturing has also contributed greatly to the creation of a more broadly based economy; and it is typically located around the fringes of our largest cities. Driving in from Dorval airport to the centre of Montreal, or from Malton airport to the centre of Toronto, one passes one new plant after another built to produce electronic equipment, television sets, plastics, steel pipe, diesel locomotives, aircraft, aircraft parts, none of which were produced, or produced in any volume, in Canada twenty years ago.

As we have moved from city to city, we have not only seen something of the increasing diversification of the Canadian economy but have also been reminded of the diversity between the historic communities of which Canada is formed. At its heart lies the union between English-speaking and French-speaking Canadians, both proud of their own traditions, tenacious of their differences, but eager to make them contribute to the enrichment of the country as a whole, convinced that Canadians have a common destiny in the economic, as well as other, spheres and willing to pay the price of ensuring it. It is perhaps in Quebec City that one has the strongest sense of a unique community. It is a society that has been marvellously held together by race, religion, laws and language. It has participated largely in Canada's economic growth but has done so with a difference, as though it were never unmindful of other values and other centuries. The sense of continuity and uniqueness is also strong in many of the cities of the Atlantic Provinces which were founded as outposts of a maritime empire long before a Canadian nation was created and which still look towards the sea, although they have provided many of the people for the provinces lying to the west. In none of the provinces, though, can one be unaware of distinctive characteristics. Only a casual visitor bemused by the metropolitan bustle and the concentration of immigrants in Toronto could entirely fail to glimpse those levels of the city that still bear the impress of the back concessions of old Ontario, of the early Loyalist settlers and of the Methodist circuit-riders. The Prairie Provinces have had little more than half a century to acquire their own characteristics; but already they are easily distinguishable one from another and markedly different from the rest of the country. And British Columbia is a rich and rapidly growing empire of its own, separated by the Rockies.

One of the principal problems of Canadian statecraft has always been to reconcile the interests of the various regions within the national purpose. Economic measures have played an important part in this process. Although the exact geographical incidence of particular measures is sometimes impossible to define, the effect of some of them has clearly been to benefit some regions more than others. Often when that has happened, compensatory action has been taken later in an attempt to redress the balance. The earliest field for the deliberate exercise of economic policy was the field of public works. Even before Confederation public monies were being spent to provide canals that would promote commerce and industry in Canada East and Canada West. Subsidies have also been paid from early times for the construction of railways. It was a part of the agreements that brought the Maritime Provinces and British Columbia into Confederation that they should be linked by rail to the centre of the country; and for those days large grants were made by the Federal Government for the building of the Inter-Colonial and the Canadian Pacific Railways. Indeed, the policy of subsidizing railway construction has persisted to the present with federal subsidies currently being paid for the construction of an important extension of the Pacific Great Eastern Railway in British Columbia and of a line to Chibougamau in Quebec. Shortly after Confederation aid to railway building was supplemented by initiatives in land policy and commercial policy to form a comprehensive design to open up the West, to hasten industrialization, and to promote east-west trade. The Dominion Lands Act, with its homestead provisions, was passed in 1872; the tariff was substantially raised in 1879; and the Canadian Pacific Railway was completed in 1885. The effect of the tariff has been to benefit secondary manufacturing and since such manufactures have usually been located near the larger centres of population in Ontario or Quebec, it has worked to the advantage of the central provinces. Its differential effect, however, has been offset by changes introduced into the freight rate structure to the advantage of the Prairies and the Maritimes, and by various forms of assistance that have been granted to the agricultural and fishing interests. Since 1898 freight rates on grain moving both east and west from the Prairies have been regulated by legislation to implement the Crow's Nest Pass Agreement and have not been allowed to rise above the level at which they stood when that Agreement was made. Freight rates on commodities moving westward from the Maritime Provinces or within the Maritime area have also been modified by statute since the passage of the Maritime Freight Rates Act in 1927, which reduced rates on such traffic by 20 per cent of what they had been previously and provided that an annual subsidy should be paid to the railways to make up the difference.* Agriculture has been assisted by projects undertaken by the

* In March, 1957, the level of the subvention on outbound traffic was raised from 20 per cent to 30 per cent.

Prairie Farm Rehabilitation Administration; by payments made from year to year under the Prairie Farm Assistance Act to farmers with low yields; by government expenditures to cover losses incurred under the Agricultural Prices Support Act and the Agricultural Products Co-operative Marketing Act; by subsidies paid on the movement of feed grain from the Prairies to Eastern Canada and British Columbia; and by a number of other schemes, including subsidies to encourage the production of high-grade hogs and high-quality cheese. Similarly Canadian fishermen have been assisted by a system of price supports and by a variety of capital grants. Substantial subsidies have also been paid to the gold mines and to the coal industry, both of which have been seriously depressed in recent years. The social security measures that have been introduced since 1939, including unemployment insurance, family allowances, old age pensions and old age assistance have of course applied to the population as a whole; but nevertheless they have resulted in not insignificant transfer payments from one province to another. Since the inception of the post-Korean defence programme, defence contracts have played an important role in the peacetime economy and inevitably their effects have not been evenly distributed among the various economic regions.

No national economic policy in Canada can be realistic that fails to take into account these and other complex adjustments which have been made in an effort to further various national purposes, to provide minimum standards of welfare and to accommodate the interests of the different regions. Nor can if wholly disregard the claims and expectations to which such measures have given rise. They represent national choices that have profoundly influenced the economic structure of the country and, by modifying the decisions of the market place, have made it different than it would have been if its development had been left to the free play of economic forces. Indeed, it is doubtful whether Canada would be a separate nation today if economic forces alone had been allowed to determine our destiny. We assume that our fellow-Canadians believe as we do that the things we hold in common, the things we cherish, abundantly justify the effort to maintain our national identity and are willing to accept the consequences. If that is so, it follows that there will be occasions in the future, as in the past, when it will be necessary to withdraw some decisions from the arbitration of the market and make further deliberate adjustments of the kind to which we have referred. Fortunately, as our wealth increases, the cost of such necessary compromises may become relatively lighter. But it will always be risky to make such choices blindfold. Canada is growing richer, but there will always be need for skilful husbandry in a country so immense and harsh and empty and under the necessity of selling a large proportion of its output in a highly competitive world.

A Sketch of a Plausible Future

It is time, though, to reveal the outlines of the economic future that we foresee for Canada if our assumptions are realized and if we manage our affairs well. In that light, the few other preliminary comments we should like to make about economic policy may appear to have more content. It seems probable that, over the next twenty-five years, our population will increase to approximately 27 million. At the same time the labour force may well double and reach a figure of perhaps 10 million by 1980. Because of the quickening pace of technological change, we think that output per man-hour will show a higher annual increase over the next two or three decades on the average than it has during any period of comparable length in our history. The result of such an increase in our labour force and of the rise in productivity that we envisage would be a national income in 1980 three times as large as it was in 1955.

There will also be significant changes in the way the total output is made up. Agricultural production will continue to grow but will form a smaller percentage of the total. At the same time external demand for our farm products will be replaced by domestic demand as the principal dynamic determining the growth and changing structure of Canadian agriculture; and one result will be that the raising of livestock will become relatively more important while grain production will relatively decline. Canadian agriculture should be able to meet the total demands that will be made on it over the next ten years without any significant increase in occupied acreage or any significant intensification of land use. At some point after that, however, the changes needed to satisfy growing demand may be of a rather more fundamental kind. This will be especially true if, towards the end of the period under consideration, external demand for wheat, which will probably remain relatively constant for quite some time, again begins to move upward.

The course of external demand for the products of Canada's mines and forests will be very different, in our opinion. It will be strong and buoyant and will lead to a large expansion of output. There may well be more than a 50 per cent increase in the production of lead and copper; almost a doubling in the production of nickel and zinc; a fourfold increase in the production of aluminum; and more than a fivefold increase in the production of iron ore. It is probable that the output of newsprint and wood pulp will double and that there will be a 60 per cent increase in the output of lumber. Proved reserves of the principal minerals in Canada are already adequate in most cases to maintain production at the present levels over the next twenty-five years, and it is probable that new methods of prospecting will lead to the discovery of hitherto unknown deposits which should enable the increased demands that are anticipated to be met. Present timber resources seem adequate to supply the growth there will be in the forest products industry; but the higher cost of cutting less

accessible stands will result in greater attention being paid to silviculture and forest management and Canadians will increasingly come to regard their forest resources as a renewable harvest as lustrous and valuable as the gold of the Prairie wheat fields.

We anticipate that the resource industries, including forestry, fishing, mining and electric power, will grow in relative importance in the economy. In 1955 they accounted for approximately 10 per cent of total output. By 1980 that figure may have risen to approximately 15 per cent. In part, this will reflect growth in the production of some minerals such as iron ore, which will be largely exported in unprocessed form. More significantly, perhaps, it will mean that Canada will have become much more self-sufficient in fuels, since the principal resource industries where output is expected to outstrip the output of the economy as a whole are petroleum, natural gas and electric power. The primary manufacturing industries which are based on our natural resources, including, for example, mineral processing and the manufacture of pulp and newsprint, will also grow; but they do not seem likely to occupy a relatively more important place in the economy than they do today. The secondary manufacturing industries, on the other hand, producing chiefly for the domestic market, are likely to increase in relative importance with their output representing perhaps 25 per cent of the total by 1980, instead of the 22 per cent that they account for today. The great growth that we anticipate in the service industries (including the two broad sectors of the economy "transportation, storage and communications" and "trade, finance and private services"), will be more apparent in the employment opportunities they will provide than in their share of total output. In this sector output is extremely difficult to measure. But because we expect productivity in these industries to rise more slowly than in the economy as a whole, their share of total output may not be much larger than it is at present. Their share of the employed civilian labour force, however, may well increase from approximately 34 per cent to approximately 40 per cent. If civilian government and community services are included, the increase would be from 46 per cent to about 55 per cent. This change, together with a decline in agriculture's share of total employment from 15 per cent to, say, 7 per cent, are the most important changes we would expect in the industrial distribution of the labour force.

As the declining relative importance of agriculture and the growth of employment in the service industries would suggest, most of the population increase will accrue to the cities and towns and the character of the country will become more urban. In 1951, 62 per cent of the population lived in metropolitan areas or in other cities, towns or villages with more than a thousand people. By 1980 that proportion may rise to 80 per cent. Over the same period the proportion of the population living in metropolitan and urban areas of more than 100,000 people may rise

from 36 per cent to 56 per cent. Not only will population grow faster in urban than in rural areas, it will also be increasingly concentrated in the larger metropolitan centres. By 1980 both Montreal and Toronto may have grown to be cities of between 2.5 million and 3 million, and Vancouver may be a city of almost 1.5 million. The process of urbanization will call for heavy expenditures on housing, streets and highways, schools, hospitals and other facilities of that kind. Expenditures on the various forms of social capital may well total $100 billion or more over the period, without making allowance for price changes.

Twenty-five years from now new capital formation will probably be financed to a greater degree than is true today by the savings of Canadians. Most of the external capital that will still be required will be supplied by United States residents, we should imagine; and United States ownership and control of a number of our largest and fastest-growing industries will be even greater than it is today, unless there is some change in present corporate practices or government policies. Our trade, though it will be a smaller part of our total economic activity, will also be increasingly focussed on the United States; and, in general, the economic relations between the two countries will become even more closely intertwined. Our deficit on current account by 1980 may be no greater in absolute size than it was in 1956; and the net inflow of foreign capital to cover it will be relatively much less than it is at present.

Our increased wealth will be reflected in much higher personal disposable income per capita, which may increase by some 70 per cent over the next twenty-five years. Some of the fruits of increased productivity will be taken in other forms than money. Average weekly hours of work will decline and there will be more leisure. Retirement will ordinarily come earlier than it does today; and, at the other end of the age scale, a higher proportion of young people will defer starting work until they have taken further training at universities and elsewhere. The problem of providing the teachers and educational facilities that will be required is among the most pressing that we face.

Modes of Adjustment

Most of the economic growth that we anticipate and of the economic adjustments that will be involved, will be brought about by the interplay of supply and demand as they are expressed in the market place. The hurly-burly of the market, marred as it sometimes is by exaggerated claims and speculative excesses, can obscure the essential function that it performs. For all its surface confusion, it is the forum for a dialectic of great practical importance. It is there that producers and consumers communicate with one another through the language of prices; and no better method of communication between them has ever been devised. Not only does a free market permit, and even enforce, the multitudinous adjustments that are necessary to create some rough harmony between what buyers want

and what producers have to sell; it also promotes efficiency through the spur of competition, which is constantly altering the relative position of producers and leading to a more productive use of the labour and capital and natural resources of the economy. It also has the added advantage that its operations can be carried on with a minimum of restrictions on the freedom of groups and individuals to make responsible choices. Maintenance of the atmosphere of freedom in which the price system works best is also, of course, a prerequisite of political and social health. At the same time it is the atmosphere in which daring innovations which can enrich the society as a whole are most likely to be made and applied.

This last consideration, however, suggests that, notwithstanding all the benefits that may be expected to flow from a free market system, it would be unwise to become too wedded to the conditions which, according to some theories, would perfect it. Such conditions, if fulfilled, would enable the price system more exactly to make the marginal adjustments that would result in a more productive allocation of the factors of production. The resulting marginal increases in output per capita, however, may be much smaller than major increases in productivity resulting from the introduction of technological innovations by industry, or than the over-all growth in output resulting from a continued high level of demand sustained by successful full-employment policies. Both daring innovations and successful full-employment policies may involve departures from what have been held to be the theoretically desirable conditions for a free market. For the successful introduction of large-scale technological improvements some departure from conditions of perfect competition may have to be countenanced. For the successful conduct of full-employment policies deliberate intervention by the central government will certainly be required.

The role of independent businessmen in encouraging and introducing innovations is one of a number of reasons why there will always be some irregularity in the rate of capital formation and some fluctuations in the anticipated rising curve of business activity. But much can be done to smooth out the curve and to maintain high levels of employment while avoiding inflation. Nothing has impressed us more during the course of our inquiry than the cardinal importance of a successful full-employment policy. It can do much to further the welfare of Canadians by protecting them from the waste and misery of unemployment and from the inequities and distortions caused by inflation. As we were reminded by Professor J. K. Galbraith, it can also contribute powerfully to long-run economic growth by maintaining a level of demand that presses on the existing capacity of the economy to produce, and so provides an incentive to develop the basic factors of production with a resulting increase in total output.[2] Moreover, as the Canadian economy becomes more diversified, there is more scope for the successful application of such policies, although

external demand, which is not amenable to their influence, must remain for as long as we can foresee an important determinant of Canadian growth and prosperity. We have also been impressed, though, by the difficulty of implementing a successful full-employment policy. It therefore behooves us all to do whatever we can to see that room is left for the exercise of such powers as it may be necessary to wield and that the economy is kept flexible enough to respond readily when they are applied. All in all, we believe that by far the most important responsibilty of the federal authorities in the field of economic policy is so to adjust fiscal, monetary and other measures that there is a high level of demand and of employment opportunities and yet a stable price level.

That, however, does not exhaust the fields in which deliberate intervention by the Federal Government is desirable. Even a successful full-employment policy may leave untouched the problems of particular regions and areas that are not sharing fully in the economic progress of the country as a whole. It would also leave undone many things that Canadians might like to see done even though they are hardly appropriate to be undertaken by private enterprise. We have spoken of the riches of the country. And it is rich. But there are many ways in which it is poor, even compared with some countries which have a much lower income per capita. Most of our cities are still poor in their social assets and amenities. We could do with fewer level-crossings and more museums. The general prosperity also often conceals the fact that, both in the cities and in the country, there are many Canadians with incomes insufficient for their needs. In spite of higher wages, there are still families with too little money to bring up their children decently. In spite of social security measures and the efforts of charity, there are still old people slowly dying in back bedrooms on which the rent is long overdue.

There will be plenty of ways to spend our increasing national wealth. We will first have to meet the claims of defence and decide what we are prepared to pay as our contribution to the collective military force of the Western world designed to deter an atomic attack. We may also want to round out our social security programme and to increase the payments made under it. There will also be proposals for expenditures on projects to add ease and grace to our common life and on other projects that would contribute either directly or indirectly to our economic growth. But we must recognize that these claims are all competing. At any one time we may have to decide that some of them are beyond our present means and have to be deferred. For if they were accepted indiscriminately and all superimposed on the normal operations of the economy, the result might well be an inflation that would bear cruelly on some groups in the community and that would price us out of some of the world markets in which we must compete. If that were to happen, we might wake up to find that our prodigality had cost us dear.

However, we are convinced that there will be latitude to do at least some of the things that we believe most Canadians think would be in the national interest and that would not be done in the normal course of private enterprise. After we have paid for defence what we think we must, and have spent on social security what in all the circumstances we think we can, we believe there should be something over to spend on other national purposes. We suggest that some of our increasing national wealth should be used to facilitate adjustments that would make the economy stronger and more resilient; to knit the various parts of the country more closely together; to finance developments that would indirectly promote economic growth and permanently add to the country's assets; to assist regions that may not be keeping pace with the economic progress of the country as a whole; and, finally, to encourage Canadians to participate more fully in the economic growth of their own country.

The promise of the economic future as we foresee it is one to command enthusiasm. An atomic war would blast it. A deep depression would blight it. But failing either of those catastrophes, which we believe it should not be beyond the wit of man to avoid, the next two or three decades should bring great prosperity for Canadians. There is, however, one further risk that might prevent the promise that we envisage from being realized. In Canada, as in other countries, there are social tensions latent in the community that in times of stress might come to the surface and cause a serious setback to economic progress. There are tensions between regions, between races, between various economic groups and between management and labour. If Canadians as a whole were to prove indifferent to the economic difficulties of particular regions; if the effort of sympathetic comprehension between the races in Canada were to be suspended; or if any of the economic groups in the community were to make exorbitant claims on its resources; in all of these cases the consequent strife and discontent might well bring economic progress to a full stop.

That is as much as to say that, in considering Canada's economic future, we are dealing with the surprising and contrary stuff of human life. The future we speak of will be made up in reality of the fortunes of millions of men and women whose lives are not bounded by economic interests nor explicable in terms of economic categories. We speak of the labour force, for example. But we are really referring to myriad individuals each with his own desires and sufferings and often possessed by singular and special aims. If, in this report, we say little about the watery splendour of human life in its real complexity, it is not because we are tempted to over-estimate the final importance of material progress. Our justification is that no human aim, whether of happiness or achievement or some form of devotion, can be entertained without at least a minimum of material goods; and most men will need more than a bare minimum if their talents are to be displayed and exercised. Nevertheless, it is true that in speculating on Canada's

economic future, we are merely setting the stage on which a multitude of separate dramas will be played. Society, though, conditions the possible action, and in its turn is conditioned by the economic structure of the country. For that reason there is ultimately a connection between the numerical abstractions with which, of necessity, we must deal and the mysterious quality of life itself.

Those who built this country showed by what they did that they believed its economic future was not entirely beyond their power to control. In some respects their problems were simpler than ours. The world in which they lived was not so menacing as today, although we should not minimize the external dangers and difficulties they faced. Nor was the rate of change in their day so rapid as to create such acute problems as we have of adjusting old values to new circumstances. In other respects perhaps we have the advantage of them. New economic theories have suggested new ways of controlling the economic environment. Moreover, the nation is now much wealthier than it was then, and can perhaps afford to concern itself more than they could with the proper distribution of wealth rather than with its creation. Even in our ampler circumstances we will probably do well to be not so cavalier about economic costs as they sometimes showed themselves. But insofar as they believed that within the limits of economic reason they could mold the future of the country to their own desires and purposes, we commend their spirit to our fellow countrymen as a proper guide for the future. It is in that spirit that the rest of this report is written.

2

THE WORLD ENVIRONMENT

WE HAVE found that our minds have been stretched in trying to comprehend the breadth and diversity of our own country. But that is not enough. It is necessary, at least in thought, to circumnavigate the world in order to see Canadian life and problems clearly. Something of Canada's essence is defined by its external relations. Much of its economic structure can be explained only in terms of its external trade. Canada is one of the few countries of the world that has within its own boundaries most of the raw materials necessary to make it a great industrial nation;[1] and since 1945 there have been many discoveries and developments that have tended to make it more self-sufficient. But it is, and must remain, an open economy highly dependent on foreign trade. The explanation is not only that Canada needs to export in order to pay for necessary imports. A more important reason is that massive capital development has taken place to serve foreign markets. The grain elevators on the Prairies, at the head of the Lakes and at Montreal; the double track from Winnipeg to Fort William; the railway to Churchill on Hudson Bay; the fleet of specialized freighters on the Great Lakes; these are all heavy investments in the future overseas demand for wheat. Similarly, large amounts of capital have been invested in pulp and paper mills, iron ore mines, and base metals smelters to produce and process raw materials for export to the United States, the United Kingdom and other countries. For at least 50 years the ratio of world trade to total world output has been gradually falling. Over the past quarter century, the proportion of Canadian output accounted for by foreign trade has also shrunk appreciably and will probably undergo a further gradual decline. But any drastic fall in foreign trade would mean that the value to us of these great capital assets would be sharply reduced and would involve widespread and wasteful dislocation of other resources, both human and material, before they could be reassembled in a new pattern of production.

The ships loading lumber on Vancouver Island or aluminum ingots on the Saguenay are reminders of how deeply our material well-being is involved in the prosperity of other countries, even outside the boundaries of North America. But there are other movements that suggest that our involvement in the world is even more crucial. The reinforcements flowing to the Canadian brigade group and air division in Western Europe, and the movement of air-freight for the construction of radar stations north of

the Arctic Circle bear witness that decisions taken outside our own boundaries can be matters of life and death for us. We live on a shrivelled planet. If we are to have a just view of our future, we must try to have some idea of the complex forces that are abroad in the world-wide community.

Since what is nowadays being put in question is hardly less than the survival of the species, it may be as well to begin by remembering how much the people of all countries have in common. With international issues increasingly reduced to almost biological simplicity, it bears repeating that many of the impulses and preoccupations of those living in Rome or Delhi — yes, or Moscow — are the same as ours. The gales of change that blow about the world are so swift and unpredictable, it is easy to forget that they blow over human creatures who share with us the will to survive, the need to provide for themselves and their families, the craving for community, and the desire to triumph in some way over time. These and other human impulses are crossed by different traditions, by different habits of thought, and by different aspirations. But they are coming more and more to assume their primal importance as people throughout the world increasingly share in a common predicament. We begin, then, with the light of common day. Yet there are situations, of course, in which it cannot penetrate. What we have learned of the last days of Hitler, surrounded underground by a bizarre court of fanatics, jugglers, quacks, seems hard to recognize as part of our own times; in its terrible absurdity we feel that it would be more aptly told of the Emperor Tiberius at his most demented. And the more recent revelations about Stalin's latter years describe an almost equally lurid and repulsive scene. Aggressiveness, suspicion, self-deluding hostility and hysteria, we are reminded, are also intrinsic elements of the human condition, and elements that civilization, for all its arts, can scarcely hold at bay.

The Burden of Defence

Over all our human encampments, sheltering so much endurance and courage and squalor, towers the principal totem of our age — a fireball two or three miles across, rising into an atomic cloud supported on a slender stalk, through which rush radio-active particles to fall over hundreds of miles in a gentle, lethal rain. For the purpose of our forecasts, we have had to assume away the possibility that there will be a world-wide holocaust and that destruction will be visited on Canadian cities. But, in candour, we cannot deny that over the next two or three decades we will live under the shadow of that ambiguous emblem. It will influence our daily lives, colouring the headlines we read and the hopes we have for ourselves and our children. It will have wide effects not only on the relations between states but on domestic policy as well. Its implications will be as much economic as political since governments, in framing national budgets, will have to take into account the risks of war and the necessity

of providing an effective deterrent. In considering our economic prospects and in devising economic policy, as well as in other activities, we will never be able to forget that if the efforts to keep the peace were to fail and if a new world war were unleashed, a single hydrogen bomb — of a type that perhaps now must be considered old-fashioned — could contaminate with radio-active fallout an elliptical area 200 miles or more in length, stretching, for example, along Lake Ontario from Hamilton to Kingston or along the St. Lawrence from Cornwall to Quebec.

What, then, are the risks of war? The Soviet Union has frequently declared its intention of living peacefully with the rest of the world and from time to time turns a more ingratiating face towards the West. But it has never abandoned its ambition of Sovietizing the world and still insists that there can be no quarter between competing ideologies. We may hope that, as the years go by, the rough edges of Soviet policy may be smoothed away and more crevices be found in which genuine tolerance and understanding may blossom. There have been examples in history of creeds ambitious of world domination losing their aggressiveness and of revolutions becoming domesticated. But the first process has always taken a long time and the second has always been attended by turbulence. So long as Soviet Communism cherishes ecumenical ambitions, has such little respect for personal freedom, and at the same time possesses such powerful weapons of mass destruction, world tensions will persist. It is also possible that Communist China, which is at an earlier stage both of its industrial development and of its revolution, may become increasingly aggressive and increasingly dangerous as it acquires the industrial strength and the modern weapons necessary for a policy of expansion. Indeed, over the period we have to survey, nuclear weapons may become so widely available that they will be at the disposal of even much smaller countries with the result that local outbreaks not directly affecting any of the Great Powers might have incalculable consequences.

Since we began our inquiry, the United Kingdom has joined the select circle of nuclear powers. But it probably remains true that the Soviet Union and the United States are the only two countries with means at their disposal of mass destruction on the widest scale. Both of them have in their armouries hydrogen bombs capable of destroying even the largest city and both of them in all probability have the power to deliver such weapons by piloted aircraft against any possible adversary. It seems certain that before very long the power of delivery will be immensely increased with the production of intercontinental ballistic missiles, which are now being developed by both the Soviet Union and the United States. A missile of this type fitted with a thermo-nuclear warhead could be launched from a small and almost undetectable site deep in the Eurasian land-mass and within a few minutes could annihilate any city in North America. Equally devastating attacks could be made over shorter distances by intermediate-range ballistic missiles or by nuclear weapons launched from submarines.

Since the end of the Second World War the Soviet Union has had a great preponderance in military manpower and in so-called conventional weapons and used this power to extend its control beyond its own boundaries. Further advance was checked by the will of threatened peoples to resist; by economic recovery promoted by large-scale assistance, particularly from the United States; and by the creation of a network of alliances, including notably the North Atlantic Treaty. But the principal deterrent was the atomic superiority of the United States and the power of its Strategic Air Command to deliver nuclear weapons over very great distances. This superiority was absolute until 1949 when the United States' monopoly in nuclear weapons was broken with the explosion of an atomic bomb in the Soviet Union. However, the United States still had a clear advantage in its power to deliver nuclear weapons and in the headstart it had made in constructing the hydrogen bomb. Now that the Soviet Union also possesses stocks of hydrogen bombs and squadrons of long-range bombers capable of intercontinental flights, and is developing intercontinental missiles, there would seem to be a situation of uneasy nuclear stalemate. The deterrent power of the Strategic Air Command is still potent and increasing. But it is matched by the deterrent power of the other world colossus, which may be of at least as swift and terrible a kind and which in any case is formidable enough to drain all meaning from the notion previously entertained that nuclear superiority lay with the West. It may be that this precarious equilibrium, where each of the antagonists can inflict appalling damage on the other, has sobered the Soviet Union as well as the United States. Looking into the fiery furnace, they may have concluded that their quarrel with the Western world should be pursued by other means. But insofar as the idea of atomic superiority has lost much of its relevance, new and greater importance attaches to the need to maintain the economic and social health of the Western democracies in the long competition they apparently face with Soviet Communism; to assist the under-developed countries accelerate the pace of their economic growth; and finally to exercise a supple and skillful diplomacy, that is disabused yet never cynical, hopeful yet ever on its guard.

Nevertheless, no error could be more fatal than to believe that our responsibilities to the future will be fully discharged if we concentrate on our own economic development — so long as we spare something for assistance to other less fortunate countries and are always on the alert to seize opportunities for diplomatic negotiation which might reduce international tension and ultimately produce some measure of genuine understanding with the Soviet Union. The nuclear weapons that have now been perfected and the more dreadful successors that will surely follow may prove so revolting to human reason and to such shreds of the idea of human solidarity as still are left that they will never be used. The fact remains that they were invented and developed for making war. No one can be sure they will never again be used for that purpose. Undoubtedly

knowledge of the wide and deep scars that they would burn on the planet will have some restraining effect. But it is not difficult to foresee events which might make a global nuclear war almost inevitable. For practical purposes there may now be a situation of nuclear stalemate; but a moment might come when, in the opinion of an aggressor, the advantage lay with him, even though swift retaliation would ensue. Or a miscalculation might be made about the areas considered vital to its interests by one of the antagonists. Or efforts to localize comparatively small outbreaks might prove unsuccessful, tactical atomic weapons might be used and a nuclear holocaust be precipitated.

In such a global war, Canada would almost certainly be involved from the outset. It would be bound by its treaty obligations to the United States. It would be bound by its adherence to the cause of which the United States is the champion. It would be involved, if for no other reason, because it lies only immediately outside the bull's eye and nuclear weapons carried in planes or intercontinental missiles making for targets in the United States might fall on Canadian territory. Above all, Canada would be involved because the defence of the North American continent can be planned only on an integral basis, and as a result the defensive preparations of both countries will increasingly interlock.*

The North Atlantic alliance, of which Canada forms a part, is at present defended essentially by the deterrent power of the United States Strategic Air Command, supplemented by the United Kingdom Bomber Force. Although the retaliatory weapons at the disposal of the United States will change, there is no likelihood of their ceasing to be our principal safeguard. The deterrent power, however, is highly complex. It is not composed solely of nuclear weapons carried in long-range bombers or in intercontinental or intermediate-range ballistic missiles. There must be alternate and intermediate bases for the bombers. There must be warning systems so that they may get into the air before they are attacked. There must be fighter planes to intercept incoming bombers, if possible, before they reach their targets and missiles designed to bring down incoming missiles or at least derange their delicate control-mechanisms. It is to this complex web of air defence that Canada's military contribution in the future will clearly be chiefly devoted. There will continue to be reasons for contributing to the covering force that now shields the vital industrial centres of Western Europe. But more and more our defence efforts will be directed towards guarding the West's power to retaliate and towards protecting our own cities.

The nature of air defence will be determined by the course of weapon development. What the stages of such development will be, is not perhaps impossible to predict. But it is extremely difficult to judge how far the

* The announcement on August 1, 1957, of the establishment of an integrated North American Air Defence Command is an illustration of this.

stages will be telescoped. Canada is now developing a new all-weather interceptor, the CF-105, that will be beginning to come into use before the end of the decade. It will fly at approximately 1,500 miles per hour and will be equipped with rockets that can be guided onto incoming bombers. To be fully effective, the new fighter will require a much expanded and highly expensive environment on the ground, including longer airstrips and new radar installations connected by land lines that will feed information into semi-automatic data processing machines. By the time this new system of defence is in operation early in the 1960's, it is probable that ground-to-air guided missiles will also be coming into use and there will be a period when both piloted planes and unmanned guided missiles may be available to attack incoming bombers. At any time, however, the problems of defence may change radically with the advent of the intercontinental ballistic missile. What defence may be found against it, is yet unknown. But it seems probable that warning lines will still be needed, since it must be remembered that, provided the intercontinental missiles being developed by the United States and the Soviet Union become operational at about the same time, the equation of mutual deterrence will remain unchanged, although the time scale on which the equation will be plotted will be greatly compressed. Then it will be the minute, rather than the hour, hand that will measure the time taken by the missile to reach its target, the time given by the warning system and the time available to launch a retaliatory salvo.

In spite of all the uncertainties about the future course of weapon development, it is perhaps not impossible to foresee, at least in very general terms, what the requirements of air defence will be over the next 10 or 15 years and so to identify those industries that are likely to be the chief beneficiaries of Canadian defence expenditures. New planes and missiles and airfields and launching-sites will be needed and they will probably be located further and further north so that there may be a chance of intercepting attacks before they reach Canadian cities. The mesh of radar stations will become more closely linked, and more complicated equipment will be installed. The means of detection will be supported by costly systems for tracking and interpretation. The industries, therefore, that are likely to receive the largest volume of defence contracts are the electronics industry and the aircraft industry, although the latter (which could hardly hope to exist in Canada were it not for continued defence orders[2]) may find itself producing more and more missiles or components for them and fewer and fewer military aircraft as the years go by. The range of other industries that will feel the effects of defence expenditures will be wide, particularly now that the proportion of the defence budget being spent on maintaining the present forces in being and supplying them with personal equipment is constantly rising. But for few other industries — shipbuilding is a possible exception — will defence orders represent a significant percentage of total output, although such orders may be large enough to give

a welcome fillip to particular companies in areas where economic development is lagging behind.

Since 1951, when an expanded defence programme was adopted as a consequence of the outbreak of war in Korea, total Canadian defence expenditures have constituted approximately 40 per cent of the federal budget, and, over the past five years, have fluctuated between 6 per cent and 8 per cent of the Gross National Expenditure.* If the international situation were to deteriorate and the world were to seem on the brink of war, these percentages might rise sharply. If, on the other hand, the military danger were to recede, there could be a substantial drop in the defence budget. Failing any such major changes, it seems likely that defence expenditures over the next two or three decades will increase somewhat in absolute terms but will represent a smaller proportion of the national expenditure than they do at present. Obviously the annual decisions that will have to be taken on this subject will be influenced by an appraisal of the risks of war as they may seem at the time, and by an appreciation both of weapon development and of what expenditures may be required in order to help provide an adequate deterrent against possible attacks. If the present enigmatic peace continues, these military considerations will have to be balanced against an analysis of hostile economic and diplomatic penetration in various parts of the world and a calculation of what might be the cost of useful counter measures. Another offsetting consideration will be the question of how large defence expenditures can be borne by the Canadian economy over the long run without inhibiting its growth or sapping its resilience. All these considerations will presumably be considered relevant in other countries as well. In addition, Canadians will no doubt want to take into account the comparisons that may be drawn between their own defence expenditures and those of the United States. A much wealthier country can support substantially larger defence expenditures, even on a per capita basis. But Canadian public opinion will probably expect Canadian defence expenditures to bear a respectable relation to those being made by the United States, if, as may be expected, the Canadian view of the international situation is not very different from that held by the United States and particularly if, as is true at present, large sums are being spent by the United States for military installations on Canadian soil. How all these conflicting considerations will be resolved, will vary from year to year. But if we may hope that the defence burden will decline somewhat in relative terms, there seems no doubt that it will continue to be heavy.

The Promise of Technology

Inevitably a promethean age creates burdens — burdens of defence, of anxiety, of foreboding. But it brings opportunities as well. As the

* Gross National Expenditure is, of course, the counterpart of — and equivalent to the — income that constitutes Gross National Product.

secrets of nature are split open not only is a whiff of impending chaos released, but there is more opportunity of building a Periclean democracy, with machines replacing the slaves. The electronic developments that have been made for the purposes of defence can be used to eliminate drudgery; and nuclear reactions may be controlled to produce innocent energy and to carry out some industrial processes that would otherwise be impossible. It seems likely that nuclear power will first become of importance in countries where other energy supplies are neither so cheap nor so abundant, as they are in Canada. Even in this country, however, it is probable that twenty-five years from now perhaps 10 per cent of all the electric power generated will come from nuclear installations. In the more settled parts of Canada nuclear power will remove the spectre of shortages, while further north smaller plants may become an economical means of meeting the energy requirements of distant mines, pulp mills and other settlements. In such marginal ways at least, the terrible forces that have been unloosed may be tamed by human skill, as in the past man has put his bridling hand on the white manes of rapids and waterfalls.

Although Canada contributes to scientific and technological research, it is something that transcends national boundaries. It forms a community of its own of which men of many races and nationalities are free, and so is part of the international environment that surrounds us. Not only is there no such thing as a Canadian physics or chemistry, but Canada is a large net importer of scientific and technological discovery. We are dependent for much of the technological research needed by our industries on work done in the United States and other countries, and our scientific indebtedness is even more widely spread. As it becomes possible to transmit electricity over greater and greater distances, thanks will be due to the pioneer efforts of scientists in Sweden as well as in Canada. As our transcontinental air services fly on faster and faster schedules and so bind the country more closely together, much of the credit will belong to those in the United Kingdom who invented the jet engine. In some fields Canadian scientists have made discoveries that have received wide recognition. This is particularly true of medicine. There are other fields in which our climate and topography have provided the spur for inventions that have been widely used in other similar parts of the world. New strains of wheat to be grown in northern latitudes have been as successful in the Soviet Union as they have been in Canada; and water-wheel generators developed here are used in many other countries whose hydro-electric resources resemble our own. For a comparatively small country, our contributions have not been inconsiderable. But, given the rarity of the highest kind of scientific and technological genius, it is inevitable that most of the advances to transform Canadian life should come from abroad. Typical, perhaps, is the part played by Canada in the development of nuclear energy. Lord Rutherford carried out research on radio-activity at McGill University for a few years, although, of course, his great work was done in the Caven-

dish Laboratory in Cambridge. Fundamental work of an important kind was also done at the University of Toronto under Sir John McLennan. When it was decided in 1940 to try to construct an atomic bomb, the level of physical research in this country was high enough for the Government to claim successfully that Canada should participate in the project with the United States and the United Kingdom. The reactors built at Chalk River as a result of that decision have been the source of much new information in the field of nuclear physics. Yet such contributions are properly thought of as only one tributary to the stream of research that has been fed from many parts of the world.

The most remarkable feature of world progress in recent years in science and technology has been the acceleration of pace. "The greatest of the changes that science has brought," Dr. Robert Oppenheimer has written, "is the acuity of change; the greatest novelty the extent of novelty. Short of rare times of great disaster, civilizations have not known such rapid alteration in the conditions of their life, such rapid flowering of many varied sciences, such rapid changes in the ideas we have about the world and one another."[3] It was only in 1939 that Emil Hahn made the fundamental discovery about the uranium nucleus that made nuclear fission possible. Yet less than six years later, the first atomic bomb was exploded over Hiroshima. And in other fields, technical progress has been almost as rapid. The proliferation of new chemicals to be used in the manufacture of plastics, synthetic rubber, and for the bonding of plywoods and glass has come so quickly that one very large chemical company in the United States now estimates that more than 50 per cent of its sales are in products introduced commercially only within the last 25 years.[4]

Much of this progress has been accelerated by the requirements of defence. But there is an even deeper reason for the quickening pace. It is a characteristic of science that matters which once were the object of research and speculation quickly become tools for further advance. The particular electro-magnetic waves, for example, that are used in radar have themselves become valuable probes and have been productive of new discoveries. Similarly, controlled radiation from nuclear reactors has thrown new light on the firmament of the nucleus and has also been used to render a wide range of substances radio-active, so providing valuable new instruments for research in biology and in the strength of materials. It is as though science were a relay race where the baton held by the runners had properties that enabled each lap to be run faster than the last.

One consequence of the swiftness of the race has been that the distinction between science and technology has grown less sharp and less important. How much of the research done to produce nuclear weapons was theoretical and how much applied? Scientific discoveries opened up technological possibilities on which engineers went to work. But their

achievements — and their failures — posed new scientific problems which had to be solved before further technological progress could be made. And of course there have been other forces besides defence requirements that have been at work to translate scientific discoveries without delay into new goods. The pressure of competition and the imperious need to earn a profit on the large capital outlays required for many modern industrial processes have stimulated interest in possible by-products and promising innovations; the scarcity of labour in times of full employment and the pressure for higher wages have made necessary the development of machinery to increase output per man-hour; and the arts of advertising have been used to persuade the public that they want the new consumer goods that industry can turn out. What one has to picture is a set of great driving wheels — the anxieties of defence planners, the absorption of scientists in their chosen specialties, the competitive ambition of entrepreneurs — all accelerating the rate of change and combining to form a process in which product development and industrial research and theoretical inquiry are closely linked.

If all forecasting is hazardous, it is particularly difficult to guess what technological changes will have wide application in the future, since no one can tell what fundamental clarifications of our understanding of the physical world may be produced by luck and genius, and since this is the unpredictable basis of technological progress. Yet any view of the next two or three decades would be incomplete without some idea of the possible changes that science and technology may bring. If we must guess, we can perhaps comfort ourselves with the reflection that there are senses in which the future is here already. It is here in the sense that there are developments already visible that will spread and become of much greater economic significance. After walking through a highly automated chemical plant costing approximately $80 million and yet operated on some shifts by only 70 men, and after, in particular, having seen the whole operation supervised by two technicians who merely glance along a wall of gauges in the control room and every two hours log down the readings, the visitor may come away feeling that he has seen the future — and it works.[5] There is another sense as well in which the future is already present. It is present in the sense that the appetite for innovation and profit is now influencing planning and effort. So there may be some basis for talking about the changes that the future may hold, even though it must be realized that there is no way of ascertaining which of all the myriad possibilities will be realized.

In recent years the most spectacular changes in man's understanding of his environment and in his power to change it have been made by the physicists; and their work will undoubtedly continue to be the source of widespread innovations. In addition to generating energy, nuclear reactions may be used to sterilize food and to produce catalytic changes, so

increasing the variety of available chemicals. Automation will spread, and electronically controlled systems will increasingly be installed in industrial plants and where a large volume of clerical work has to be done. Electronic developments will also make possible improvements in communications. Colour television will be supplemented by facilities for receiving programmes from overseas and also for recording programmes for repetition at the individual's pleasure. Through the use of transistors, radios and telephones will be reduced to much smaller sizes and will become more portable. In the field of chemistry new uses for plastics will be developed and new ways of making them. It may become convenient and economical, for example, to pour houses entirely out of plastics in a single operation. It also seems certain that chemistry will more and more become the pervasive science both in metallurgy and in the forest products industry. Chemicals will be put to wider use to leach out minerals from the ore and to separate wood fibres and recombine them in new forms. In metallurgy the spread of chemical processing will make possible more continuous flow operations and more complete recovery of all the minerals that the ore may contain. Present operations in many pulp and paper mills are already highly automatic; but wider application of chemical processing will here again enable fuller use to be made of the raw materials. In both fields one result will be to widen the store of materials that can be profitably exploited. The biological and medical sciences, it may be hoped, will come into their own if only because of apprehension about the effect of radio-activity on human genes and the risk of mutations that might destroy the race. Experiments to test the effect of radio-activity on plants and animals and to deliberately induce mutations may result in hardier and more productive strains and so increase agricultural yields. More fundamental physiological research may throw light on how cells grow and divide. This may lead to knowledge of how to check the uncontrolled multiplication of cells that occurs in cancer and may even suggest how to mitigate the effects of aging.[6]

But that may be to look too far into the future, since it assumes fundamental discoveries that have not yet been made. If we were to follow that path, we would have to consider even more startling possibilities. Knowing that already the earth has been ringed by artificial satellites, we would have to take into account the possibility of interplanetary travel. And remembering that even now silk stockings and vanilla and newsprint are all made from wood fibre, we would have to scan the horizon for an age of metamorphosis in which almost anything could be made from anything else and where the nature of the initial raw material would be comparatively unimportant.

It is time, though, to decelerate through the stratosphere and return to the known world. After all, twenty-five years is not an inhuman distance to peer into the future. We, or our children, will see the world as it will

be then, and we can be fairly confident that whatever technical revolutions may be in store will not work themselves out so rapidly as to make it wholly unrecognizable. In all probability iron and steel, for example, will be of as great economic importance then as they are now; and many other raw materials will not have been displaced. We can be even more certain that the people of the world will not have changed radically. To speak only of Canada, we can be sure, if we can be sure of anything, that twenty-five years from now boys will still be going on camping trips and gardeners will still be growing sunflowers against the backyard fence.

Some World Trends of Economic Importance

The two most obvious conclusions of economic significance that emerge from surveying the peoples of the world would seem to be that world population is growing rapidly and that there are secular trends of opinion that may have as wide economic effects as other trends that are more amenable to measurement and analysis. If man sometimes seems an alien among the heights and abysses that have been opened up by his own scientific brilliance, he has managed more successfully to place himself near the centre of the economic universe. Ideas of what should be possible have been sown on the wind; have won wide acceptance; and have led economists and others to undertake the hard labour of trying to elaborate new theories and find new practical measures that would enable such hopes to be realized. The new structure is incomplete and in some respects untested. But it promises to be more habitable than any that has ever been known before.

a) World Population Growth

A word first, though, about world population growth. The increase that began in Europe towards the end of the seventeenth century and spread to other continents is still continuing. In preparation for the World Population Conference in 1954, the United Nations drew up population forecasts for the main areas of the world; and these have been revised by a member of our staff[7] to take into account new information that has since become available about the population of China and the Soviet Union and new population forecasts that have since been made both for the United States and Canada. These revised world estimates are shown in Table 2.1. Obviously they must be regarded as being even more conjectural than the estimates made for us of Canadian population growth, since they rest, in the case of many countries, on very sketchy census material. But if that warning is borne in mind, they can be of value in indicating the probable dimensions and continental distribution of the world population growth that is to be anticipated. In any case, they suggest that world population, which is currently increasing at an average annual rate of 1.3 per cent, will be almost 50 per cent greater twenty-five years from now than it is at present, rising from an estimated total of 2,690 million in 1955 to a projected

WORLD POPULATION
1920-80
(millions)

Continent	Estimated[a]					Projected[b]				
	1920	1930	1940	1950	1955	1960	1965	1970	1975	1980
Europe (incl. U.S.S.R.)	486	531	572	574	606	634	664	693	721	748
North America	117	135	146	168	183	198	213	229	249	270
Canada (excl. N.W.T. & Yukon)	(8.5)	(10.2)	(11.4)	(13.7)	(15.6)	(17.5)	(19.5)	(21.6)	(24.0)	(26.7)
Central and South America	91	109	131	162	183	205	230	259	291	327
Oceania	8.8	10.4	11.3	13.0	14.6	14.8	15.6	16.3	16.9	17.5
Africa	140	155	172	199	223	224	238	254	271	289
Asia (excl. Asiatic U.S.S.R.)	967	1,073	1,213	1,360	1,481	1,535	1,640	1,764	1,910	2,081
World total	1,810	2,010	2,250	2,480	2,690	2,810	3,000	3,220	3,460	3,730
	Percentage distribution									
Europe (incl. U.S.S.R.)	26.9	26.4	25.5	23.2	22.5	22.6	22.1	21.5	20.9	20.0
North America	6.5	6.7	6.5	6.8	6.8	7.0	7.1	7.1	7.2	7.2
Canada (excl. N.W.T. & Yukon)	(0.5)	(0.5)	(0.5)	(0.6)	(0.6)	(0.6)	(0.6)	(0.7)	(0.7)	(0.7)
Central and South America	5.0	5.4	5.8	6.6	6.8	7.3	7.7	8.1	8.4	8.8
Oceania	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Africa	7.7	7.7	7.7	8.0	8.3	8.0	7.9	7.9	7.8	7.7
Asia (excl. Asiatic U.S.S.R.)	53.4	53.3	54.0	54.9	55.1	54.6	54.7	54.9	55.2	55.8
World total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

a United Nations, *Demographic Yearbook* 1956, New York, p. 151.

b United Nations, *Proceedings of the World Population Conference* 1957, Vol. III, pp. 283-324. The population projections for Europe and Asia were revised to take into account revisions in the population estimates for 1950; Central and South America projection was revised because of more recent population projections for most of that area prepared by the United Nations; national population projections for the United States and Canada were used to revise the population projection for North America.

total of 3,730 million in 1980. The population of Europe over the same period and according to the same estimates may rise from 606 million to 748 million, and would then form a somewhat smaller proportion of the world total than it does at present. Concurrently, the population of North America may rise from 183 million to 270 million, with little, if any, change in its relative importance. A clear majority of all the people in the world now live in Asia, and its percentage of the total may be expected to rise slightly over the next twenty-five years, since its rate of annual growth would appear to be somewhat higher than the world average. The absolute increase to be expected in Asia over the next quarter century is so great that by 1980 that teeming continent alone may have a larger population than the total population of the world in 1930. The rate at which population is growing in Central and South America is higher than anywhere else and its population will probably surpass that of North America sometime within the next decade or two. Population is expected to grow in Africa at a rate close to the world average and its share of the world total is therefore likely to remain fairly constant at about 8 per cent.

b) Currents of Opinion

These last three regions — Asia, Central and South America, and Africa — together include approximately 70 per cent of the world's population. By and large, they are areas that are economically under-developed and it is here that the ferment of one of the great new ideas influencing economic growth is most apparent. It is the idea that all the peoples of the world should be able to benefit from technological change. Some of the under-developed countries have only recently emerged from semi-barbarism. Others have long traditions of civilization but for centuries have lain in lethargy. All of them, however, are passionately of the belief that they must rid themselves of crushing poverty if they are to make the most of their present human resources and of their past accumulations of wisdom. The report of the Commonwealth Consultative Committee that initiated the Colombo Plan, in speaking of the ancient civilizations of South and South East Asia, expressed the determination that these human riches should be liberated from the cloud of poverty so that they might "contribute toward the self-realization of individuals, toward the fulfilment of national aspirations, and toward the enhancement of the lives of other peoples throughout the world. The progress of science and technology has suggested ways in which this may be done; and, in an age when other countries are increasingly reaping the advantages of scientific and industrial advance, the hastening of a similar process in Asia cannot safely be delayed."[8]

The under-developed countries have watched what has been accomplished in the West and, through other methods, in the Soviet Union by

the application of science and technology; and clearly the outcome of the competitive struggle in which we are engaged will be affected not only by military comparisons but also by the comparisons drawn in under-developed areas, first, between our economic progress and stability and what is achieved in the Soviet Union, and, second, between the economic assistance that the two rival systems can make available. For a corollary of the idea that all the peoples of the world should be able to benefit from technological change is that under-developed countries may expect help from countries with more advanced technologies and with a higher standard of living. This is a principle that would seem to be as dangerous to deny as it is difficult to accept. It is difficult to accept because unless the aid is skillfully directed and unless under-developed countries are taking the initiative to create the conditions in which it can be effective, it may result in an almost meaningless dissipation of resources. It is dangerous to deny because under-developed countries that are not assisted by the West may turn elsewhere for assistance or may so lose all hope of economic betterment that they may be prepared to sacrifice the possibilities of political and individual freedom in exchange for an economic system that seems to promise a higher standard of living. Moreover, in a shrunken world the idea of humanity must have wider practical relevance. It may gradually become as unacceptable to the conscience of the West as it is now to the aspirations of the under-developed countries that there should be such gross disparities in human welfare throughout the world. In a remarkably short time the notion that such disparities cannot be tolerated within a single state has been accepted in almost all Western countries. To apply that principle throughout the world will be a much longer and harder task. But the issue has been raised and can hardly be wished away — even if Canadians were so disposed, which we do not for a moment believe.

The problems of economic growth in the under-developed countries are strongly coloured by nationalist sentiments. Many of these countries have only recently emerged from colonial status and believe that colonialism not only retarded improvement in their standards of living but distorted the structure of their economies. Now they are intent on fashioning an economic structure more to their own wishes. Sometimes nationalism may provide the motivation for economic policies in the under-developed countries that may prove more costly in the long run than they are inclined to think and which may twist their economies in one direction as far as they believe them to have been twisted in an opposite way in years gone by. Nationalism certainly also complicates the problem of extending economic aid effectively. But at the same time the achievement of national independence has provided a new opportunity for tackling the problems of economic development in these areas and has supplied new ardour for the attempt.

Not that nationalism anywhere in the world can be considered to be a spent force. Notwithstanding all the new international responsibilities of the United States, the conviction is strong there that the first objective of policy should be to maintain and increase the strength of the United States within its own borders if its new responsibilities are to be successfully fulfilled; and this conviction influences commercial and agricultural policy as well as the recurrent debates on defence. In Western Europe, the historic home of modern nationalism, the ancient panoplies have been hallowed by fresh victories and fresh defeats. National shrines have been sanctified because they became rallying points of resistance to the oppressor. Some Europeans have drawn the conclusion from new weapons, from the large-scale production that modern technology requires, and from the increasing polarization of the world between the United States and the Soviet Union, that larger groupings in Western Europe are necessary. But old traditions — and vested interests — are strong. And others, contemplating the new barbarisms, believe more firmly than ever that the ancient nations in Europe still have their own distinct, civilizing missions to perform. Whatever the reasons may be, it would clearly be mistaken to expect that the colours in any of the national blazons will quickly fade even in the apocalyptic light that modern science has created. Indeed, it may be argued that they are quietly and almost accidentally being restored by one of the effects of modern economic thought.

The idea that society has a responsibility to provide minimum standards of welfare for all its members has been making headway in the West for at least a hundred years; and the idea that the state should assume this responsibility is almost as venerable. Such ideas could hardly produce results of more than marginal charity, indeed could produce little more than a painful discord between mind and conscience, so long as it was believed that, if all artificial obstacles were removed, the automatic working of economic laws would result in the most productive allocation of resources. The flaws in that dogma were first convincingly revealed by Lord Keynes. Examining the flows of expenditure that sustain employment, he detected an inherent probability that situations would recur in which savings would not be put to work to produce all the goods and services of which the economy was capable. The result would be unemployment. The remedy was for those in control of national budgets and national currencies to take deliberate action at such times to increase the flows of expenditure for both consumer and capital goods. In periods when unemployment seemed to threaten, national governments should be prepared to run budgetary deficits. Conversely, in periods when effective demand for goods and services threatened to bid up the general level of prices, governments should budget for a surplus in order to drain off some of the excessive purchasing power. Lord Keynes' analysis also provided sanction for social security measures that would ensure at least minimum flows of expenditure even in times of slack business activity. All this mark-

ed a revolution in economic thought comparable to the revolution in theoretical physics that had been effected by Einstein only a few years previously. Only in this case it was a revolution that enabled man to stand at the centre of the economic orbits and to play with them as though they were his own instead of leaving him as a spark among the expanding nebulae.

It will be seen that one of the secondary effects of this revolution is to enhance the importance of national governments. They alone have control over currencies and can regulate the supply of money at will. They alone have budgets large enough for such budgetary changes as they may introduce to have significant effects on the economy as a whole. And they know that public insistence on the maintenance of high levels of employment is so strong that they would almost certainly be turned out of office if their endeavours were to prove unsuccessful. It may be that in time techniques will be devised for co-ordinating the employment policies of various national governments. Already exploratory efforts in that direction are being made by the United Nations and by the Organization for European Economic Co-operation. But it will be many years before that objective can be realized. In the meantime, the fact that the public in every Western country expects its national government to protect it against widespread unemployment and the fact that the highest level at which such action can be taken is at the level of national policy mean that nationalism has acquired a new justification and a new source of strength.

Admittedly it is too soon to judge how the new theories and the new measures to combat cyclical fluctuations in business activity will survive a major test. It must also be admitted that the new discoveries have raised new problems. In an age of full employment who will be found to do the dirty but necessary work? If government expenditures for desirable public works are to be deferred until there is a serious recession, will they be postponed indefinitely? What can be done to prevent inflation from becoming endemic? But to live and wrestle with these problems may be a small price to pay for deliverance from mass unemployment.

The winds of opinion will continue to blow across our borders carrying seedlings of new promise and new problems. We will also be open to rapid technological change, which will bring new challenges to our industries. We will feel the repercussions of political changes throughout the world and probably will continue to live under the threat of nuclear destruction. The only constant will be the certainty of change. That is a banal enough conclusion. But it may not always be easy to accept the prescription that would seem to follow from it. We will have to keep our minds and policies supple to deal with changing circumstances. We will have to keep our industries flexible so that they may adjust themselves

to changing demand and changing technology. Among the countries of the world we may count ourselves to be particularly fortunate and happy. But it would be folly to forget how deeply involved we are in a wider future. For, to borrow the terms used by Alfred North Whitehead, the world's occasions are all immanent here.

3

CANADA AND THE UNITED STATES

CANADA AND the United States live in a kind of symbiosis — two organisms separate and distinct, each with its own ends and laws; but highly interdependent, indissolubly sharing the same continental environment and, in spite of a great disproportion in wealth and economic power, each necessary to the other.

How closely the Canadian economy is intermeshed with that of the United States will appear in the following pages. But even the United States, a giant though it is in comparison, with a population 11 times as large as Canada's and a national income 15 times as large, has had reason during recent years to become aware of its need of its northern neighbour. If Canada must rely in large measure on the United States for defence against possible attacks, the United States requires Canadian co-operation for its own security. Simultaneously the United States has become aware that it is now a deficit country for many important raw materials which Canada can supply. Through much of this century the United States has imported nickel, asbestos, wood pulp and newsprint in large volume from Canada. But it was made clear in the report of the President's Materials Policy Commission (the Paley Commission) that the United States now needs to import, in addition, large quantities of iron ore, copper, lead, zinc and petroleum and that its dependence on foreign sources of supply for these raw materials will increase over the next twenty years. In relation to the size of its economy, the United States of course has a much smaller stake in foreign trade than Canada. In 1955, for example, commodity imports accounted for only about 3 per cent of its Gross National Product and commodity exports for only 4 per cent, whereas the comparable percentages for Canada in the same year were both close to 17 per cent. But of all United States imports in that year Canada provided 23 per cent. Not only was Canada the United States' principal supplier; it was also the United States' largest customer, as it has been ever since the end of the War, buying goods in 1955 to a total value of $3,452 million, or more than all the Latin American countries combined. These facts are known and appreciated by many in Washington, by American exporters who recognize the importance of the Canadian market and by American businessmen who have invested in Canada or who rely heavily on Canadian sources of supply. They are not perhaps fully realized by public opinion in the United States at large. Indeed, it may be unrealistic to expect that

they should be. Few Canadians, on the other hand, can be unaware of the pervasive intimacy of their economic relations with the United States.

Some first sense of how intimate those relations are may be obtained by considering the complications that arise from time to time from the long indenture of the common border. If a submarine cable is to be laid across the Strait of Georgia to transmit electric power to Vancouver Island from the mainland, it may be found that the most direct route lies through United States territory, so that permission must be sought from the Federal Power Commission in Washington. If an outbreak of foot-and-mouth disease necessitates closing the border temporarily to Canadian shipments of livestock, meat, and some other commodities (including hay and straw) in which the virus might be carried, not only are serious problems raised for cattle exporters and meat packers but mining camps in the Yukon are threatened with a stoppage of meat shipments to them across the Alaska Panhandle and farmers in Quebec and New Brunswick are deprived of the supplementary income that they could have earned by driving across the border with a team of horses to cut wood in the lumber camps of Maine and Vermont. It is also at the border that the most vivid sense is to be obtained of the gaps in the Canadian economy and of its dependence on United States output for many parts, components and materials that are not yet produced in Canada. To watch one truckload after another of structural steel beams roll across the bridge at Fort Erie or one freight car after another stacked with automobile body-stampings cross the river at Windsor is to receive an indelible impression of one important way in which the two economies fit together. Nor are the thousands of border crossings that Canadians make every day of the year without wide economic significance. A businessman flying to New York to clinch a deal or to attend a meeting of a trade association; a retired couple driving down to Florida or California to spend the winter; a student entering to take advantage of a fellowship offered by an American university; an expert on his way to a conference of his professional colleagues; such travellers may or may not have American goods to declare on their return but they all bring back with them something of American tastes, standards, customs and ideas. These are also spread with particular thoroughness in Canada by American periodicals, radio, television and films. As a result, there are probably no other two countries in the world that have such a close identity of consumer preference or business psychology.

Even if Canada were in the antipodes, however, we would feel the economic influence of the United States, and Canadian economic analysts would be busily scanning the figures of American steel production, car loadings, housing starts, consumer credit and other indicators for hints of the probable course of business activity in the United States. For the United States has been dominant in the world economy for some three decades. We need not describe here the manner in which it achieved economic

supremacy or the many and varied ramifications of this development. What is pertinent is the overwhelming degree of its industrial superiority. As is pointed out in the study made for us of *Canada-United States Economic Relations,* if the countries within the Communist orbit are omitted from the calculations, the United States produces about half of total world industrial output, generates more than half of world investment, creates about 40 per cent of world money income, and accounts for approximately 16 per cent of international trade. When all due allowance has been made for the hazards of statistical generalizations of this kind, these remain facts of inescapable importance which form part of the framework for any realistic discussion of international economic relations generally and of economic relations between Canada and the United States in particular.[1]

There are a number of questions, we suppose, that come to the mind of any Canadian when he thinks of economic relations between the two countries. Is the gap between the standard of living in Canada and in the United States likely to narrow or widen over the next two or three decades? Is the control of Canadian industry likely to fall more and more into American hands? How successful will the United States be in its efforts to master the business cycle? Will Canada become more or less vulnerable to business fluctuations generated in the United States? Will our economic relations with the United States become more or less intimate? To what extent will the rate of Canada's economic growth be determined by economic growth across the border and to what extent will it show some degree of autonomy? To seek answers to these questions we must turn to aggregate statistics and to the main links that mesh the two economies together — links of trade and investment and the institutional links between businesses and trade unions on both sides of the border.

Principal Economic Links

Until a few years after the end of the War the pattern of Canada's trade was triangular. Our imports came predominantly from the United States while our exports went predominantly overseas; and our deficit on current account with the United States was covered not only by capital inflows when the investment climate seemed favourable, but also by the surplus earned through our trade with other parts of the world. Vestiges of that trading pattern are still discernible. It is still true that we buy from the United States more than we sell, while we sell to the United Kingdom, to other sterling area countries and to Western Europe more than we buy, using the net proceeds of our trade with those areas to help meet our deficit with the United States. But our trade is now concentrated so preponderantly on the United States that for most purposes it has ceased to be useful to think of it as being triangular. We cannot afford to neglect any of our export markets. But new trading patterns have been drawn since the end of the War, and the old triangular configuration has been so narrowed as to be almost unrecognizable.

So far as there has been a change in the geographical pattern of Canadian imports, it has been gradual. Since the turn of the century Canada has imported more largely from the United States than from any other country; and the percentage of imports coming from that source has grown slowly but steadily until in 1955 it stood at a little less than 75 per cent of the total. Imports from across the border range from oranges to bulldozers, from coal to cotton textiles. But they are chiefly composed of machinery and equipment, consumer durables, and miscellaneous manufactured consumer goods. It seems likely that the volume of imports of such commodities will increase relatively faster than other items in the total import bill. If that turns out to be the case, we may expect a further increase in the percentage of imports coming from the United States.

The change in the geographical distribution of our exports, on the other hand, has been sudden and extreme. In 1947, as is shown in Table 3.1, the United States took 38 per cent of our merchandise exports, which

Table 3. 1

DESTINATION OF CANADA'S DOMESTIC EXPORTS

(PERCENTAGES OF TOTAL DOMESTIC EXPORTS, EXCLUDING GOLD, TO ALL COUNTRIES EXCEPT NEWFOUNDLAND)

	U.S.	U.K.	Continental Western Europe	Other countries[a]
1937	36	38	9	17
1946	38	27	12	23
1947	38	28	11	23
1948	50	23	10	17
1949	50	24	8	18
1950	65	15	6	14
1951	59	16	9	16
1952	54	17	10	19
1953	59	16	9	16
1954	60	17	9	14
1955	60	18	8	14

[a] Rounded, so that the total equals 100 for each year.

SOURCE: Roger V. Anderson, *The Future of Canada's Export Trade*, 1957, a study for the Commission, Chap. 2, p. 36.

was about the same proportion as in 1928 or 1937. By 1950 the proportion had risen to 65 per cent. The next year it slipped back, but only to 60 per cent, and currently fluctuates around that figure. What happened to produce such a remarkable shift in so short a time? Well, lumber which could not be sold in the United Kingdom because of currency difficulties found a market in the United States. The export controls that, since the early years of the War, had prevented sales of livestock across the border were lifted and meat and cattle to the value of more than $100 million were exported in 1948. The depreciation of the Canadian dollar to a 10 per cent

discount against the United States dollar in September 1949 provided Canadian exporters with an advantage in the United States market over domestic producers. By 1950 the defence build-up in the United States consequent on the outbreak of war in Korea in June of that year was already under way and was resulting in some defence procurement in Canada. But some of these developments were of a temporary character and none of them goes deep enough to explain the fundamental re-orientation in Canada's export trade that has taken place.

What has happened essentially would seem to be this. The United States has been growing at such a rate that it is now the most productive economy that the world has ever seen and has far outstripped all its rivals in the West. There would seem to be a presumption that such a rapid economic growth would result in a heavier concentration of Canadian exports on that market. That presumption remained unrealized through the 1930's because of the long-continued severity of the depression in the United States and because shortages of base metals and petroleum had not yet developed. The War greatly increased the United States' productive capacity (as it did that of Canada) while it impoverished the countries of Western Europe, so tilting the economic balance of power immensely in favour of North America. But the patterns of trade during the War years were so abnormal that they seemed to offer no guide to what might be expected in the post-war period. For a few years after the War the emerging realities were masked by the substantial credits which Canada extended to many of its European customers, notably the United Kingdom, in an effort to assist in the rehabilitation of the war-torn economies and to maintain traditional markets overseas, and in the hope that a liberal regime of world trade could be restored and the triangular pattern of Canadian trade recreated. But by 1947 the Canadian credits were petering out (although in the following year generous United States grants under the European Recovery Programme were beginning to finance some Canadian exports under the system of off-shore purchasing). At the same time the United Kingdom was undergoing the first of a series of exchange crises after a premature attempt to make sterling convertible, and Canada as well found itself in exchange difficulties because of a combination of heavy investment at home and exporting on credit abroad. The forces that had been latent in the situation then sprang to life. The relative ability of overseas countries to import from Canada was now seen to have been gravely weakened. Concurrently, new markets opened up in the United States, which were fostered by the deliberate efforts of Canadian producers. This redirection of trade was supported by continued high levels of business activity in the United States, by raw materials shortages there, and by the discovery of new resources in Canada. It now shows every sign of being permanent. Indeed, there will probably be a substantial increase over the next two or three decades in the share of Canada's exports moving across the border. This is partly because much of the capital invested in recent years in the

discovery of petroleum and in the development of iron ore has not yet resulted in the flow of exports to the United States that it was intended sooner or later to produce. It is also partly because other exports including, for example, uranium and the non-ferrous metals, which are marketed chiefly in the United States, are likely to grow proportionately more than exports such as wheat, which are marketed chiefly overseas.

If in considering the direction of our exports it is possible to look back and pinpoint a brief period in which occured a change of lasting importance, in considering United States investment in Canada, we stand rather in the very thick of change. Since the end of the War there has been a great acceleration in United States investment in Canada, which still seems to be continuing. Even in the inter-war period the growth of capital invested in Canada by United States residents was substantial. Until the First World War the chief source of external capital to finance our economic development was the United Kingdom. But so long ago as the early 1920's (as is shown in Table 3.2) investments by United States residents began to exceed those held in the United Kingdom; and in fact United Kingdom investments in Canada have never again reached the peak they attained in 1914, while United States investments have continued to grow. Since

Table 3. 2

FOREIGN CAPITAL INVESTED IN CANADA SELECTED YEAR ENDS 1900-55

(millions of dollars)

Year	Amounts owned by						Total non-resident investment
	U.K.	%	U.S.	%	Others	%	
1900[a]	1,050	85	168	14	14	1	1,232
1914[b]	2,778	72	881	23	178	5	3,837
1918[b]	2,729	60	1,630	36	177	4	4,536
1926	2,637	44	3,196	53	170	3	6,003
1930	2,766	36	4,660	61	188	3	7,614
1939	2,476	36	4,151	60	286	4	6,913
1945	1,750	25	4,990	70	352	5	7,092
1948	1,610	22	5,567	74	332	4	7,509
1954	2,181	17	9,692	77	704	6	12,577
1955	2,347	17	10,289	77	832	6	13,468

a Estimated by Dr. Jacob Viner, *Canada's Balance of International Indebtedness 1900-1913*, (Cambridge, 1924).
b Estimated by Professor F. A. Knox in Excursus appearing in Marshall, Southard and Taylor, *Canadian-American Industry*, (New Haven, 1936).

SOURCE: Irving Brecher and S. S. Reisman, *Canada-United States Economic Relations*, 1957, a study for the Commission, Table 16, p. 88.

the last War, however, the increase has been much more rapid. From 1945 to 1955 total capital invested in Canada by United States residents increased from $4,990 million to $10,289 million. In other words, United States investment in Canada grew substantially more during that

decade than in the whole period from 1900 to 1945. United States investment in this country now represents some 77 per cent of all the foreign capital invested here as compared with 17 per cent held in the United Kingdom and 6 per cent held elsewhere. Moreover, the growth continues unabated. In 1956 alone, United States capital invested in Canada increased by over $1,300 million.

Most of the increase since the end of the War has been in the form of direct investment. It represents, that is to say, additional capital invested in branches of United States corporations; or in Canadian subsidiaries either wholly owned by United States parents or at least controlled by them; or in Canadian companies with more than 50 per cent of their capital stock owned across the border, even though there may be no parent concern. In that respect, the present spate differs from the United States investments that were made in Canada during the last great period of expansion in the 1920's. Some of the increase during that period took the form of direct investment in the automobile, electrical, aluminum and pulp and paper industries, for example. But a very substantial amount of it was in the form of portfolio investment and was typically directed towards bonds and other fixed interest securities rather than towards equity stock. Of all the increase in United States capital between the end of the War and 1955, only about $1,000 million or some 20 per cent was in the form of portfolio investment. All the rest was invested directly to expand existing enterprises or to develop new industries; and indeed, since 1945 the United States has accounted for all but some $800 million of the increase in direct foreign investment in Canada. The growth in direct investment has been motivated for the most part either by a desire to develop additional sources of supply for raw or semi-processed materials or by a desire to open the Canadian market more effectively to products of parent companies in the United States. For that reason it has been concentrated in a comparatively few areas of the economy — in petroleum development, mining and smelting, and manufacturing.

In a later chapter an attempt will be made to set out in some detail the facts about the growth of foreign investment in Canada and to elucidate their implications. Here it may be enough to anticipate a few of the conclusions of that analysis. The increase in United States investment in Canada, accompanied as it has been by new technology and managerial skills, has clearly resulted in a faster rate of economic growth than would otherwise have been possible. At the same time, since it has chiefly taken the form of direct investment, it has led to United States residents acquiring a controlling interest in many of our largest and fastest growing industries. The book value of Canadian companies in which a controlling interest is held in the United States accounted at the beginning of 1955 for 68 per cent of the total investment in the petroleum industry, for 51 per cent in the chemical industry, for 95 per cent in the automobile and parts industry,

and for 45 per cent in the pulp and paper industry; and all these percentages have been increasing. Moreover, since a large part of the increase in direct United States investment has been in branch plants or wholly-owned subsidiaries, and since, further, it has been financed in large measure from retained profits and depreciation allowances, there seems little reason to expect that the current trend towards greater United States control of some of our fastest growing industries is likely to be reversed unless there is a change in present corporate practices or government policies.

The corporate links between the United States and Canadian business enterprises are paralleled by the links between trade unions on both sides of the border. In 1955 there were 1,268,207 trade union members in Canada, and of these slightly more than 70 per cent belonged to unions with international affiliations in the United States.[2] Indeed, the only Canadian unions of any size that are without such affiliations are the syndicates in the Province of Quebec joined together in the Canadian and Catholic Confederation of Labour;* the Canadian Brotherhood of Railway Employees and Other Transport Workers; some civil service unions; and unions of fishermen on the East and West Coasts. Canadian participation in international unions arose naturally during the period when migratory labour played a more important part in the economy than it does today, and when movement back and forth across the border was easier. It was also natural for Canadian locals, when they were in an early stage of their development, to welcome assistance from organizers from the parent headquarters. Although there are differences in constitution and structure among the various unions that now form the Canadian Labour Congress, perhaps the typical situation is one in which a Canadian sits on the international executive and a Canadian organizer heads the district in which locals in this country are grouped. In almost every case, part of the dues paid are remitted to the account of the international headquarters, which renders a number of services in return and which also reserves the right to approve or disapprove proposed strike action. In most cases new contracts have also to be ratified by the international headquarters, although usually this is little more than a formality and Canadian unions ordinarily enjoy wide latitude in negotiating new contracts. They do, however, often receive advice from officials of the international headquarters in the course of collective bargaining, and in this way United States wage agreements no doubt have some indirect influence on the wage rates and other benefits obtained by Canadian labour. On the other hand, it seems clear that the wages paid in the United States for comparable work would play an important part in labour negotiations in Canada even if Canadian unions had no international affiliations.

---

* The C.C.C.L., however, has entered negotiations to join the Canadian Labour Congress, which in turn, of course, has fraternal relations with the American Federation of Labor and Congress of Industrial Organization.

Economic Similarities and Differences

These corporate and union links that span the border would ensure that there would be significant similarities between Canada and the United States in economic behaviour, in economic conditions, and in economic growth. But, as has been already suggested, that would be in large measure true even without them. From one point of view the border is an immense plate-glass window through which Canadians look at a profusion of goods of every sort for sale. They also can readily see how Americans live, what comforts they have, what is in their pay packets, and in general, what standard of living they enjoy. More than that, many of the attitudes that have a bearing on economic progress have been shaped by similar historic circumstances in both countries. For both Canada and the United States the conquest of the wilderness represents an heroic age of the recent past, which, in Canada at least, has not yet come to an end. That is perhaps one reason why, insofar as there is a typical United States attitude towards material things, it is shared by many Canadians. Canadians also share with Americans much the same attitude towards the collectivity and the individual. How the typical North American view on this central problem of social organization differs from the approach to it common among the French, say, or the English or the Slavs, would need a nice discrimination to define. Something of its quality, however, may perhaps be suggested by a sentence from an early settler's letter quoted by Frederick James Turner in his classic work on *The Frontier in American History*. "It is a universal rule here", the settler wrote, "to help one another, each one keeping an eye single to his own interest."[3] That attitude, strongly coloured by the struggles of pioneer days, is still widely prevalent in Canada as it is in the United States.

What impressed earlier observers of economic conditions in the two countries, however, was not so much the similarities as the differences between them. In 1818 a Presbyterian minister from Scotland who was travelling down the St. Lawrence and had spent the night in Prescott on the Canadian side of the river, had occasion to cross over to Ogdensburg on the American side, and being struck by all the activity there, remarked that "the contrast of apathy and inexertion on the one side of the river with bustle and business on the other cannot but be mortifying to one of genuine national feelings".[4] In 1839, when Lord Durham relinquished his Commission and submitted his *Report on the Affairs of British North America,* he devoted considerable space to the contrasting social and economic conditions of the two countries and reported that they were "the theme of every traveller who visits these countries and who observes on the one side of the line the abundance, and on the other, the scarcity of every sign of material prosperity which thriving agriculture and flourishing cities indicate, and of that civilization which schools and churches testify".[5] A traveller of genuine national feelings would not be so mortified if he were

to travel down the St. Lawrence today. He would find, we imagine, quite an adequate amount of bustle on the Canadian as well as on the American side of the river as he watched channels being dredged for the Seaway and cement being poured for the power-houses at Barnhart Island. Nor could such discouraging comparisons now be drawn between activity in Montreal and in the cities of Upper New York State as Lord Durham discovered a century ago. Yet it would need no very shrewd observer to notice that Canadians are still not so well off as their neighbours in the United States. They eat steak a little less often; they own fewer cars; they come to work more often with frayed collars. For the fact is that, if Canada has a higher standard of living than any other country in the world except the United States, the gap in this respect between the two countries is still substantial.

Whatever criterion is taken — whether national income per capita or disposable personal income per capita or average weekly earnings — the conclusion seems to be that the Canadian standard of living is from 25 per cent to 30 per cent below that of the United States. None of the relevant statistics (which are shown for 1955 in Table 3.3) are gathered on a strictly comparable basis in the United States and Canada; and the same is true of the various price indices that can be used to reduce them to real terms. Nevertheless, the statistics would seem to be reliable enough to warrant the conclusion that the differential between the standards of living of the two countries falls within the general range that has been indicated.

The Gross National Product is not of course a measure of welfare; but it is perhaps as well to start with it since it is the most familiar, and perhaps the most pertinent, aggregate measure of the economy's output and sets at least an outer limit to the average standard of living that is possible for individual citizens. In 1955 per capita Gross National Product in the United States was $2,366, while the parallel figure for Canada was $1,719. Per capita national income in Canada was therefore 27 per cent lower than in the United States. To have some idea of whether a differential of that order of magnitude accurately reflects the comparative ability of residents of the two countries to satisfy their material wants, it is necessary to have some judgment of the comparative purchasing power of the United States and Canadian dollar. None of the price indices compiled in the United States and Canada will provide an answer to that question; but it would seem that in recent years living costs have been much the same in Canada as in the United States. While the costs of basic foodstuffs are lower here, most manufactured foods cost rather more. Consumer durables are also more expensive here, but services cost less. Insofar as it is possible to think of a typical basket of goods and services bought by comparable Canadian and United States consumers, the cost would not differ very widely. Nor would an examination of the prices of

other components that enter into Gross National Expenditure tend to suggest much disparity between the purchasing power of the Canadian and the United States dollar. The price of industrial machinery is substantially higher in Canada than in the United States, while construction costs are about the same. On the other hand, many of the services purchased by governments are cheaper in Canada than across the border.

Table 3.3

COMPARATIVE ECONOMIC POSITION OF CANADA RELATIVE TO THE UNITED STATES IN 1955

Economic indicators	Canada	United States	Canada as a percentage of U.S.
			%
	(1)	(2)	(3)
Population (millions)	15.6	165.2	9.3
Labour force (incl. armed forces) (millions)	5.68	68.9	8.2
Labour force participation rates, labour force as a per cent of population 14+	53.3	58.0	91.9
Gross National Product	*Cnd. $*	*U.S. $*	
Total 1949 dollars (billions)	21.6	344	6.3
current dollars (billions)	26.8	392	6.8
Per capita 1949 dollars	1,384	2,081	66.5
current dollars	1,719	2,366	72.7
Per worker 1949 dollars	3,801	4,990	76.2
current dollars	4,716	5,673	83.1
Disposable personal income	*Cdn. $*	*U.S. $*	
Total current dollars (billions)	18.2	270.6	6.7
Per capita current dollars	1,168.7	1,637	71.4
Per worker current dollars	3,206.5	3,927	81.7
Personal consumption expenditures	*Cdn. $*	*U.S. $*	
Total 1949 dollars (billions)	14.3	226	6.3
current dollars (billions)	16.9	254	6.6
Per capita 1949 dollars	918.3	1,366	67.2
current dollars	1,084	1,537	70.5
Per worker 1949 dollars	2,519.4	3,274	76.9
current dollars	2,975	3,686	80.7
Average hours per week			
Manufacturing — year's average	41.0	40.7	100.7
— selected week	41.5	41.1	101.0
Non-agricultural — private sector	41.3	38.9	106.2
Wage rates — manufacturing	*Cdn. ¢.*	*U.S. ¢.*	
Average hourly	144.8	191.0	75.8
	Cdn. $	*U.S. $*	
Average weekly	59.25	76.52	77.4
Output per man-hour (1949 dollars)	*Cdn. $*	*U.S. $*	
Total private sector — G.N.P.	1.83	2.49	73.3

SOURCE: Irving Brecher and S. S. Reisman, *Canada-United States Economic Relations*, 1957, a study for the Commission, Table 34, p. 224.

With a comparison of per capita disposable personal income, we come closer to figures that have meaning for the average Canadian as he draws his wages or buys the groceries. In 1955 per capita personal disposable income in Canada amounted to $1,169, which was 29 per cent lower than the parallel figure for the United States of $1,637. Much the same differential is revealed by a comparison of average weekly earnings in all manufacturing in Canada and the United States. According to information supplied to us by the Department of Labour, average weekly earnings in manufacturing in the United States in 1955 were $76.52, while in Canada they were $59.25. In the same year the average hours worked per week in manufacturing industries in the two countries were almost identical. In other words, a Canadian factory worker typically earned from 25 per cent to 30 per cent less than a factory worker in the United States, although working approximately the same number of hours.[6] Since the end of the War the spread in average weekly earnings has narrowed somewhat. At the same time, Canadian wage earners in the manufacturing industries have improved their relative position in another way, since the average number of hours worked per week in Canada has been falling more rapidly than in the United States.

What are the reasons for the lower standard of living in Canada than in the United States? One can refer to comparative productivity statistics and say that output per man-hour in the private sector of the Canadian economy is substantially lower — perhaps by 25 per cent to 30 per cent. But that is merely to point out that the United States economy as a whole out-performs ours, and to suggest the extent of the difference. Why is it more productive? To answer that question fully, it would be necessary to trace the concurrent and inter-related processes through which the United States and Canadian economies have been formed. Clearly that would be impossible within the compass of a short chapter, even if we were capable of it. But perhaps in one or two paragraphs it may be possible to suggest some of the main differences in the economic evolution of the two countries.

When the colonial period came to an end in the United States, it had a much larger population than was to be found in Canada and they were living in a more clement climate with more abundant, varied and accessible resources. The degree of economic growth that these circumstances made possible attracted labour and capital from Europe and particularly from the British Isles. These in their turn promoted further economic progress, which gradually began to acquire a momentum of its own as settlements moved westward and as industry began to flourish. Increasingly this process created conditions through which it could be perpetuated. Industrial skills were developed. Entrepreneurs found new opportunities, seized them, and gained self-confidence for still further undertakings. A basic network of communications, other public services, and financial

institutions was laid on which further economic development could be built. And the whole process was reinforced and hastened by a protective tariff which led more rapidly to the establishment of new industries than would otherwise have been possible.

Meanwhile, as the American economy through the middle decades of the nineteenth century was beginning to turn on its own spindle,[7] Canadian economic development was still hesitant and highly colonial in character, being dependent on the export of a comparatively few staple commodities, none of which were essential in terms of the technology of the day or for long indispensable to the countries which imported them. The Canadian economy was stimulated for a while by the Reciprocity Treaty of 1854 with the United States and perhaps even more by the export opportunities provided by the Crimean War and by the American Civil War. But for the most part this expansion was shallow and short-lived. Population grew comparatively slowly. Wheat exports flourished only spasmodically. Many Canadian settlers subsisted as best they could with very narrow markets for their agricultural produce. There was little industrial growth. The contrast between the economic development of the two countries was perhaps at its sharpest during the last three decades of the nineteenth century when the development of the American far west was attracting large flows of capital and immigrants to the United States and leaving Canada in a backwater.[8] It was only in the opening years of this century, after most of the available land in the United States had been occupied and after methods had been successfully found for farming the Canadian prairies, that capital and immigrants were drawn to Canada in large volume and that the wheels of Canadian economic progress began to take fire from the rapidity of their own motion. Henceforward Canadian economic development was to be promoted rather than retarded by economic development across the border.

Leaving these historical comparisons and turning to things visible today, it seems to us possible to pick out a number of present differences which help to explain why Canadian productivity and Canadian standards of living are lower than those of the United States. Our more rigorous climate is sometimes thought to be largely responsible; and clearly our colder winters provide at least part of the explanation, since they add to the costs of both construction and transportation. But the economic importance nowadays of climatic differences between the two countries is probably less than is ordinarily supposed.[9] Also of some relevance is the higher proportion of national income spent on transportation in Canada than in the United States, although it would seem that in recent years the relative burden of these national overhead costs has been declining and is now not very much heavier than it is across the border. A more important reason, in our opinion, for lower Canadian productivity and standards of living is to be found in the higher proportion of the Canadian labour force

employed in agriculture. If over-all productivity statistics say little about the reasons why Canada's standard of living is below that of the United States, it is significant that agricultural productivity, although increasing rapidly, is considerably lower than productivity in other sectors of the economy both in the United States and Canada and that in this country the numbers employed in agriculture are proportionately much greater than across the border. In 1955 some 15 per cent of the total Canadian labour force was employed in agriculture, while in the United States agriculture accounted for only about 10 per cent of the total. It also seems true that there is relatively more subsistence farming in Canada, much of it on sub-marginal lands, from which only meagre cash incomes can be drawn. And more generally it may be that, compared with the United States, the Canadian economy has relatively more depressed patches where productivity is low, such as the salt-cod fishery on the Atlantic Coast and the coal mining industry in Cape Breton. Even in sectors of the economy that are roughly comparable with their counterparts in the United States, productivity is substantially lower. This is notably true of secondary manufacturing in Canada, where productivity would seem to be from 35 per cent to 40 per cent lower on the average than in the United States. The reasons for this difference are no doubt complex. But the principal explanation undoubtedly is the small size of the domestic market, which makes it impossible for most Canadian manufacturers producing primarily for it to plan for long runs and so to reap the economies of mass production and specialization in the form of lower unit costs. Because of the need to use more versatile machinery and to adjust it frequently in shifting from one production run to another, most of Canada's secondary manufacturing industries are precluded from having such highly capital intensive operations as their competitors in the United States and from achieving such high levels of output per man-hour.[10]

Lines of Division

We have already spoken of the bands that run north and south and loop the two economies together. But there are also highly important bands that run transversely across the continent dividing the two economies. These are the United States and Canadian tariffs. As much as anything else, it is the pattern of production in Canada that they have crystallized which accounts for the differences in average income and standards of living between the two countries.

The importance of the United States tariff for Canada is illustrated by the fact that the occasions on which there have been major reductions in duties on key Canadian commodities are red-letter dates in Canada's economic as well as commercial history and have largely affected the pattern of Canadian industrial production. When, for example, the United States granted free entry to Canadian newsprint in 1911 and to wood

pulp in 1913, it followed almost inevitably that the Canadian pulp and paper industry would concentrate on manufacturing those two commodities to the virtual exclusion of other possible wood products.[11] One outstanding feature of the United States tariff — as of the tariff of many other countries — is that it provides for free entry or entry at very low rates of duty for industrial materials in their raw form or in an early stage of processing and imposes progressively higher rates on goods at a more advanced stage of manufacture. Were it not for that fact, it seems highly likely that with access to a continental market, Canada would have been able to produce fine papers economically and export them to the United States; to send a larger percentage of its output of base metals across the border in a more highly refined or fabricated form; and to compete in the United States market with some of the chemicals that can be produced from oil and natural gas. The clearest illustration of the stunting effect of the United States tariff on the growth of Canadian industry is perhaps to be seen on the St. John River between New Brunswick and Maine. At Edmundston on the Canadian side of the border is a plant producing wood pulp. But over the middle of the stream hovers the phantom presence of the United States tariff. So instead of being further processed in Canada, the pulp is piped across the river to be made up in the United States into high-quality paper in another factory belonging to the same company. If the United States tariff had not had such a determining influence on the structure of Canadian production, Canada would make more of the things it can make best and there would be a more productive allocation of resources resulting in a higher income per head.

Inability to secure entry into the United States market for many of the goods that could advantageously be produced here had a bearing on the decision to increase Canadian tariff protection with the National Policy of 1879. But many Canadians of that day were also persuaded that there could not be a separate nation in the northern half of the continent unless deliberate steps were taken to promote the development of domestic manufacturing; to stimulate an east-west movement of trade; and to emulate the complex economic growth, with its wider employment opportunities and circumstances favourable to still further economic advance, that had been watched and envied in the United States.[12] One effect of the Canadian tariff has clearly been to increase the price to Canadians of many commodities on which duties are levied. More broadly, it must be recognized that in the absence of the tariff there would have been a different and more productive allocation of the factors of production in Canada with a consequent increase in real income per capita, although it is more open to question what the effects would have been on the number and variety of employment opportunities, on population growth and on the complex process of economic development.[13] In any event, no generation of Canadians has been prepared to reverse the basic decision taken in the era of Confederation. There have been continuing arguments about

the proper level of the tariff and about its incidence on particular areas and interests in the country. But, on the whole, Canadians have been willing to pay the price that the tariff exacts in lower average incomes, regarding it as part of the legitimate cost of nationhood.

Differential Rates of Growth — and Future Prospects

Besides the disparity in average real income there is another difference between the two countries that is more flattering to Canadian pride. Over the past thirty years Canada has been growing somewhat faster than the United States. The Canadian birth rate has been higher than across the border; and for this reason and because of the relatively higher flow of immigrants into Canada, population has been increasing more rapidly than in the United States. Between 1926 and 1955 the average compound rate of annual increase of the Canadian population was 1.74 per cent, while the rate in the United States was 1.18 per cent. The Gross National Product has also been growing more rapidly. During the same period the annual average rate of increase in Canada was 3.61 per cent as against 2.94 per cent in the United States. Within this long-term trend three shorter periods may be distinguished: the years from 1926 through 1928, during which there was a Canadian annual rate of growth of more than 7 per cent compared with a rate of less than 2 per cent for the United States; the 1930's, when there was a similar rate of decline in both countries, although slightly less marked in Canada; and the post-war period, when there were high rates of growth in both countries, with the Canadian rate fractionally higher than that of the United States. For the three decades as a whole the comparative position can be summed up in the observation that in 1955 Canada's Gross National Product amounted to 6.3 per cent of that of the United States, whereas in the period from 1926 to 1928 the average was 5.6 per cent.[14] Investment as one of the mainsprings of economic activity provides not only a criterion of current growth but also a basis for gauging potentialities for future expansion. Comparable sources for both Canada and the United States are not available for the whole of this period. However, such information as it has been possible to put together permits a number of generalizations. The most striking fact is that in the two periods of rapid growth since 1926 — the late 1920's and the post-war years — a substantially higher proportion of income was devoted to investment in Canada than in the United States. In addition, investment has increased at a considerably faster rate in Canada and high levels of capital formation have been sustained more consistently in this country, particularly in the past decade. This recent period is of special interest because of its greater relevance for future economic expansion. Between 1946 and 1955 Canada devoted on the average about 18 per cent of its Gross National Expenditure to gross private domestic investment (excluding inventories) while the comparable figure for the United States was about 14 per cent. During this same

period capital outlays in Canada increased from $1.9 billion to $4 billion (measured in constant 1949 dollars) or by 115 per cent; for the United States, by contrast, the increase was from $24.6 billion to $43 billion (measured in constant 1947 dollars) or 75 per cent.

There can thus be a differential between the rate of growth of the Canadian and the United States economies. But care should be taken not to draw too large conclusions from that fact. As is indicated by the trade and investment figures cited earlier in this chapter, Canada's economic growth is closely tied in to the American grid; and it is inconceivable, for example, that there could be rapid expansion here with the United States economy stagnant, although the rates of growth can certainly differ. Without Canadian enterprise, the stability of Canadian institutions, the possession of natural resources that are in wide demand, a high birth rate and substantial immigration, our economic growth would not have been so remarkable. But on the other hand, much of the liveliness in the air comes from our being next door to a huge productive machine revolving in a field highly charged with technical skill and the appetite for innovation. That is the dynamo that supplies much of the current to make our atmosphere crackle.

The capacity of the United States economy will continue to expand and although there will continue to be fluctuations in business activity that may sometimes be of a relatively serious kind, it seems reasonable to anticipate that, given good luck and the degree of good management in the United States that we expect, it will operate much of the time at close to peak loads. Without expectations of that kind we could not be so optimistic about Canada's economic future as our projections suggest. No precise inference, however, should be drawn from a comparison of our forecasts with those that have been made for the United States. According to the latest estimates prepared by the Bureau of the Census in Washington, the population of the United States in 1975 is expected to range between 207 million and 229 million people. The projections made for the Paley Commission of the anticipated growth of Gross National Product are the only estimates of output that look so far into the future. But they were based on earlier Bureau of the Census population figures that have subsequently been revised upwards. If they are arbitrarily increased by 10 per cent (as seems reasonable) to make allowances for changes in the population data, Gross National Product in the United States might increase from $391 billion in 1955 to $705 billion in 1975 in constant dollar terms. Projected growth of that order of magnitude is one of the important grounds for our confidence in the future growth of the Canadian economy. The only comparative judgment we would care to hazard is that there seems little reason why the Canadian economy should not continue to grow at least as rapidly as the American.

We are more hesitant about guessing whether the gap in living standards between Canada and the United States is likely to narrow or increase, since any judgment on that point must depend on highly fallible comparisons of output per man-hour in the two countries. However, such statistical data as we have been able to develop would seem to suggest that productivity in the private sector of the economy has been increasing somewhat more rapidly in Canada than in the United States. If that is true and if such a trend persists, the gap in average incomes and standards of living should decrease. An expectation of that sort would be supported by the higher level of capital investment that has been taking place in Canada, much of which has not yet resulted in higher output per man-hour. Further justification for it could also be found in the trend towards a relatively lower volume of imports reflecting some improvement in the competitive position of Canadian secondary manufacturing industries, a number of which now seem able to produce at costs closer to those prevailing in the United States. On the other hand, such optimism could be falsified if technological changes of a revolutionary kind requiring production on a scale too large to be economical in Canada were to be introduced in the United States.

The Canadian economic growth that has taken place since the end of the War has been more rapid than that during any period of comparable length in our history; and it has been considerably more sound and balanced than the growth that occurred during the inter-war years. Here would seem to be one important explanation of why we have been becoming slightly less sensitive to cyclical downswings in business conditions across the border. That there has been such a trend, at least since 1929, is suggested by the examination that has been made for us of all significant fluctuations in the United States since the end of the First World War and of their effects on our economy.[15]

Even if Canada were completely insulated from the United States, the large amount of capital per unit of output needed by many of our industries, our high levels of income and savings, and our large personal expenditures on consumer durables would mean that the Canadian economy would be capable of generating quite respectable fluctuations of its own without any outside assistance. It can also be sensibly affected by tremors coming from Western Europe rather than North America. But normally these are hardly more than overtones. For our economy, the dominant modulations are those coming from across the border. We have long been highly sensitive to changes in business conditions in the United States; and we will continue to be. But the evidence suggests that our degree of sensitivity may be slightly diminishing.

That might seem paradoxical in view of the increasingly close relations between the two economies that have developed over the past twenty-five years. One explanation appears to be that the Canadian economy, growing,

as it has been, at a rapid and steady pace in recent years, has acquired a resilience of its own that has made it somewhat less susceptible of being thrown off balance by recessions originating in the United States. Another reason for the slightly reduced vulnerability of the Canadian economy, of course, is that it is now stabilized by such measures as a progressive pay-as-you-go personal income tax, unemployment insurance, old age security and assistance payments, and family allowances. Some of these measures involve variable receipts and expenditures and have an automatically contra-cyclical effect; all of them serve to support effective demand in periods of slackened business activity. Furthermore, the effectiveness of monetary and budgetary policy to moderate cyclical fluctuations has been enhanced by the absolute growth and increasing diversification of the economy, so that a relatively wider area is receptive to interventions by the Federal Government. If, for example, foreign investment, especially from the United States, has been mounting phenomenally, it nevertheless forms a smaller percentage of gross domestic investment than it did twenty-five years ago. Similarly, foreign trade is now a smaller percentage of Gross National Expenditure; and since the effects of United States recessions are usually felt widely throughout the world, that falling ratio may be as important for an understanding of our apparently somewhat reduced sensitivity to cyclical movements in the United States as the ratio (which has remained almost constant over the last quarter century) of our exports across the border to our total output. In other words, although the links that join the two economies and that transmit American business fluctuations to Canada have greatly increased, there has been at the same time an immense growth in the Canadian economy and a growth, it would seem, of a more healthy and balanced kind than occurred during the last great period of expansion in the 1920's. At the same time the commodity composition of our imports has been swinging towards a higher proportion of durable and investment goods, which show a more marked downward response to the influence of recessions; and this trend has also contributed towards dampening somewhat the transmission to Canada of United States fluctuations. These facts, together with greater knowledge of how the economy can be stabilized, would seem to be the principal reasons why we may now be a little less vulnerable to shocks reaching us from the United States.

We are also disposed to accept the view that this modest trend is likely to continue. That judgment is based on the expectation that over the next two or three decades the relative importance to the economy of foreign trade and foreign investment will gradually decline. It also depends on confidence that with experience the touch and timing of those responsible in Canada for trying to maintain high levels of employment while avoiding inflation will become increasingly sure and deft.

All this applies, however, to comparatively shallow downswings of the kind that were experienced in 1953 or 1949. A major United States

depression would still have devastating consequences for Canada, although no doubt more effective measures would now be taken to shelter us in some degree from its full impact than were taken, or even seemed possible, in the 1930's. But, in our opinion it would be wrong for Canadians or others to brood too much over that contingency. For the purpose of making economic projections we have found it necessary to assume that a major United States depression can be avoided. That is more than a necessary assumption, though. We believe there are good grounds for thinking it may well be justified. The United States of today in its institutions, its tax structure, its business and social philosophy, is very different from the country that hurtled to depression in 1929. Its banks and stock exchanges are much more carefully regulated and supervised; mortgage lending is more widely guaranteed; it has a system of social security and unemployment insurance which has wide coverage and important stabilizing effects; both the two major political parties have shown that they accept in practice the body of doctrine designed to moderate fluctuations in the business cycle; and efficient arrangements have been made within the United States Government and the Federal Reserve System to keep the state of the economy under constant scrutiny and to bring to bear upon it such influence as may be exerted by deliberate contra-cyclical measures. Full-employment policy is an art of blunt instruments. Only its practitioners perhaps fully appreciate how blunt the instruments are and how much skill is required if they are to be used effectively. But the experts charged with such responsibilities in the United States, aided as they are by particularly full and prompt statistics, would seem to be as skilful and successful as any in the world, although their task is complicated by having to be carried out within a government of deliberately divided powers. Yet, of course, there can be no final assurance that there will never again be a major depression in the United States. If there were, Canada's economic growth would be arrested, even though it might be hoped that measures would be taken to muffle the shock and thus protect the citizens of this country from the worst of the waste and misery that would result.

Leaving that dire possibility aside, we find it easy to visualize a prospect over the next two or three decades in which the Canadian economy would continue to grow at least as fast as the American, in which the spread between standards of living on one side of the border and the other would narrow a little, and in which the Canadian economy would become slightly less vulnerable to United States recessions.

Yet the disproportion between the two countries in size and wealth and economic power would be almost as great as it is today, and the network of economic ties between them would be even more closely knit. In such circumstances, it is perhaps only natural that by far the smaller of the two organisms, living together to their mutual benefit, should feel that there are risks to its integrity involved in the relationship. We would

venture only two general suggestions. Such economic problems as may arise from time to time between the two countries would be eased, in our opinion, if more Americans could remember to think of Canada, not as a hinterland, but as a country. Canadians, for their part, while taking such action as may be necessary to provide the economic basis for the nation they are building in the northern half of the continent, would do well to recognize how much they have profited from having as neighbours a people so productive, so ingenious and so capable of magnanimity.

4

THE PROSPECTS FOR WORLD TRADE

SINCE CANADA'S prosperity will continue to depend in great, although gradually diminishing, degree on its foreign trade, we have felt obliged to speculate a little about the future of world trade as a preliminary to considering in later chapters the market prospects for our principal export commodities.

As we have seen in Chapter 2, a very large increase in world population is anticipated over the next two or three decades. At the same time it may be expected that most national governments will remain determined to stabilize employment at high levels and that the under-developed countries of the world will be actively furthering their own economic development. For these reasons there is a presumption that there will be need in many parts of the world for many of the commodities that Canada has to sell. In some countries population growth may inhibit a rise in economic activity. But in many countries of the world and for considerable periods of time we believe that one or other of the three factors that we have mentioned will be working, either separately or together, to produce high levels of economic activity and to create requirements for industrial raw materials, including minerals, chemicals and forest products. Although the volume of world trade has not been keeping pace with the growth in output thoughout the world, it has been increasing at about the same rapid rate as industrial production.[1] We believe that trend will continue. Similarly, inputs of raw materials have not been keeping pace with the output of finished goods; but nevertheless total raw material requirements have been rising rapidly.[2] Here again is a trend that we expect to persist. There is also a marked correlation between national income per capita and consumption per capita of many mineral and wood products. With the progress of economic development throughout the world and with increasing population, there should therefore be need for larger quantities of many of the commodities that Canada has to export.

However, it does not necessarily follow that such needs will be converted into effective demand for Canadian products, even when they are fully competitive. Would-be customers may be prevented from buying the goods we have to offer either because of trade or exchange restrictions or because the communities in which they find themselves, whether imposing restrictions or not, are unable to afford what they would like to import. To form some idea, therefore, of the future of our foreign trade it is necessary to

consider how dense is likely to be the thicket of trade and currency restrictions of all kinds over the next twenty-five years throughout the world. Some consideration, however brief, must also be given to what is likely to be the structure of international trade and to the probable terms of trade between manufactured goods and primary products.

Canada's Interest in World Trade

Judgments on all these matters are obviously difficult to make since they involve a tissue of both political and economic considerations, and nothing like finality is possible. But it is important to have some views about them since so much of Canada's productive capacity has been developed to meet the requirements of world trade. It is true that much of the pattern of Canadian production was shaped at a time when the United States, as well as Canada, was maintaining substantial tariff walls; that the traditional markets for some of our important commodities have been determined by international market-sharing agreements; that more recently much new production has been developed by United States corporations for their own use; and that the roots of some of our industries reach back to the mercantilist period. Yet, to a large extent Canada's productive capacity was developed to meet world requirements at a time when world trade was exceptionally free from restrictions. The classic example is Prairie wheat production. But many other commodities produced in Canada have been sold in virtually every country around the world. In Chapter 3 we have stressed the great and growing importance of the United States market to Canada. It is well to bear in mind, though, that for some commodities overseas markets are still pre-eminent.[3] In 1955, for example, overseas countries took 97 per cent of our exports of wheat and wheat flour and 96 per cent of our exports of automobiles and trucks and parts. Overseas markets also accounted for between 60 per cent and 70 per cent of 1955 exports of aluminum, coarse grains, non-farm machinery, chemicals (including synthetic rubber but excluding fertilizers and uranium), engines and boilers, and electrical apparatus. In addition, over half of our 1955 exports of copper and lead went overseas. By far our principal overseas market is, of course, the United Kingdom.

It has therefore been very much in Canada's interest to try to create the conditions in which our exports could find relatively free access to world markets. Our goal has been — and should continue to be — the establishment of a world trading system where quantitative import restrictions would either be eliminated or used only very sparingly (since such restrictions are more arbitrary and absolute in their effects than tariffs), where international settlements would be made multilaterally, where currencies would be freely convertible, and where national governments would rely solely on moderate tariffs to promote such degree of diversification in their economies as they might consider desirable. In such a world each

country would come close to concentrating on producing those goods and services which it could produce best, with resulting gains in national income per capita. For, in much the same way as an individual tends to maximize his personal income by concentrating on what he can do best, so a nation tends to maximize its national income per capita by exploiting to the full those lines of production in which it has a comparative advantage and by leaving others to make commodities which it can produce only at comparatively higher cost. That is a principle of general application, but it is of particular relevance for Canada since so much of our production has been built up on the assumption that other countries will recognize its validity and act accordingly. The advantage of multilateral trade for Canada, as for other countries, is that it avoids the necessity of balancing our accounts with each other country separately and permits us to profit from buying in the cheapest markets and selling in the dearest. The advantage of convertibility is that it enables such multilateral settlements to be effected smoothly. All these truths we hold to be self-evident.

In present circumstances, however, it may be of less practical importance to specify the exact degree to which Canadian economic growth has been geared to world trade and the exact degree to which we would benefit from the establishment of a liberal system of world trade than to stress a grosser truth. It is this. If by misadventure the progress towards freer trade that has been made since the end of the War were to be reversed and the world were to enter on a downward spiral of such beggar-your-neighbour policies as competitive increases in tariffs or in other trade or exchange restrictions, Canada would stand to lose at least as much as any country in the world. That was tried during the '30's and the result was only to compound the difficulties that had been created by the world-wide collapse of effective demand.

On the other hand, it cannot be assumed that we are so much the darlings of fortune that, merely because the establishment of a liberal trading system would be in our interest, it is bound to come about. At its hey-day during the latter half of the nineteenth century and the first decade of the twentieth century, such a system virtually covered the globe. The United Kingdom stood at its centre, both importing and exporting heavily, supplying in addition large exports of capital, and lacing the whole system together with the filaments of a world-wide network of banking, insurance and shipping services. Since then, however, the system has suffered major defections and serious fragmentation. It was shaken to its foundations by the hyperbolic sacrifices demanded of all the European participants in the First World War. Russia underwent a revolution which virtually withdrew it from world trade and has subsequently become the centre of an economic empire stretching from Berlin to Vladivostok in which trade is conducted on very different principles. The effects on the trading position and trade policies of the countries of Western Europe were not so dramatic; but the conflict so accelerated changes in their economic relations that the

mechanisms of the nineteenth century system had great difficulty in making the necessary adjustments. By the end of the '20's, however, liberal trading arrangements seemed, at least on the surface, to have weathered the storm. Then came the Great Depression and with it higher tariffs, quota restrictions, bilateral trade agreements, and competitive devaluations. The Second World War saw further grievous disinvestment in the United Kingdom and other countries in Western Europe and a further drastic change in the balance of economic power throughout the world. It also saw the transformation of the sterling area from a loose arrangement of countries who found it convenient to hold their reserves in London, as well as to borrow there, into a much tighter institution in which the effects of the central dollar pool were reinforced by exchange restrictions and co-ordinated policies of import control. Since the end of the War progress has been made in dismantling these and other exchange and trade restrictions. But at the same time the achievement of independence by a large number of countries in Asia has sharply altered some old trading patterns and has led to new restrictions, while in many parts of the world there has been pressure for regional trading arrangements which may prove highly discriminatory in effect. What are the chances that all these pieces can be put together into a world system in which trade will take place with a minimum of interference?

What Are the Prospects for Freer Trade?

The oracles come only in the rustling of leaves and are highly equivocal. Take one of the principal prevailing breezes — the primacy in the economic policy of most governments of maintaining high levels of employment. What is its effect likely to be on commercial policy throughout the world? On the one hand, it is clear that barriers to trade are more likely to be reduced when employment and incomes are buoyant than when any considerable number of people are out of work; and it may be that when the major trading countries have had longer experience with conditions of full employment and have even greater confidence in their continuance, it may prove easier to make further advances towards freer trade. On the other hand, as has been pointed out by the author of the study prepared for us on *The Future of Canada's Export Trade,* if national governments are deliberately and artificially sustaining levels of income and employment in their own countries, they may be reluctant to see any considerable part of the benefits of such policies go to foreign suppliers.[4] This would certainly seem to be true insofar as a down-turn in activity was being combatted by substantially increased government spending, but it might also prove to be true of exceptional government action through other budgetary and monetary means. Moreover, there is a constant risk that the pursuit of high levels of employment may result in inflation leading to an increased volume of imports which governments might find it expedient to curb by new import restrictions. Indeed, it may have to be

admitted that, for political reasons, there is more likelihood that some governments would prefer to retain some quota restrictions rather than take the final anti-inflationary measures that would make them unnecessary. It is also possible that one of the effects of full employment on public opinion may be to make the higher domestic costs that flow from protective measures seem relatively unimportant and relatively easy to absorb. Since, in any case, the benefits to be expected from freer trade are impossible to quantify exactly, they may seem to be reckoned only in pennies, whereas the gains to be had from a successful full-employment policy or from rapid technological advance may seem to be reckoned in pounds. The gains from freer trade would still be real and tangible but the scale on which they would be measured might make them seem relatively unimportant. Even if that were the tacit inference drawn by public opinion, we doubt whether national governments, remembering the experience of the '30's, would be rash enough to regard general increases in trade barriers as a permissible means of trying to implement their full-employment policies. But it may be that such an inference may sap enthusiasm for further advances towards freer trade. On balance, then, it seems to us that, while full employment itself should be favourable to moves in a liberal direction, the deliberate pursuit of full-employment policies and the fact that the highest level at which they can be implemented is at the level of national policy, may operate against rapid further progress to remove trade restrictions.

We moisten our fingers again and try the direction of another wind. What will likely be the angle of incidence to commercial policy of the determination of under-developed countries to promote their own economic development? Here again the answer would seem to be equivocal. Like others, the under-developed countries have an interest in purchasing their imports as advantageously as possible and in allocating their resources to the most productive ends; and in recent international negotiations they have shown increased awareness of this. But they can hardly accept the proposition that their production should be restricted to subsistence agriculture and a limited number of plantation crops such as cocoa, rubber, jute, tea, coffee, as has been the lot of many of them in the past. They are the more reluctant to accept this role in view of the wide fluctuations there have been in the prices of primary commodities, even since the end of the War, when levels of employment and demand in the industrialized countries of the world have been high. Such a pattern of production is associated in their minds with a colonial status and they regard some measure of industrialization as an indispensable attribute of new national prestige. In many cases their desire to promote the establishment of domestic manufacturing industries is supported by the more concrete argument that without such industries there will not be employment for the surplus labour on the land which will be increasingly shaken free by the improvements in agricultural technology they are trying to popularize. For these reasons

under-developed countries may be expected, even over the course of the next two or three decades, to remain unwilling to dispense entirely with protective devices to encourage the new industries that they wish to establish.

It has long been acknowledged that a case can be made for imposing tariff restrictions to promote the growth of infant industries. It might be argued that by the use of moderate tariffs alone the under-developed countries should be able to achieve the objectives they have in mind. But many of them are finding it difficult to sustain the pace of economic development that they consider desirable without generating some inflation. The pressures that this creates for excessive imports may, in some cases, be kept in check by monetary and budgetary measures. But it is more difficult for such policies to be successful in countries where financial and tax-gathering systems are comparatively rudimentary; and as we know, even countries with highly developed financial and fiscal systems have found the task of restraining inflation almost too much for them. Some of the under-developed countries also have to deal with another complication which tends to make fiscal measures inadequate as a means for curtailing imports. This is the fact that wealth is so unevenly distributed that sales, or excise, or other taxes can hardly be relied on to prevent those with large accumulations of wealth from making use of scarce exchange resources to purchase luxury consumer imports, which the developing economy with its needs for capital goods can hardly afford. There are therefore a number of reasons why the under-developed countries are likely to be slow in dispensing with quota restrictions and currency controls.

Although they have a genuine interest in freer world trade, we anticipate that the special problems of the under-developed countries will necessitate the maintenance of substantial tariff and other barriers to trade and that these in the aggregate will put a brake on world progress towards a more liberal trading system. We would suggest that one way in which the more highly industrialized countries of the West could help them to identify their own interest more clearly with programmes for trade liberalization would be by paying more attention to the problem of stabilizing commodity prices. We realize that there are great difficulties in the way and that the problems involved vary from commodity to commodity. But we believe that time and effort spent in trying to solve them would be well worth while.

Defence considerations, we believe, will also cut both ways. World trade over the next twenty-five years may well resemble the state of the Mediterranean from the seventh to the eleventh century, when Christendom and Islam were living in competition and intermittent conflict, with part of its waters having fallen under the domination of the Saracens while the rest was controlled by the Byzantine and Venetian galleys, with some territories such as Sicily shifting from side to side, and with the whole area subject to piratical incursions.[5] There may be halcyon periods when trade between

the Soviet bloc and the rest of the world will be conducted primarily on commercial grounds. But Soviet trade will never be unaffected by strategic considerations and may often be deliberately disruptive and piratical in intention. Canadian producers, for example, may have to face the dumping in third markets of such commodities produced within the Soviet bloc as lumber, asbestos, coarse grains and salmon. Those directing Soviet trade may also think it worth while for political reasons to purchase such surpluses as may not be marketable throughout the free world. And at the same time as they are using such disruptive economic tactics they will, in all probability, be maintaining an atmosphere of tension by attempts at subversion and threats of military aggression under the overhanging threat of nuclear annihilation.

In a situation of this kind it will always be easy for countries outside the Soviet bloc to believe that their own security is to be found at home and is best furthered by policies of increased self-sufficiency. There will be a temptation to forget that what is being tested is no less than the vigour and resiliency of free societies and that, in such times, the continuance of comparatively inefficient production may be an expensive luxury. It may also be tempting to rest in the presumption that, during some emergencies, it would prove valuable to have assured domestic sources of supply for the production of military equipment and to overlook the equally valid consideration that, in the case of a thermo-nuclear war (where the initial impact would probably be decisive), it might be irrelevant whether a nation had industrial stand-by capacity available or not.

On the whole, it seems to us that in recent years the net effect of defence arguments has been to make progress towards freer trade more difficult. That tendency was evident, for example, in the action of the United States Congress in attaching a defence amendment to the Trade Agreements Extension Act of 1955. On the other hand, the Executive Branch of the United States Government has never been unaware that, in a world of siege-warfare, sortie and alliance, the trade problems of its allies and friends cannot be regarded with indifference. If they are prevented by trade restrictions from selling in their traditional markets, they may turn in exasperation elsewhere, form new trading links and eventually be detached from their association with the free world, or, alternatively, as a result of trade stagnation, embrace a totalitarian form of government and economic organization. The importance of freer trade policies as a means of preventing defections to the Soviet bloc will become increasingly recognized, in our opinion. Indeed, we would expect it to be one of the principal motives for a new movement towards freer trade whenever such an initiative can be launched. But it is apparent that it may take some time for this logic to prevail.

Of the forces at work in the world today, there is one that we are sure will be far from equivocal in its effects upon commercial policy. It is the

world-wide pressure to sustain the incomes of agricultural producers and to protect them from foreign competition either by subsidy payments or import restrictions or both. Defence preoccupations have played a part in helping to create this pressure. We need not agree, for example, with all the details of the United Kingdom's agricultural policy to have some sympathy with its desire, after suffering from submarine warfare twice in a generation, to raise domestic wheat production above the levels that would be achieved if economic forces alone were allowed to determine output. The responsibility of governments to protect their people from starvation is far older than any of the responsibilities they have assumed in recent years to maintain full employment or to promote economic development. It is therefore also natural that in many of the under-developed countries, where local or general famine has long been endemic, governments should have decided to give a high priority to programmes for increasing agricultural production and in particular should have concentrated on raising the output of grain, which yields a higher calorie content per acre than any other foodstuff. We believe that all these variously motivated programmes to make individual countries more self-sufficient in wheat and other grains will operate to limit the quantity of cereals entering world trade over the next twenty-five years and will tend to depress the international price of wheat relative to that of other commodities.

But there is no need to go so far afield for examples of agricultural protectionism. New Zealand butter producers could testify to how effective, albeit informal, have been the arrangements over the years for excluding New Zealand butter from the Canadian market except at times when it was convenient to have it as a supplement to Canadian production; and more recently embargoes have been placed on the importation into Canada of cheddar cheese, turkeys and fowl, and dried skim milk. Across the border, protection of United States farmers from foreign competition has been much more systematic and thorough. When the Agricultural Adjustment Act was passed in 1933, with the objective of raising the relative prices of major agricultural commodities, it was realized that whenever such prices were supported at levels substantially higher than those current elsewhere, there would be an added inducement for foreign producers to export to the United States. For that reason it was provided in Section 22 of the Act that whenever foreign imports were interfering or threatening to interfere with the purposes of the legislation, they should be curtailed by special fees or by quantitative restrictions. Under this section, imports of milling wheat, wheat flour, dairy products, and flaxseed and linseed oil have been restricted for an indefinite period; and the section has also been used to impose temporary restrictions on rye, oats and barley. The damage done to Canadian interests by the use made of Section 22 should not be exaggerated, since some of the commodities affected have not normally moved in volume to the United States market, and since, in other cases, the size of the quota has been comparatively generous. On each occasion that

Section 22 has been invoked, however, an arbitrary limitation has been placed on Canadian trade with the United States, and the Canadian Government has protested vigorously.[6]

At the same time as United States agricultural policy has necessitated the application of special import restrictions, it has also resulted in large accumulated surpluses of agricultural commodities in the hands of the Federal Government, although exceptionally favourable weather conditions during the past decade have also contributed to this embarrassment. As these surpluses have mounted, legislation has been introduced to help in disposing of them overseas. Under the terms of successive Mutual Security Acts and of the Agricultural Trade Development and Assistance Act, United States surpluses have been given away for purposes of relief, bartered for strategic commodities, and sold for local currencies, which in turn have been devoted to a number of ends lying outside the field of ordinary commercial enterprise. Unquestionably these programmes have deprived the Canadian Wheat Board of some sales it would otherwise have made.

The burden on the United States Treasury of subsidizing United States agriculture at the levels that have currently been in force, and even of meeting the carrying charges on the accumulated surpluses, has led to pressure for modifications in the price support programme to avoid perpetuating the present situation. It has also been increasingly realized that the present high and rigid price supports are distorting the pattern of United States production and are standing in the way of an adjustment of supply to demand. These considerations, together with the difficulty of disposing of agricultural surpluses overseas without disrupting normal channels of trade, have all had a part in persuading many in the United States that some change in its agricultural policy is needed. So far this movement has met with comparatively little success. Over a longer period of time, however, we would expect it to make some headway. With some modification of present policies, it is at least possible to imagine that before many years have passed, present surpluses may have been worked off and no new accumulations be imminent; that overseas disposals by the United States Government may be limited more genuinely to whatever may be needed for the purposes of relief and whatever can be used to promote the development of under-developed countries; and that less recourse may have to be made to Section 22 of the Agricultural Adjustment Act. But that section could hardly be repealed unless the United States were to adopt an entirely different method of supporting farm incomes; and although such a shift may come about, it can hardly be counted on. Moreover, Section 22 has now been sanctified by a waiver under the General Agreement on Tariffs and Trade legitimizing action taken under it in the past and any that may be taken in the future. This waiver has made it more difficult to oppose appeals from other countries for special protection against agri-

cultural imports and indeed has weakened the position of the United States in resisting protective pressures generally within the GATT forum. This is an illustration of how agricultural protectionism has operated to check progress towards freer trade. Over the next twenty-five years we would not expect its force to be diminished or its influence on other areas of commercial policy to be easily muffled.

These are some of the forces that are in the field. The king's horsemen are pulling in different directions and it will take generalship of a high order to so discipline them that it may become possible to re-establish a liberal regime of world trade. But if Humpty Dumpty can be put together again, it will be a different Humpty Dumpty that will sit on the wall.

It will be different, for one reason, because economic adjustments do not now — and in our opinion never will again — operate with the same degree of automaticity as was postulated and to a considerable extent realized in the nineteenth century. Internal markets often present a scene of highly imperfect competition with comparatively few large firms dominating whole sectors of industrial activity so that prices do not necessarily respond freely to changing circumstances. At the same time, business, labour and farm groups are highly organized and negotiations among these various economic groups — and with the government — often prevent any automatic transfer of the factors of production from one activity to another. It may well be that all these corporate interests will increasingly recognize the desirability of leaving wide latitude to the price mechanism to facilitate economic adjustments so that the economy will remain flexible. But flexibility is not the same as automaticity; and we would not expect the latter to regain its old ascendancy in domestic economic affairs. The new instituitonal arrangements to which we have referred are one explanation of this view. Another is to be found in the increased scope everywhere of government intervention in the economy, which has added a good deal of cushioning to the billiard-ball Newtonian world of the nineteenth century. Nor would we expect international equilibrating mechanisms ever again to work so automatically as they did throughout the hey-day of free trade. We cannot discern in any country a desire to return to the automatic discipline imposed by the gold standard, involving as it did from time to time long bouts of deflation and widespread unemployment. Such conditions would not be tolerated today by any government that could avoid them. Before the First World War they were made only barely tolerable by the possibility of unregulated large-scale migration and by international movements of private capital, lured abroad by the prospects of higher profits. But nowadays the flow of migrants is highly supervised and entry to most countries highly restricted. Private capital movements have also declined in importance, with portfolio investments showing a greater relative decline than direct investment; and capital movements of the latter type are ordinarily motivated not so much by differences in interest rates as by such other considerations as the need to develop foreign sources of supply.

Another reason why a liberal trade regime, if it can be re-established, will be different from any that has been know hitherto, is to be found in the difference between the position of the United States, which is by far the most important economic and trading power in the world nowadays, and that of the United Kingdom during the nineteenth century. The United Kingdom was a maritime power with many colonial possessions, needing to import large quantities of foodstuffs for its people and raw materials for its industrial plant, and trading throughout the seven seas, over which the Royal Navy enforced the Pax Britannica. The United States is fundamentally a continental power, still largely self-sufficient, with foreign trade small in proportion to its total output and thus barely conscious of any need to trade or invest abroad. For this reason the United States dollar has not supplanted sterling (in which approximately 50 per cent of the world trade is still conducted) as an international currency. Nor have the capital markets in New York achieved the dominant international position formerly held by the City of London. Indeed, private United States lending is still, in the aggregate, of modest proportions, although of course it is of great importance for Latin America and for those countries in the Middle East which have large oil resources, as well as for Canada. But as a means of financing the large United States surplus earned through the commercial exchange of goods and services with other countries, it is far surpassed by government transfers of various kinds. In 1955, for example, the net outflow of private capital from the United States amounted to not much more than $1 billion, while military expenditures in foreign countries by the United States Government for the construction of bases, troop pay, and other purposes, amounted to almost $3 billion, and grants for economic assistance totalled almost $2 billion.[7] It was these outflows of government funds that were chiefly responsible in every year from 1950 to 1956 for some net increase in other countries' reserves of gold and United States dollars as a result of their transactions with the United States.[8] These payments of United States dollars are sometimes referred to as "extraordinary". But since they form such an intrinsic part of United States foreign policy and supply such an essential lubricant for trade throughout the free world, it is difficult to imagine them suddenly coming to an end.

Private foreign investment has been so important for Canadian economic growth that it would be easy for us to overlook how, in the world at large, flows of private capital have dwindled in importance in comparison with other international transfers and how comparatively minor a role they now play in maintaining international equilibrium.[9] In most countries of the world outside North America even domestic investment decisions are more frequently either subject to government control or overtly influenced by considerations of public policy than is the case in the United States or Canada. Such decisions may be made, for example, with a view to implementing national plans for industrial development or

achieving a variety of regional objectives or creating new productive capacity that would result either in a reduction of dollar imports or an expansion of dollar exports. It is therefore not unnatural that international capital transfers, meshing as they must with such projects, should also have taken on a more public character. The International Bank has been highly successful in mobilizing resources of capital and making them available either to governments or to private enterprises enjoying a government guarantee. The International Monetary Fund has not only been a valuable forum for consultation on exchange questions but more recently has also begun to use the currency at its disposal on a more liberal scale to assist countries in balance-of-payments difficulties and to facilitate orderly exchange adjustments. In the United States the Export-Import Bank has continued to provide credit to countries wishing to import from the United States. Contributions under the Colombo Plan have been a substantial help to countries in South and South East Asia in their development programmes. The balance-of-payments deficits of many countries are in such ways still being deliberately "managed" by action taken through international organizations or by the United States Government.[10] That, of course, is not so true today as it was in the years immediately following the War. Perhaps the high water-mark of such action came in 1947 when the Marshall Plan was about to be launched. In May of that year, for example, in a speech at Cleveland, Mississippi, Mr. Dean Acheson, then Under-Secretary of State, presented a comprehensive survey of the balance-of-payments horizon around the world, estimated the total dollar deficit that would arise if imports were to continue at a tolerable level, and expressed the concern of the United States that the deficit should in some fashion be met.[11] As economic recovery has proceeded and as the level of reserves has risen somewhat from very inadequate levels, it has been possible for the approach to balance-of-payments problems to become more piecemeal. But deficits in many cases are still being met by deliberate international action at the governmental level. Of the measures that have been involved, none have been more important than the grants for economic and military assistance that have been extended by the United States.

The United States has also been moving to reduce its tariff and in other ways to facilitate access to its domestic market. Measurements of the general level of tariff protection are often seriously misleading since they cannot give due weight to the effect of high rates of duty which either totally exclude foreign imports or reduce them to very small volume. Such measurements, however, can be useful in suggesting the movement of tariff rates over time. We may therefore cautiously accept as indicative of what has been happening since the end of the War estimates prepared by the United States Tariff Commission which show that the average incidence of the tariff on dutiable imports had fallen from approximately 18 per cent in 1945 to approximately 12 per cent in 1953. On dutiable

goods of proven importance to Canada it would seem that United States tariff rates have been about halved since 1945; and for certain important items rates have been cut to one-quarter of where they stood in 1934, when the Reciprocal Trade Agreements Programme was initiated.[12] In recent years some progress has also been made by administrative action in reducing the protective effect of the "buy-American" legislation. Many would argue that customs administration in the United States has been as important an obstacle to foreign imports as the level of duties. The system of classification established in the United States tariff is highly complex and has led to long delays in ascertaining the rates at which many goods could be imported. The system of valuation has also discouraged imports by placing a higher value for duty purposes on many goods than those shown on the invoices. In this field also there has been some improvement. A start has been made on simplifying United States tariff classification and an act has been approved by Congress to amend the system of valuation.

Offsetting such progress, however, have been the measures to which we have already referred to provide protection for agricultural producers. Increased use has also been made of the general escape clause in the Trade Agreements Act. The effect of this clause is to empower the President to restrict imports considered by the United States Tariff Commission to be doing injury to domestic producers; and in various forms it has been incorporated in successive Trade Agreements Acts since 1943. At the time of the last extension of the Act in 1955 the escape clause was strengthened, and over the last eight or nine years more use has been made of it than previously. Between 1948 and 1955 there were 61 applications to the Tariff Commission for relief from foreign competition under this clause. Of these the Tariff Commission recommended increased protection in 14 cases and in 7 cases the President acted to raise the level of protection. Thus the occasions on which the escape clause has been applied have not been numerous. But it is an undeniable discouragement to foreign exporters to know that if they make the special effort that is often needed to sell their products in the highly competitive United States market and are successful, the upshot will almost certainly be complaints from domestic producers to the United States Tariff Commission which may result in increased protection and a waste of all their efforts.

It is difficult to resist the conclusion that the impetus given to a policy of freer trade by the inception of the Reciprocal Trade Agreements Programme in 1934, an impetus renewed by the publication of the *Commercial Proposals* sponsored by the United States and the United Kingdom in 1945, is now virtually exhausted. When the Trade Agreements Act was last extended, the President was granted authority by Congress to cut tariff rates by only a maximum of 15 per cent over a period of three years. Even if this authority were fully used, the resulting increase in foreign

imports would be very slight. One of the most distinguished American experts on foreign trade, Dr. Jacob Viner, has expressed the opinion that many of the reductions made so far in United States rates of duty under the Reciprocal Trade Agreements Programme have been little more than "window-dressing".[13] That may be too pessimistic a view. But if there is any truth in it and if it is only now that further tariff cuts would result in substantially increased imports into the United States and some reallocation of the factors of production there, it would explain why difficulty is being experienced in making further advances in a liberal direction. In any event, the train seems to be coming to the end of the line of tariff reductions, and as it does, the brakes are being put on by greater use of the escape clause mechanism. There also seems to be great difficulty in mobilizing sufficient support in Congress to secure United States membership in the proposed Organization for Trade Co-operation, which would give some permanency to the GATT organization. We need not be either too censorious or too superior about these difficulties. The protectionist pressures that are being encountered in the United States are far from unknown in other countries. Indeed, both Republican and Democratic Administrations deserve great credit for their efforts to identify the national interest from among a welter of particular claims; for the sense of responsibility with which they have examined not only the broad lines of commercial policy but also individual cases; and for their evident desire that, on balance, access to the United States market should continue to be made easier for foreign suppliers. Yet it must be admitted, in our opinion, that in recent years progress has slowed almost to a halt. That is the more serious because the United States, as by far the world's greatest economic power and the world's largest creditor, stands in a special, in an exemplary, position. If the United States finds it almost impossible to further liberalize its commercial policy, we doubt whether much progress can be expected from other countries.

Canada's second most important customer, the United Kingdom, has also made strides towards freer trade since the end of the War. During the War all importing into the United Kingdom was under licence and many commodities were purchased in bulk under government contract. Because of the dollar stringency these arrangements — together with exchange control — were continued almost unchanged after the War and were used to discriminate against dollar suppliers. But by 1952 economic recovery had proceeded so far that decisions were taken to restore the import trade to private hands and to free raw materials and essential foodstuffs from import controls. Over the next three years these decisions were carried out with such effect that by 1955, for example, 75 per cent of Canadian exports to the United Kingdom had been freed from discrimination and were subject to only nominal restriction, while an additional 10 per cent also entered, in practice, on a non-discriminatory basis.

This progress was made possible by the success of the export drive. In prosecuting the War, the United Kingdom was forced to liquidate overseas investments worth approximately £1 billion and to assume additional foreign indebtedness to the value of approximately £3 billion.[14] As a result of this drastic alteration in its overseas financial position, it was officially estimated in 1945 that the United Kingdom would have to export 50 per cent more by volume than before the War if it were to pay for imports at the 1938 level, and that the increase might have to be of the order of 75 per cent if provision were also to be made for the gradual repayment of debt and for some modest increase in the volume of imports.[15] At the time many were skeptical whether it could ever be reached. But in 1950 the volume of the United Kingdom's exports was estimated to have been more than 75 per cent greater than in 1938, and in no subsequent year have they fallen far below the target.[16] In spite of the financial difficulties that still face the United Kingdom, that remains a remarkable achievement, which shines all the more brightly when the wartime background is remembered. For in none of the allied countries during the War was the burden of social and individual responsibility longer, heavier or more continuous than it was in the United Kingdom. Strength for great feats of arms and of civilian endurance could be found in temporary ardour and exaltation; but they could not wipe away the deep fatigue left by those exertions and by unremitting efforts, often under conditions of danger and discomfort in factories, business houses, and government offices. These human costs of the War perhaps explain why sometimes policy has faltered and why there may have been a more widespread desire for a little comfort and security than Britain's altered circumstances would warrant. But it is also true that great daring and energy have been shown in the post-war period in many British industries such as aviation, electronics, and nuclear energy, where British production often leads the world. And the measure of success obtained in the export drive, which could not have been achieved without very considerable social discipline, suggests that the United Kingdom possesses not only the skill but also the staunchness of heart to forge new greatness from its diminished strength and resources.

The expansion of exports has also encouraged the United Kingdom to make some progress towards the convertibility of sterling. At a meeting of Commonwealth Prime Ministers in 1952, it placed before its Commonwealth partners comprehensive proposals. The details of these have never been made public but it is believed they contemplated formal arrangements for making all sterling earned by non-residents on current account convertible and for allowing sterling to fluctuate within wider limits. Although these proposals have never been implemented, action was taken subsequently to give a considerable degree of convertibility to sterling in practice. This was done by widening the area covered by the Transfer-

able Accounts system and by supporting the rates quoted in unofficial markets for transferable sterling. As a result of these arrangements, sterling can now in effect be converted by those who are prepared to sell it at a slight discount. There are a number of reasons why the original proposals have never been put into effect. It was realized at the time that they could be safely attempted only if the United Kingdom and other sterling area countries were restraining excessive internal demand by appropriate domestic policies. But that is easier said than done. The United Kingdom has heavy military commitments; it has responsibilities to assist in promoting the economic development of many communities throughout the world; it operates an elaborate system of social security for its own citizens; and the demands of its wage earners have sometimes been in excess of productivity gains. All these claims on its resources have created inflationary pressure, which has been far from perfectly controlled. Nor have all other sterling area countries been successful in holding inflation at bay. Finally, the degree of progress made by the United States in liberalizing its commercial policy has not been considered to offer sufficient promise of increased imports into the United States market to justify a decisive and formal move towards convertibility, which would be difficult to reverse.

In the long run, we would hope that the United States would again take the lead in efforts to re-establish a more liberal system of world trade. President Eisenhower is increasingly committing the Republican Party to the support of this objective, as the Democratic Party has been for many years, although there are sectional interests within both parties that are very wary of liberal measures in practice. Over the years, however, it seems likely that industries which sell a considerable proportion of their output in other countries and so have a practical interest in freer trade will increase in relative importance over the older and smaller industries which because of the high labour content in the value of their production are particularly vulnerable to foreign competition and for that reason are opposed to freer trade. Above all, we would expect that the day-to-day problems of holding the alliance together over a prolonged period of tension would gradually convince the United States that it must pursue commercial policies that allow its allies to be prosperous and strong. But in our opinion there may be little progress over the next five years or more. Recent debates in Congress have shown that protectionist forces in the United States are powerful and perhaps resurgent. Present agricultural policies will be a stumbling block. Defence considerations will continue to be adduced as an argument for caution. The primary importance of maintaining high levels of employment may make legislators hesitant to approve measures that would result in increased foreign competition. Indeed, it may be that no more than marginal advances in liberalizing United States commercial policy can be made until some method has been found by Congress for easing the local adjustments that a really liberal policy would require.

Further progress by the United Kingdom in removing trade and exchange restrictions will depend in part on United States commercial policy and in part on its own ability to shift and lighten the pack that it now carries on its back and to expand its exports overseas. It may be, however, that the United Kingdom is now importing about as much as in present circumstances it can afford. In that case, even complete convertibility and a complete removal of trade restrictions would have little effect on Canada's trade with the United Kingdom. Our exports would rise gradually with growing production in the United Kingdom, and there might be some change in their composition as a result of freer choice for United Kingdom purchasers. But that would be all. We find it hard to avoid the conclusion that balance of payments problems will be a constant preoccupation in the United Kingdom for many years to come. In one way or another, the United Kingdom's imports, which even now are hardly larger in volume than they were before the War, will have to be adjusted to fit the level of exports. Thus, the question of what will be the United Kingdom's import policy merges into the much wider question of what will be the probable articulation of world trade over the next twenty-five years.

Some Comments on the Future Structure of World Trade

To raise that question is to realize how impossible it is to answer. It is difficult, for example, to foresee the effects on the volume and on the pattern of world trade of even such a project as that already outlined in current proposals for a European free trade area. If it were to be successful in creating a common market in Western Europe, efficiency would be improved, output increased, and the ability of the whole area to trade with the rest of the world, including North America, raised to a higher plane. On the other hand, if the project were to be only partially successful, it might prove to be only another engine for discriminating against dollar imports.

However, there are some features in the world landscape that may prove of rugged durability and if so may have fairly predictable effects on the structure of world trade. One of these is the rupture of trade links with the Soviet bloc and Communist China. No doubt attitudes towards such commerce will vary over the years and from time to time will result in higher levels of East-West trade than obtain at present. But it seems unlikely that such trade will become more than relatively unobstructed; and the continuing rupture will have serious consequences for Western Germany and Japan. Both of these countries, like the United Kingdom, need heavy imports of raw materials and must export large quantities of manufactured goods. Cut off from the natural markets, they will be forced to push their exports elsewhere, with the result that trade throughout the free world in manufactures is almost certain to be highly competitive. The

competition will be the more intense because under-developed countries, although requiring capital goods for their development programmes, in all probability will be affording high levels of protection to their own new manufacturing industries. At the same time, in our opinion, they will be concentrating less than in previous periods on producing raw materials for export. These anticipated characteristics of the economic policy of under-developed countries are the second more or less durable feature we discern in the world scene which we would expect to have wide implications for the pattern of international trade.

We have already spoken of the world-wide scope of agricultural protectionism. If that feature of the world trading environment is added to those we have just mentioned, it seems reasonably clear, first, that the level of protection against manufactured goods and agricultural commodities is likely to be higher than the level of protection against industrial raw materials, and second, that suppliers of such materials are not likely to face so keen competition as those who have manufactured goods to offer.

These conclusions, if substantiated over the next two or three decades, would be of obvious importance to Canada. From earliest times the people living in this country have had a deep interest in the relative prices of imported manufactured goods and of the primary products they could offer in exchange. It was a widespread legend of the fur trade that occasionally an Indian was required to keep stacking his pelts, one after another, against a rifle barrel until they reached the muzzle before he could paddle away with the rifle.[17] In that equation the terms of trade were brutally clear. But they were almost equally apparent to a Hudson's Bay factor in the late eighteenth century as he scanned his Comparative of Furs and Standard of Trade in which the value of the various skins that the Indians might bring in and of the various imported manufactured articles he had on his shelves were all translated into the currency of "Made Beaver" — one of our earliest units of account represented by the symbol MB.[18] As Canadian imports and exports became more diversified, the terms of trade between them were no longer synonymous with the terms of trade between primary products and manufactures. But with little prospect, as we see it, of wider foreign markets for our manufactured goods and with our lessened dependence on imports of some raw materials such as oil, the two ratios may in future come rather closer together than they have for many decades. In any event, the ratio in international trade between the price of manufactured goods and the price of primary products will never be without some impact on the Canadian economy.

However, it would be rash to assume that the two conclusions about world trade tentatively reached above mean that the terms of trade will move over the long run in favour of primary products as a whole, or even of that group of them that consists of industrial raw materials. Earlier in this chapter we have given one reason why we think the international price

of wheat may decline relative to the general price level. Another reason is that wheat production, unlike other forms of agriculture, lends itself to large-scale mechanization which reduces unit costs. Clearly, the varying pace of technological change in different industries, with resulting variations in the rate of increase in productivity, will play a large part in determining relative price changes. In recent years, for example, constant innovation in the techniques of mining and metallurgy have prevented increased demand from producing any sustained relative increase in the price of most minerals. Over the next twenty-five years, of course, there may be relative increases in the price of some industrial raw materials. In the study made for us on *The Outlook for the Canadian Forest Industries,* for example, a considerable rise in the price of lumber relative to the general price level is anticipated;[19] and the same may prove true of asbestos.[20] We have expressed in an earlier chapter our skepticism about possible methods of forecasting price changes; but in general we see little reason for expecting rising price trends for most raw materials.

Nevertheless, the outlook as we see it is very different from what Canadians have been accustomed to in many periods in the past. Historically, the prices of primary products have fluctuated much more widely than the prices of manufactured goods. The reasons for this in the case of agricultural commodities are briefly examined in a later chapter. The wide swings that have been experienced in the prices of raw materials have been due partly to the process of inventory accumulation and depletion, which have exaggerated for raw materials the amplitude of cyclical fluctuations of demand, and partly to the fact that many raw materials are used principally in the production of capital goods and consumer durables, which suffer most in a recession. We doubt whether stabilization policies either can, or perhaps ever should, be so thorough-going as to level out the minor business oscillations that lead to substantial inventory adjustments. Accordingly, we would not be surprised if the price of many raw materials were still to show wider variations than the price of manufactured goods. On the other hand, as we have already indicated, we think it not unreasonable to believe that a succession of extreme booms and slumps can be avoided. It is these that have led in the past to catastrophic swings in demand for industrial raw materials and abysmally low prices for them through long periods. Remove the sequences of boom and slump and you also remove one of the chief causes of depressed raw materials prices. As we foresee the future shape of world trade, then, there are grounds for considerable optimism about the terms on which most of our principal exports will be traded. Demand will probably continue to be high for industrial raw materials. There may well be a buyers' market for most manufactured goods. At the very least, it seems fair to say that, if reasonably high levels of employment can be maintained throughout the world, we should not find over the next twenty-five years that the terms of trade are stacked against us.

5

CANADA'S ECONOMIC GROWTH SINCE 1939

AS PART OF the background of Canada's prospective economic growth, we have now tried to provide some observations about the world environment in which it will take place, about our relations with the United States, and about the changing nature of world trade. Before proceeding to outline our detailed forecasts, it remains to say something about Canada's economic development in the immediate past. It is true, of course, that all of our history is a prelude to what lies ahead and may throw light on it. The reason we have chosen to restrict our attention to the period since 1939 is partly that earlier periods have been well surveyed in the documents of the Royal Commission on Dominion-Provincial Relations (the Rowell-Sirois Commission) and elsewhere; and partly that the War years and the decade that followed saw the growth of the Canadian economy to a different order of size and complexity. Valuable information about recent Canadian economic development is to be found in many of the studies which have been prepared for us; and in addition much of this material has been drawn together in a separate study on *Canadian Economic Growth and Development from 1939 to 1955*. That study does not pretend to follow in detail the fluctuating course of business activity since the beginning of the War but attempts to concentrate on developments which have altered the structure of the economy or permanently added to its productive resources. That is also our purpose in this chapter. In addition, we should like to make some tentative suggestions about how the contemporary Canadian economy may most appropriately be regarded.

One of the ways of approaching Canadian economic history that has had wide influence has been to see it as a panorama of staple production for export.[1] First on the scene come the French and Portuguese and English in their small fishing-vessels to catch cod on the Grand Banks and in the Gulf of St. Lawrence and to establish harbours as far inland as Tadoussac. Then for more than a hundred years the centre of the stage is held by the fur trade, with voyageurs threading their way along distant lakes and rivers as far to the northwest as Lake Athabaska and beyond, and as far south as the lower Mississippi to bring back beaver skins and other peltries for shipment to Europe. Then an attack is made in earnest on the Canadian forests and great booms of squared timber come rafted down the Ottawa and St. Lawrence. The next turbulent scene shows the first transcontinental railway being built; immigrants pouring into Western

Canada; the prairies being broken; sod houses going up on the new homesteads; and wheat being threshed far into the late summer night as sparks swarm skyward from the threshing-machine. In the boom of the '20's, the spotlight is on new staples, including primarily newsprint and aluminum; but the pattern is still essentially the same — production of a comparatively few staple commodities for export and development of the facilities required to prepare and bring them to market.

That way of looking at Canadian economic history no doubt makes clear what essentially was happening in earlier periods. But our economic growth has now reached a point where such a method of regarding it no longer seems adequate. External demand is still perhaps the most important spur to our economic development; but the stimuli are now of many kinds. Sometimes our economic growth would seem to be chiefly promoted by government expenditure. Sometimes consumer expenditure has the central role. Sometimes we are experiencing a capital boom which may be concentrated for extended periods on the resource industries and primary manufacturing but, at others, may shift to the secondary manufacturing industries. The stimuli to growth are now various, and no one of them need necessarily become more than relatively unimportant as another comes to the fore. Moreover, various kinds of economic activity interact upon one another in more complex ways than was true in earlier periods. Finally, the whole process now seems to be more self-reinforcing and self-sustaining than it was during those phases of our economic growth that have been illuminated by a view focussed on staple production. During the period from 1939 to 1955, which it is the purpose of this chapter to examine, economic growth may be seen rippling across many sectors of the economy, freshened by demand from a number of different quarters.

Sectors of the Canadian Economy

The sectors into which we have divided the economy have been chosen with a view to facilitating analysis of what has been occurring and of what structural changes may be expected in the future. Since they do not fully coincide with the sectors used by the Dominion Bureau of Statistics, it is necessary to make clear what activities they cover. The main change that we have introduced into the standard industrial classification used by the Bureau has been to cut the manufacturing category in two. How this has been done is shown in detail in Appendix G. Some general idea, however, of the division we have made is indispensable to an understanding of many of the tables and analyses contained in this report. Manufacturing is a very broad class and includes industries that differ widely. Some of them, which we have called "primary manufacturing" industries, are principally engaged in the processing of natural resources and are generally located close to those resources. These industries produce industrial materials rather than end-products, export a significant proportion

of their output, and, by and large, have little tariff protection. Many of them use a large amount of capital relative to labour and so are described as "capital-intensive". The industries, on the other hand, that we have grouped together under the heading of "secondary manufacturing" typically carry out a higher degree of processing and make use of raw materials and semi-manufactured goods of both foreign and domestic origin. They produce end-products rather than industrial raw materials; they are ordinarily located close to their markets, which are largely domestic; and most of them enjoy at least a moderate degree of tariff protection. As a group, they are somewhat less capital-intensive than the primary manufacturing industries.

Some examples may serve to indicate how we have drawn the line of division through the broad manufacturing category. Included in primary manufacturing are the lumber industry, the pulp and paper industry, nonferrous smelting and refining, food canning and processing, and that part of the chemical industry which produces such bulk chemicals as fertilizers, acids, alkalis and primary plastics. Secondary manufacturing covers a broad range of industries, including, among others, the automobile industry, the iron and steel industry, the clothing industry, the electrical industry, the textile industry, and that part of the chemical industry which manufactures such products as paints, soaps and drugs. We are aware that the line of division between the two categories is neither completely logical nor completely satisfactory. Indeed, it could not be in a period of rapid technological change such as the present when the number of products often manufactured by a single plant makes it difficult to give a clear answer to the apparently simple question, "What is an industry?" But we would claim that the division we have made separates with rough accuracy two kinds of manufacturing which have different problems and respond to different stimuli; that for that reason it facilitates analysis; and that, into the bargain, it draws a distinction that much public discussion of manufacturing often seems to be searching for.[2]

The other changes that we have made in the Bureau of Statistics' classification are less significant. Forestry; fishing, and trapping; and mining, quarrying and oil wells; these are all the same as the Bureau's categories with those names. In our classification they are listed, together with electric light and power, as the "resource" or extractive industries, on which primary manufacturing is based. The various categories of tertiary industry are arranged and combined rather differently in the classification we have used than they are in the Bureau's publication; but identifying their counterparts there should not be difficult.

Main Dimensions of Growth

The two accompanying charts give some indication of the growth that has taken place in the Canadian economy since the beginning of the War.

Chart 5.I

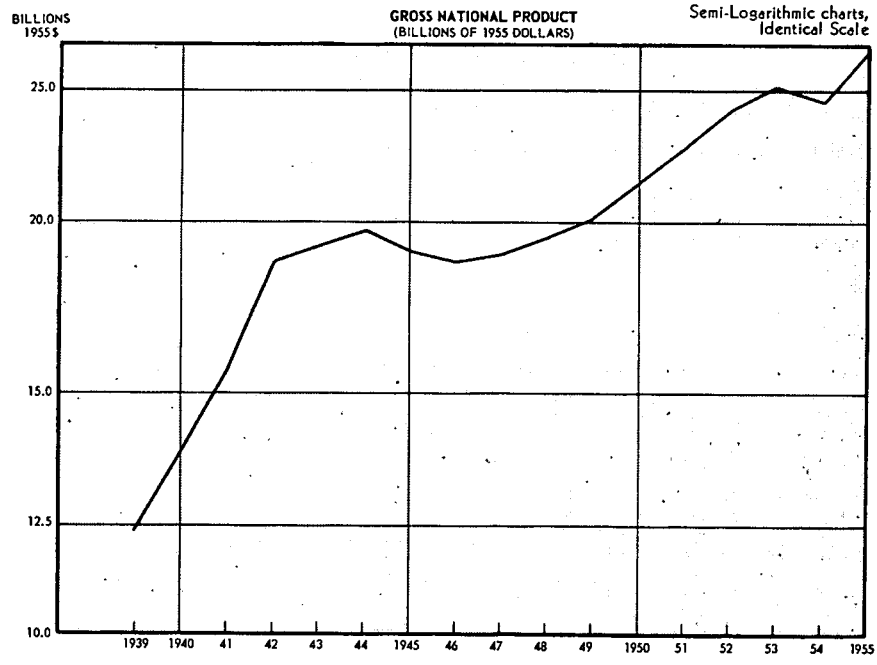
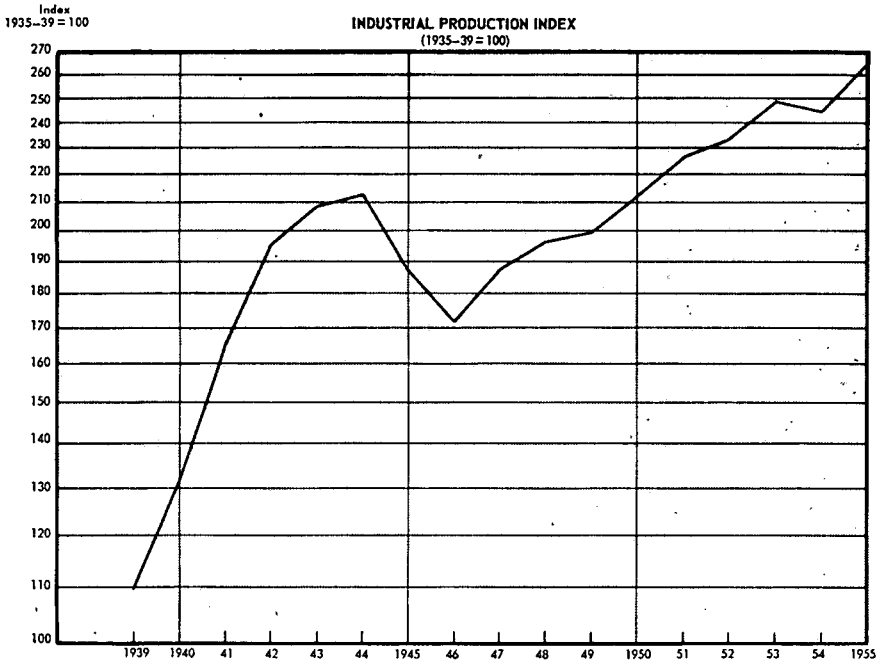


Chart 5.II



In constant dollar terms the Gross National Product increased by 124 per cent between 1939 and 1955, or at an annual compound rate of 5.16 per cent. Per capita Gross National Product increased in real terms by 61 per cent, or at an annual compound rate of 3.04 per cent. Over the same period the index of industrial production increased by 142 per cent or at an annual compound rate of 5.68 per cent. Growth of this order of magnitude was made possible by concurrent growth in supplies of the basic factors of production. There was a rapid increase in population and in the labour force; in known and commercially exploitable natural resources; and in the amount of capital that had been put in place.

In 1939 Canada's population amounted to 11,267,000. By 1955 it had risen to 15,601,000, augmented by natural increase, by immigration and by the entry of Newfoundland into Confederation on April 1, 1949, with an existing population of 343,000 and with a high birth rate of Newfoundland babies. If Newfoundland is omitted from the calculation, the population of Canada has been increasing over this period at an average rate of 1.88 per cent annually. Meanwhile, the labour force (including those in the armed services) grew from 4,658,000 in 1939 to 5,042,000 in 1946 and to 5,676,000 in 1955. The rate of increase over the whole period was 1.24 per cent. It is worth remarking that most of the net addition to the labour force since 1946 was provided by immigration. This is explained by the fact that over the last 20 years the number of those in the age group from 15 to 19, from which new entrants to the labour force are ordinarily drawn, has remained virtually constant with the result that natural increase has not made any significant contribution to the net addition to the labour force since the end of the War.[3] From 1939 to 1946 neither immigration nor emigration was of much importance. In the following nine years, however, 1,131,000 immigrants entered the country, while 519,000, it is estimated, emigrated, leaving 612,000 as the total for net immigration. Without large-scale immigration, labour shortages would have been even more acute than they were, and the degree of economic growth actually experienced could not have been achieved.

Unfortunately, there is no simple way of showing statistically how the natural resources base has been expanded. In the case of mining, it might be thought that figures for proved or measured reserves would furnish a reliable comparison. However, because it is expensive to develop proved reserves, such figures tend to reflect current production at least as much as total potential and therefore are an inadequate guide to the resources probably available. The best that can be done, therefore, is to pick and choose, giving examples now of increases in the volume of production, now of increases in the value of production, and, in a few instances, of increases in the figures for reserves. Although iron ore had been mined in past years in Canada and many deposits were known, there was no

production between 1924 and 1938 (except in Newfoundland), since none of the deposits could be mined at a profit. In 1955 Canadian shipments of iron ore amounted to 16 million tons and this figure rose in 1956 to more than 22 million. In 1939 Canadian production of crude petroleum from the comparatively small Turner Valley field in southern Alberta amounted to 8 million barrels. As a result of the many new fields discovered since the strike at Leduc in 1947, Canadian production in 1955 amounted to 129 million barrels; and proved reserves increased between 1946 and 1955 from some 70 million barrels to approximately 3,000 million barrels. Between 1939 and 1955 production of natural gas increased from 35 billion to 151 billion cubic feet; and proved reserves rose from 2 trillion cubic feet to some 21 trillion cubic feet. In 1939, of course, no uranium was produced in Canada. In 1956 the value of uranium production amounted to almost $40 million. There have also been substantial increases in the production of non-ferrous metals, which have been mined in quantity in Canada since not long after the turn of the century.

Expansion of our mineral resources has been brought about in a number of different ways. In part, it has resulted from completely new discoveries, as in the case of many of the western oil fields, the uranium mines on Lake Athabasca and in Algoma, the nickel mines in northern Manitoba, the lead and zinc mines in New Brunswick, and the asbestos mines in northern British Columbia and northern Ontario. In part, it has flowed from further probing of known and already mined deposits, as in the case of the Sudbury Basin and of the Sullivan mine in southern British Columbia. In still other cases such as the copper mines at Chibougamau and the iron mines at Steep Rock Lake in Ontario and at Knob Lake in Labrador and New Quebec, it has arisen from the development of deposits whose existence had long been known but which had become economic to mine only with new technological methods and with keener world demand reflected in higher prices. Finally, these same causes made it profitable to reopen some mines that had been abandoned, such as a number of copper mines in Newfoundland and silver and base metals mines in the Yukon. The shape of our mining frontier, in other words, has been determined not only by the discoveries of prospectors on Canadian soil but also by events in Cuba or Rhodesia, by new metallurgical techniques invented in Switzerland or Delaware, and by the views taken of these developments by traders in St. Louis or on the London Metal Exchange.

In a country like Canada with abundant natural resources, many of which, however, are either inaccessible or intractable or both, the distinction that is often drawn between "land" and "capital" is apt to become a little blurred, since much of the land's potential wealth is not brought into any significant relationship with the economic process until demand for it is sufficient to justify a heavy expenditure of capital in its exploitation. That is true of water-power, for example. Between 1939 and 1955 installed

hydro-electric capacity increased from 8 million to 18 million horsepower — at the cost of a heavy outlay in dams, turbines and generators. But the capital invested in recent natural resource development in Canada has characteristically been heavy. We were told by representatives of the Aluminum Company of Canada, for example, that close to $300 million was invested in the project at Kitimat in British Columbia before a single pound of saleable aluminum was produced.[4] Similarly, an investment of approximately $255 million by the Iron Ore Company of Canada was necessary before the mines at Knob Lake could be brought into production.[5]

No figures have previously been published in Canada to show the growth of capital stock. But provisional estimates developed by the Commission's staff suggest that between 1939 and 1955 the gross stock of fixed industrial capital in Canada increased (in terms of 1949 constant dollars) from approximately $24 billion to approximately $38 billion.[6] However that may be, the rate of capital investment has certainly been impressive. During the War capital investment was hardly more important than it had been during the depression years of the early '30's. In 1943, for example, gross private domestic investment (excluding inventories) represented only 7.7 per cent of Gross National Expenditure, which was almost exactly the same percentage as had been invested in 1934. As soon as the War was over, however, investment accelerated rapidly. In 1946 gross domestic investment represented more than 12 per cent of Gross National Expenditure. By 1950 this proportion had risen to almost 18 per cent and by 1955 to almost 19 per cent. During recent years, as we have already mentioned in Chapter 3, Canada has been devoting a substantially larger proportion of its total expenditure to capital formation than has the United States.

The Canadian Economy during the War

Perhaps these are sufficient indications of the main dimensions of economic growth over the period and we may now turn to record briefly what happened to the economy during the War, in the post-war period of readjustment and during the succeeding expansion. At a number of points in the narrative, reference is made to the information contained in Tables 5.1, 5.2, and 5.3, which show the changing composition of the employed civilian labour force and of total output* and expenditure.

---

* The measure of output used in Table 5.2 and throughout this chapter is Gross Domestic Product at factor cost. This differs from Gross Domestic Product at market prices in that the amount of indirect taxes has been subtracted and the amount of subsidies added, as those two items are defined in the National Accounts. The only difference between Gross Domestic Product at market prices and the more familiar concept, Gross National Product at market prices, is that the former excludes foreign earnings of residents of Canada and includes earnings in Canada of non-residents, while the latter includes all income earned by residents and excludes all income earned by non-residents. The Gross Domestic Product (at factor cost) of a sector measures the value of the output *attributable to that sector*. In other words, it is a net concept.

CIVILIAN EMPLOYED LABOUR FORCE BY SECTORS 1939-55

Table 5.1

Years	Total	Gov't & comm. services	Industry excl. government and community services									
					Business economy excl. agriculture and government and community services							
			Total	Agriculture	Total	Resources industries	Transportation and communication	Construction	Trade finance & services	Manufacturing		
										Total	Primary	Secondary
	Thousands											
1939	3,981	318	3,663	1,293	2,370	228	249	186	979	728	163	565
1940	4,121	325	3,796	1,260	2,536	231	253	215	1,015	822	179	643
1941	4,157	336	3,821	1,147	2,674	255	266	211	958	984	192	792
1942	4,366	348	4,018	1,068	2,950	240	289	221	1,001	1,199	214	985
1943	4,432	360	4,072	1,049	3,023	201	307	207	986	1,322	224	1,098
1944	4,435	384	4,051	1,067	2,984	190	314	160	995	1,325	239	1,086
1945	4,357	404	3,953	1,075	2,878	180	327	165	995	1,211	232	979
1946	4,687	437	4,250	1,186	3,064	216	346	228	1,052	1,222	267	955
1947	4,844	461	4,383	1,122	3,261	219	374	254	1,145	1,269	280	989
1948	4,886	485	4,401	1,096	3,305	228	372	289	1,143	1,273	284	989
1949	4,948	507	4,441	1,079	3,362	221	367	321	1,142	1,311	284	1,027
1950	4,996	532	4,464	1,018	3,446	239	377	337	1,170	1,323	286	1,037
1951	5,111	556	4,555	940	3,615	271	399	351	1,239	1,355	301	1,054
1952	5,173	579	4,594	887	3,707	267	423	344	1,334	1,339	293	1,046
1953	5,246	603	4,643	858	3,785	254	424	352	1,367	1,388	298	1,090
1954	5,194	627	4,567	873	3,694	267	393	333	1,389	1,312	300	1,012
1955	5,328	664	4,664	817	3,847	297	401	367	1,420	1,362	313	1,049
	Percentage distribution											
1939	100.0	8.0	92.0	32.5	59.5	5.7	6.3	4.7	24.5	18.3	4.1	14.2
1940	100.0	7.9	92.1	30.6	61.5	5.6	6.1	5.2	24.6	20.0	4.4	15.6
1941	100.0	8.1	91.9	27.6	64.3	6.1	6.4	5.0	23.0	23.7	4.6	19.1
1942	100.0	8.0	92.0	24.4	67.6	5.5	6.6	5.1	22.9	27.5	4.9	22.6
1943	100.0	8.1	91.9	23.7	68.2	4.5	6.9	4.7	22.2	29.9	5.1	24.8
1944	100.0	8.6	91.3	24.1	67.3	4.3	7.1	3.6	22.4	29.9	5.4	24.5
1945	100.0	9.3	90.7	24.7	66.0	4.1	7.5	3.8	22.8	27.8	5.3	22.5
1946	100.0	9.3	90.7	25.3	65.4	4.6	7.4	4.9	22.4	26.1	5.7	20.4
1947	100.0	9.5	90.5	23.2	67.3	4.5	7.7	5.3	23.6	26.2	5.8	20.4
1948	100.0	9.9	90.1	22.4	67.7	4.7	7.6	5.9	23.4	26.1	5.8	20.3
1949	100.0	10.2	89.8	21.8	68.0	4.5	7.4	6.5	23.1	26.5	5.7	20.8
1950	100.0	10.6	89.4	20.4	69.0	4.8	7.6	6.7	23.4	26.5	5.7	20.8
1951	100.0	10.9	89.1	18.4	70.7	5.3	7.8	6.9	24.2	26.5	5.9	20.6
1952	100.0	11.2	88.8	17.1	71.7	5.2	8.2	6.6	25.8	25.9	5.7	20.2
1953	100.0	11.5	88.5	16.3	72.2	4.8	8.1	6.7	26.1	26.5	5.7	20.8
1954	100.0	12.1	87.9	16.8	71.1	5.1	7.6	6.4	26.7	25.3	5.8	19.5
1955	100.0	12.5	87.5	15.3	72.2	5.6	7.5	6.9	26.6	25.6	5.9	19.7

SOURCE: Wm. C. Hood and Anthony Scott, *Output, Labour and Capital in the Canadian Economy*, 1957, a study for the Commission, Chap. 5, Appendix F, p. 398 and Chap. 7, Appendix B, p. 499.

GROSS DOMESTIC PRODUCT BY SECTORS AT FACTOR COST 1939-55

Table 5.2

(excluding residential rents and G.D.P. arising in the armed forces sector)

Years	Total	Gov't & comm. services	Industry excl. government									
			Total	Agriculture	Business economy excl. agriculture and government							
					Total	Resources industries	Transportation and communication	Construction	Trade finance & services	Manufacturing		
										Total	Primary	Secondary
	In millions of 1949 dollars											
1939	9,012.0	944.5	8,067.5	2,183.4	5,884.1	803.2	630.9	379.1	1,948.6	2,122.3	566.0	1,556.3
1940	10,100.4	996.5	9,103.9	2,240.1	6,863.8	920.1	773.3	429.1	2,067.7	2,673.6	669.0	2,004.6
1941	11,182.1	1,133.0	10,049.1	1,903.4	8,145.7	936.0	939.7	535.0	2,223.8	3,511.2	788.1	2,723.1
1942	13,053.9	1,092.9	11,961.0	2,841.8	9,119.2	935.9	1,042.7	566.1	2,255.3	4,319.2	846.2	3,473.0
1943	12,664.1	1,137.8	11,526.3	1,910.9	9,615.4	886.9	1,189.5	539.1	2,272.7	4,727.2	872.8	3,854.4
1944	13,309.7	1,148.1	12,161.6	2,355.5	9,806.1	867.7	1,193.8	434.0	2,381.8	4,928.8	891.9	4,036.9
1945	12,295.9	1,197.8	11,098.1	1,782.3	9,315.8	895.2	1,186.1	443.9	2,579.8	4,210.8	854.2	3,356.6
1946	12,674.2	1,333.7	11,340.5	1,969.6	9,370.9	922.6	1,092.7	580.1	3,065.9	3,709.6	895.4	2,814.2
1947	13,301.7	1,372.5	11,929.2	1,827.7	10,101.5	981.7	1,159.2	672.0	3,272.1	4,016.5	977.5	3,039.0
1948	13,765.5	1,405.0	12,360.5	1,958.2	10,402.3	1,073.6	1,184.0	767.2	3,229.5	4,148.0	1,008.3	3,139.7
1949	14,050.3	1,455.1	12,595.2	1,892.0	10,703.2	1,073.3	1,195.8	820.5	3,414.5	4,199.1	1,014.3	3,184.9
1950	14,928.6	1,508.6	13,420.0	2,085.0	11,335.0	1,199.8	1,233.9	857.4	3,620.0	4,423.9	1,072.8	3,351.1
1951	15,846.0	1,560.8	14,285.2	2,338.5	11,946.7	1,391.3	1,329.4	887.8	3,595.2	4,743.0	1,151.1	3,591.9
1952	16,687.8	1,647.8	15,040.0	2,544.7	12,495.3	1,423.9	1,436.0	970.7	3,827.1	4,837.6	1,153.6	3,684.0
1953	17,325.3	1,711.1	15,614.2	2,406.6	13,207.6	1,484.1	1,455.0	1,044.5	4,012.4	5,211.6	1,196.6	4,015.0
1954	16,730.9	1,771.9	14,959.0	1,916.6	13,042.4	1,610.9	1,392.7	1,060.1	4,054.4	4,924.3	1,237.1	3,687.2
1955	18,270.7	1,836.6	16,434.1	2,342.3	14,091.8	1,819.4	1,486.0	1,187.3	4,324.5	5,274.6	1,324.7	3,949.9
	Percentage distribution											
1939	100.0	10.5	89.5	24.2	65.3	8.9	7.0	4.2	21.6	23.6	6.3	17.3
1940	100.0	9.9	90.2	22.2	68.0	9.1	7.7	4.3	20.5	26.4	6.6	19.8
1941	100.0	10.1	89.9	17.0	72.9	8.4	8.4	4.8	19.9	31.4	7.0	24.4
1942	100.0	8.4	91.6	21.8	69.8	7.2	8.0	4.3	17.2	33.1	6.5	26.6
1943	100.0	9.0	91.0	15.1	75.9	7.0	9.4	4.3	17.9	37.3	6.9	30.4
1944	100.0	8.6	91.4	17.7	73.7	6.5	9.0	3.3	17.9	37.0	6.7	30.3
1945	100.0	9.7	90.3	14.5	75.8	7.3	9.7	3.6	21.0	34.2	6.9	27.3
1946	100.0	10.5	89.5	15.5	74.0	7.3	8.6	4.6	24.2	29.3	7.1	22.2
1947	100.0	10.3	89.7	13.7	76.0	7.4	8.7	5.1	24.6	30.2	7.3	22.9
1948	100.0	10.2	89.8	14.2	75.6	7.8	8.6	5.6	23.5	30.1	7.3	22.8
1949	100.0	10.4	89.6	13.5	76.1	7.6	8.5	5.8	24.3	29.9	7.2	22.7
1950	100.0	10.1	89.9	14.0	75.9	8.0	8.3	5.7	24.3	29.6	7.2	22.4
1951	100.0	9.8	90.2	14.8	75.4	8.8	8.4	5.6	22.7	29.9	7.3	22.6
1952	100.0	9.9	90.1	15.3	74.8	8.5	8.6	5.8	22.9	29.0	6.9	22.1
1953	100.0	9.9	90.1	13.9	76.2	8.6	8.4	6.0	23.1	30.1	6.9	23.2
1954	100.0	10.6	89.4	11.5	77.9	9.6	8.3	6.3	24.3	29.4	7.4	22.0
1955	100.0	10.1	89.9	12.8	77.1	9.9	8.1	6.5	23.7	28.9	7.3	21.6

SOURCE: Wm. C. Hood and Anthony Scott, *Output, Labour and Capital in the Canadian Economy*, 1957, a study for the Commission, Chap. 5, Appendix F, p. 398 and Chap. 7, Appendix C, p. 501.

Table 5.3

DISTRIBUTION OF GROSS NATIONAL EXPENDITURE IN CONSTANT DOLLARS—1939-1955

Years	Consumer expenditure	Government expenditure	Investment (excl. inventories)				Change in inventories		External trade			Residual error	G.N.E.
			Total	Residential construction	Non-residential construction	Machinery and equipment	Total	Business	Exports less imports	Exports	Imports		
	In millions of 1949 constant dollars												
1939....	6,338	1,195	1,104	402	287	415	+ 687	+530	+ 301	2,973	2,672	+ 15	9,640
1940....	6,841	1,809	1,380	409	350	621	+ 680	+419	+ 417	3,342	2,925	— 92	11,035
1941....	7,344	2,525	1,672	428	455	789	+ 33	+236	+1,051	4,366	3,315	— 62	12,563
1942....	7,658	5,056	1,531	329	521	681	+ 702	—241	+ 396	3,870	3,474	—163	15,180
1943....	7,760	5,666	1,188	273	516	399	— 287	— 89	+1,292	5,424	4,132	— 48	15,571
1944....	8,338	6,447	1,193	335	357	501	— 218	+ 13	+ 283	5,206	4,923	— 81	15,962
1945....	9,069	4,534	1,372	395	349	628	— 501	—119	+1,041	5,066	4,025	—102	15,413
1946....	10,266	2,389	1,865	503	578	784	+ 400	+486	+ 258	4,137	3,879	— 41	15,137
1947....	10,741	1,851	2,531	616	701	1,214	+ 419	+548	— 157	4,088	4,245	— 70	15,315
1948....	10,555	1,915	2,829	677	850	1,302	+ 154	+159	+ 432	4,188	3,756	— 52	15,833
1949....	10,963	2,128	2,968	742	903	1,323	+ 48	+175	+ 174	4,011	3,837	— 2	16,279
1950....	11,645	2,216	3,047	760	970	1,317	+ 591	+450	— 176	4,034	4,210	+ 2	17,325
1951....	11,572	2,760	3,205	650	1,061	1,494	+1,056	+682	— 299	4,406	4,705	+ 46	18,340
1952....	12,237	3,462	3,484	635	1,223	1,626	+ 485	+197	— 2	4,872	4,874	— 79	19,587
1953....	12,905	3,452	3,844	832	1,287	1,725	+ 584	+328	— 441	4,856	5,297	— 12	20,332
1954....	13,375	3,357	3,678	910	1,250	1,518	— 266	— 60	— 387	4,671	5,058	+ 87	19,844
1955....	14,300	3,481	4,044	1,122	1,294	1,628	+ 436	+160	— 723	4,998	5,721	+ 35	21,573
	Percentage distribution												
1939....	65.7	12.4	11.5	4.2	3.0	4.3	+7.1	+5.5	+3.1	30.8	27.7	+0.2	100.0
1940....	62.0	16.4	12.5	3.7	3.2	5.6	+6.2	+3.8	+3.8	30.3	26.5	—0.8	100.0
1941....	58.5	20.1	13.3	3.4	3.6	6.3	+0.3	+1.9	+8.4	34.8	26.4	—0.5	100.0
1942....	50.4	33.3	10.1	2.2	3.4	4.5	+4.8	—1.4	+2.6	25.5	22.9	—1.1	100.0
1943....	49.8	36.4	7.7	1.8	3.3	2.6	—1.9	—0.6	+8.3	34.8	26.5	—0.3	100.0
1944....	52.2	40.4	7.4	2.1	2.2	3.1	—1.2	+0.1	+1.8	32.6	30.8	—0.5	100.0
1945....	58.8	29.4	9.0	2.6	2.3	4.1	—3.3	—0.8	+6.8	32.9	26.1	—0.7	100.0
1946....	67.8	15.8	12.3	3.3	3.8	5.2	+2.6	+3.2	+1.7	27.3	25.6	—0.3	100.0
1947....	70.1	12.1	16.5	4.0	4.6	7.9	+2.8	+3.6	—1.0	26.7	27.7	—0.5	100.0
1948....	66.7	12.1	17.9	4.3	5.4	8.2	+1.0	+1.0	+2.8	26.5	23.7	—0.3	100.0
1949....	67.3	13.1	18.2	4.6	5.5	8.1	+0.3	+1.1	+1.1	24.6	23.6	—0.01	100.0
1950....	67.2	12.8	17.6	4.4	5.6	7.6	+3.4	+2.6	—1.0	23.3	24.3	+0.01	100.0
1951....	63.1	15.0	17.4	3.5	5.8	8.1	+5.7	+3.7	—1.7	24.0	25.7	+0.3	100.0
1952....	62.5	17.7	17.8	3.2	6.2	8.3	+2.5	+1.0	—0.01	24.9	24.9	—0.4	100.0
1953....	63.5	17.0	18.9	4.1	6.3	8.5	+2.9	+1.6	—2.2	23.9	26.1	—0.1	100.0
1954....	67.4	16.9	18.5	4.6	6.3	7.6	—1.3	—0.3	—2.0	23.5	25.5	+0.4	100.0
1955....	66.3	16.1	18.7	5.2	6.0	7.5	+2.0	+0.7	—3.4	23.2	26.5	+0.2	100.0

SOURCE: Wm. C. Hood and Anthony Scott, *Output, Labour and Capital in the Canadian Economy*, 1957, a study for the Commission, Chap. 7, Appendix D, pp. 506 and 508.

This is not the place to record the achievements of the Canadian economy in turning out military material and supplies for its own forces and for those of its allies at the same time as Canada was maintaining a force of more than 750,000 men under arms. Our focus of attention must rather be on those developments that left some lasting increase in productive capacity or led to some lasting structural change in the economy. When war broke out, the economy was operating at far below its full capacity. To mention only one indicator, 11 per cent of the labour force were still without work in 1939. That explains why much of the talk in army mess halls and among matelots on the destroyers was about riding the rods; about brushes with the railway police; and about the "jungles" that had sprung up during the depression on the fringes of most Canadian cities. It is also one reason why in some sectors of the economy it was possible to increase output very substantially without any increase in productive capacity. If, on the outbreak of war, there had been unemployment in the cities, there had also been serious under-employment on the farms, to which many who had been unable to find work elsewhere had drifted back since there they could at least be sure of food and shelter. The needs of the armed forces and the increase in industrial activity at once began to cut into this reservoir of surplus manpower. In 1939 the labour force in agriculture amounted to almost 1,300,000. By 1944 this figure had dropped to only a little over a million. With demobilization in 1945 and 1946, the farm labour force again turned upwards. But as the mechanical revolution on Canadian farms got under way, this very temporary movement was quickly reversed and the number of those employed in agriculture has since dropped almost steadily so that, in 1955, it amounted to only 817,000, or slightly more than 15 per cent of the employed civilian labour force. Here was one wartime trend that was to prove lasting.

In spite of a declining labour force and little or no increase in the acreage under cultivation or in agricultural capital, farm output between 1935-39 and 1940-44 increased by some 30 per cent. This was accomplished by dint of more intensive cultivation. Perhaps more important, though, than the rise in real output, which was comparatively modest when set alongside a 60 per cent increase for the economy as a whole between 1939 and 1944 (when output reached its wartime peak), were the production shifts that occurred. By 1944 output of livestock and of poultry had both increased by about 58 per cent over pre-war levels. Canadian agriculture had been given a twist away from its concentration on the production of cereals. This was to be undone when the War was over; but it foreshadowed a trend of increasing significance for the future.

The resource industries also expanded less than the economy as a whole, with their output increasing by only 8 per cent from 1939 to 1944. What happened in these industries essentially was that, while output remained virtually constant, the products they turned out were put to

different uses and many shifts in production occurred, with the output of gold, for example, being sharply reduced and the output of zinc sharply increased. The only area in which there was a marked expansion in capacity was hydro-electric power, where installed capacity grew by only a little less than 25 per cent between 1939 and 1944. Much of this increase was associated with growth in the aluminum industry, whose ingot-producing capacity increased fivefold between 1939 and 1944.[7] Another primary manufacturing industry that grew significantly during the War was the primary chemical industry, with facilities for the manufacture of sulphuric acid, for example, doubling over the period. The output of all primary manufacturing industries taken together grew at about the same rate as total output. . . .

The heterogeneous service industries were inevitably affected very unevenly by wartime demand. The railways were called on to move a much larger number of passengers and a much larger volume of freight; and the construction industry was hard-pressed to put up all the new military and industrial installations that were required. The output of the construction industry and of the transport, communications and storage industries rose somewhat more than total output during the War. Activity in almost all the other service industries, however, was curtailed by wartime restrictions. Output in the trade, finance and private service industries increased by only 20 per cent from 1939 to 1944 and the steady growth in the proportion of the labour force employed in these industries that had been noticeable in every decennial census for more than 70 years was interrupted. Personal incomes during the War increased in real terms by almost three-quarters, but this increase was prevented from stimulating most of the service industries by increased taxes, higher savings, and shortages of consumer goods.

The sector of the economy that benefited most from wartime expansion was secondary manufacturing. During the War it was simultaneously insulated from foreign competition and exposed to the forcing effects of intensified research and development. From the very beginning of the War Canada was cut off from overseas suppliers by scarcity of shipping space, and this situation was aggravated as the destructiveness of enemy action mounted. Sources of supply in the United States were also less available, initially because of the importance of preserving Canada's limited exchange resources of United States dollars and, later, as United States war production shifted into high gear, because of the lack of surplus capacity across the border to meet the requirements of the Canadian war effort. As a result, Canadian industry found itself more on its own than it had ever been before. Government assistance came in the form not only of very large contracts and generous capital cost allowances, but also of sponsored programmes of research and development. As the President of the National Research Council pointed out in his submission to us, very little industrial

research was being done in Canada before the War; but in the Second World War Canadian industry underwent the same exposure to widespread government research as United States industry had experienced in the First World War.[8] In this protected hot-house atmosphere, where costs were of relatively minor importance, secondary manufacturing grew like a beanstalk.

Between 1939 and 1944 it is estimated that the output of the secondary manufacturing industries increased by 160 per cent. Because of the difficulty of valuing munitions on a basis comparable with civilian production, that estimate may somewhat overstate the increase actually achieved. Nor was all of the increased output by any means permanent or accompanied by permanently increased capacity. Nothing may be left of a wartime explosives plant but some decayed bunk-houses and a road leading nowhere that a canoeist comes on with surprise as he is portaging through the bush. Yet when every allowance has been made, it remains true that the output of the secondary manufacturing industries increased prodigiously during the War and that it left them with greatly increased stature both absolutely and relatively. In some industries, basic capacity was permanently enlarged. Basic steel-making capacity, for example, increased by more than 50 per cent during the War and was never subsequently cut back.[9] Production was rounded out. Electronic components, that before the War had been imported from the United States, were now produced in Canada. New industries were successfully established. Synthetic rubber, roller bearings, diesel engines, antibiotics, high octane gasoline, were produced here for the first time during the War and this new production resulted in permanent additions to Canada's industrial capacity. New skills were acquired by the labour force. Management became more adept and more confident through experience with large-scale organization and improvisation. The story is summed up in a few simple figures: in 1939 secondary manufacturing accounted for approximately 17 per cent of total output and 14 per cent of the employed civilian labour force; by 1944 those percentages had risen to 30 per cent and 25 per cent respectively; by 1949, when the post-war adjustment was complete in most respects, they had fallen back but only to 23 per cent and 21 per cent, which were considerably above the comparable figures for any year either in the '20's or '30's.[10]

As would be expected, the chief stimulus to economic expansion during the War was provided by government expenditure. In his annual report for 1945 the then Governor of the Bank of Canada, Mr. G. F. Towers, drew attention to the fact that government expenditure on goods and services, including exports directly or indirectly financed by government, represented about 40 per cent of Gross National Expenditure and he described this total government outlay as "the main driving force behind the very high level of activity which was attained during the War period". The problem before the country, he went on, was "to expand the other

types of expenditure, and particularly domestic private investment and domestic consumption, in order that there will be compensating stimulus as government outlays decline to their post-war level". [11]

Years of Adjustment

In the period following the end of the War as the economy was being converted to peacetime production, and on through 1949 as total output again began to rise, the principal stimulus to economic growth and activity would seem to have been consumer expenditure. When the War ended, there was a large backlog of unsatisfied consumer demand and a large accumulation of personal savings. Together with sustained levels of current income, they provided the fuel for the blaze of consumer spending that, more than anything else, kept a good head of steam behind the economy and enabled it to shift to a civilian basis without much decline in output or any considerable degree of unemployment.

In Canada, as well as in the United States and other countries, it had been feared during the War that the end of hostilities might be followed by a sharp drop in business activity and elaborate preparations had been made to avoid such a contingency. The various precautionary measures that had been introduced had been inspired by a wide variety of motives. Some of them were principally designed to deal justly and even generously with ex-servicemen on their return to civilian life. Examples of such measures were the war service gratuities and re-establishment credits payable by the Department of Veterans Affairs. Other measures were principally designed to put into effect the recommendations of the Rowell-Sirois Commission for minimum national standards of welfare and for adjustments in the taxing power. Examples of such measures were the Unemployment Insurance Act of 1940, the Family Allowance Act of 1944, and the Wartime Tax Agreements between the Federal and Provincial Governments. Another set of measures, including the Agricultural Prices Support Act of 1944, were intended to prevent a repetition of the disastrous fall in farm incomes that had added so materially to distress in the '30's. But all of these measures were coloured to a greater or less degree by the general view that there should be means available to the federal authorities to maintain flows of expenditure for consumer and capital goods when depression threatened.

That view found its most authoritative Canadian expression in the White Paper on Employment and Income, which appeared in the spring of 1945. In that document the government of the day declared that a high and stable level of employment was a major objective of its policy and gave some indications of the courses to be followed in achieving it. In the field of foreign trade, it was pointed out, Canada had already co-operated with many other countries in plans for the United Nations Relief and Reha-

bilitation Agency, the International Monetary Fund and the International Bank for Reconstruction and Development. These international efforts to restore the damage done by the War and to re-establish a freely operating system of world trade would be supplemented on Canada's part by substantial credits to enable its principal overseas customers to pay for their imports from Canada while they were repairing and readjusting their economies. In the investment field, provision had been made to provide credit for small businesses through the formation of the Industrial Development Bank and for residential construction through the formation of the Central Mortgage and Housing Corporation. It was the government's intention that private investment should be further stimulated by maintenance of the low interest rates that had prevailed during the War. In the field of taxation, early and substantial reductions were forecast in corporate and personal income tax rates and in the sales tax. Since it is unlikely that any government in Canada will want to divest itself of responsibility for maintaining full employment, the change in the relation of the government to the economy epitomized in the White Paper of 1945 is likely to prove permanent. Indeed, it may well be considered to be the most important of all the changes recorded in this chapter.[12]

Some of the measures that were conceived during the War to ward off a threatened depression operated only indirectly to increase consumer incomes. Others, however, such as family allowances, veterans gratuities and tax reductions, directly increased the amounts available to individuals for consumer spending. And all of them helped, along with the large volume of accumulated personal savings, to create an atmosphere of confidence, in which consumers felt they could safely proceed to make large purchases of the goods they had been denied during the War. In this atmosphere consumer expenditures, in terms of 1949 constant dollars, grew from $8,338 million in 1944 to $10,963 million in 1949. Over the same period the percentage of Gross National Expenditure represented by consumer spending increased from 52 per cent to 67 per cent.

But nowadays as one economic stimulus comes to the fore, others do not necessarily recede, except in a relative sense; and if consumer demand would seem to have provided the principal stimulus from 1945 to 1949, private investment and external demand were also vigorous during those years. This was the period when Canadian cities began to be circled with the new housing developments that have expanded, ring by ring, ever since. It was also the period when combines and tractors were moving in droves on to Canadian farms to transform agriculture in the Prairie Provinces, particularly, and to reduce drastically and definitively the size of the farm labour force. The manufacturing industries were also equipping themselves with new structures and new equipment. Reflecting these developments, private investment in constant dollar terms grew from $1,193

million in 1944 to $2,968 million in 1949. The percentage of Gross National Expenditure accounted for by private investment increased over the period from 7 per cent to 18 per cent.

One of the sectors of the economy in which there was substantial capital investment during these years was the resource industries. We have already mentioned that output in this sector increased hardly at all during the War, except for the generation of electric power. With the end of the War, however, external demand for the products of Canada's mines and forests revived. The output of metals, wood pulp and lumber all expanded substantially and the commodities produced by the primary manufacturing industries on the basis of these resources regained the pre-eminent place they had held before the War in Canada's export trade.

During this period a significant proportion of our exports were financed by governments — by the post-war credits extended by Canada to the United Kingdom and other countries and later by United States grants to third countries for off-shore purchasing under the European Recovery Programme. It is estimated, for example, that in 1946 one-third of all Canada's exports were financed by the Canadian Government.[13] When one looks back at those years and also recalls the historic dependence of the Canadian economy on the export trade, what seems surprising about Canada's exports immediately after the War is not that Canada became involved in balance-of-payments difficulties late in 1947 through exporting such a large volume of goods without receiving anything in immediate return, but rather that, at a time when domestic consumption and private investment were both strong, it was possible for the economy for almost two years to export so much on credit.

By 1949 the economy, supported by high levels of demand, particularly on the part of consumers, had gone a long way toward sorting itself out into its new peacetime pattern. Agriculture now accounted for a significantly smaller proportion of total output and total employment. The resource industries and primary manufacturing had risen in relative importance from the position they had held during the War. Secondary manufacturing provided employment for almost as many workers as it had in 1944, but it had declined since then in relative importance, both from the point of view of output and employment, as the total labour force had grown and as the service industries had come to provide a larger and larger proportion of all the jobs in Canada. The number of workers in the construction industry doubled between 1944 and 1949 and there were also substantial increases in employment in transportation and communication and in the trade, finance and private services sector. The 1949 Gross National Product in constant dollar terms for the first time exceeded the previous peak that had been reached in 1944.

The Post-Korean Expansion

With the boom initiated by the outbreak of war in Korea in 1950, we return to a period that fits the familiar, historic pattern of dominant export demand, which was accompanied in this case, as in similar periods in the past, by heavy capital expenditures to meet it. It was in those years that the iron ore in Labrador and New Quebec was developed; that heavy investment was made in the development of oil and natural gas on the Prairies; and that a new large-scale aluminum project at Kitimat in northern British Columbia was undertaken. Between 1949 and 1955 output in the resource industries increased by approximately 70 per cent, accounting for 10 per cent of total output in the latter year instead of the 8 per cent that it had represented in 1949. Gross domestic investment as a proportion of Gross National Expenditure varied between 17 per cent and 19 per cent and was heavy in the resource industries and primary manufacturing. Canadians who remembered the boom in the first decade of the century or in the '20's, found much that was familiar in the dynamic behind this new growth.

It is worth noticing, however, how deeply Canada's economic growth in this period, unlike other boom periods in the past, was influenced by defence expenditures. In real terms government expenditure was half as large again in 1955 as it had been in 1950 and accounted for 16 per cent rather than 13 per cent of Gross National Expenditure. In part these increased expenditures went to support much larger armed forces; but their effects on the economy were widespread. Under the stimulus of government contracts the aircraft industry, which had declined sharply after the War, grew rapidly until by 1955 it employed more than 30,000 workers. The need to build radar warning lines stimulated the construction industry, the electronics industry and civil aviation. The establishment of Camp Gagetown near Fredericton added the equivalent of a new industry to New Brunswick and one larger than any that had existed there before. These effects of Canadian and United States defence expenditure on the Canadian economy are reasonably well known and are obvious enough. What is not always so fully realized is how the programme of resource development was coloured to greater or less degree by defence considerations.

When the North Atlantic Treaty Organization was established in 1949, military planning was predicated on the assumption that the probable course of weapon development would make some future years more dangerous than others. With the outbreak of war in Korea, however, this view gave way to the belief that the period of maximum danger had already begun; and in its turn, this was modified into a realization that the threat to the security of the West might last for decades and take many forms. At the same time as strategic thinking was undergoing these changes, it was beginning to appear that the economic recovery of the countries

of Western Europe had now progressed so far as to initiate a period in which their requirements for raw materials would be on an ascending scale. Moreover, the United States was discovering that it was becoming deficient in many important raw materials. This discovery was dramatized by the work of the Paley Commission, which had been established by President Truman early in 1951 in order to consider how the needs of the United States for raw materials arising from the defence programme, from consumer demand, and from the long-term growth of the economy could best be satisfied. At the same time the International Materials Conference, which had been set up as a result of the meeting of President Truman and Prime Minister Attlee at the end of 1950, was attempting to allocate materials that were in short supply.

These events and the thinking and forecasts which they reflected have had an important influence on the development of Canada's natural resources. It has been estimated, for example, that about 40 per cent of the free world's production of nickel is used for defence purposes;[14] and it seems likely that this is also a fair measure of the proportion of Canadian output that has been channelled in recent years either into the United States stockpile or into military production. Contracts with the United States Government, in fact, have been the indispensable basis for much new nickel production. Similarly, uranium production in Canada has been made possible only by guaranteed sales to the Atomic Energy Commission in the United States. The influence of defence considerations on other resource developments has not always been so direct. But the search for oil and natural gas in Western Canada has obviously been affected by the political and military uncertainties overhanging the continuance of supplies from the Middle East; and United States steel companies might have decided to open up reserves of iron ore in other parts of the world had it not been for the fact that Canadian supplies were less likely to be interrupted in time of war. Canadian resource development, in other words, has profited from our proximity to the voracious industrial capacity of the United States at a time when the United States was undertaking large responsibilities for the defence of the free world and when troubled political conditions were casting a shadow on the reliability of overseas sources of supply. In some cases these projects have also been on a larger scale than might have seemed justified without the expectation that defence requirements and political uncertainties would persist for many years to come. All of them — the developments of iron ore and aluminum and nickel and uranium and oil and natural gas — have a full rich body that would be fortifying in peace or war or cold war. But many of them have a glint of the sergeant's shilling somewhere at the bottom of the glass, just the same.

It is also worth remarking the continued vivacity of consumer demand during this period. Both on an aggregate and per capita basis, consumer

expenditure continued to rise steadily with only a slight interruption to the upward trend in 1951. The long-run stability of the ratio of personal expenditure to personal income, cautions against attributing too much novelty to the phenomenon. Nevertheless, the vigour of consumer spending was remarkable. In part, it would seem to be explained by the wide distribution and levelling up of incomes throughout the population. There was wherewithal for the aspirations of consumers to be widely satisfied. The high levels of consumer expenditure would also seem to be related to changing consumption patterns that concentrated expenditure on automobiles and other consumer durables for which credit could be readily arranged. Far outstripping the growth of personal disposable income and of consumer expenditure, consumer credit has had the effect of loosening the ties between the addiction to consume and income limitations. Another partial explanation would seem to be that consumers have now rid themselves of the last vestiges of a depression psychology and, in the expectation that good times will continue, are complacent about assuming fairly heavy burdens of consumer indebtedness. Whatever the reasons, they have proceeded to purchase goods and services on a scale that has confounded many forecasts. To take only one illustration, broadcasting of television programmes began in Canada only in 1952. By 1956 it is estimated that 55 per cent of the wired households in Canada had one or more television sets installed.[15] Consumption expenditure on this scale is clearly only possible with high levels of income. But it is equally obvious that, in its turn, it provides a stimulus toward higher incomes.

The Canadian Economy Today

By 1955 the Canadian economy was much more diversified — and more versatile — than it had been in 1939. A large number of new industries had been successfully established. Secondary manufacturing occupied a relatively more important place in the economy than it had before the War. The resource base had been extended. The range of commodities exported in significant volume had been widened and total exports accounted for a significantly smaller slice of Gross National Expenditure than they had in 1939.

The extent of the change should not be exaggerated. If we now export a wider range of commodities, our exports are still heavily concentrated on a comparatively few basic staples. There has been a significant shift away from agricultural commodities toward forest products, metals, minerals and chemicals; but the bulk of our exports are still composed of goods which have received comparatively little processing.[16] If we now depend relatively less on exports for the generation of incomes and Gross National Product, they still play a vital part in our economy.

Indeed as is shown in Table 5.4, their declining relative importance is almost wholly attributable to the declining importance of agricultural exports in relation to total output.

Table 5.4

CANADA'S EXPORTS AS A PERCENTAGE OF GROSS NATIONAL EXPENDITURE

	1926-28	1936-38	1946-48	1954	1955
Goods, including gold					
Total exports	23.1	21.4	20.1	16.8	16.8
Excl. agriculture[a]	11.3	15.0	13.8	13.2	13.7
Goods and services					
Total exports	29.6	28.6	26.3	21.2	21.5
Excl. agriculture[a]	17.8	22.1	20.1	17.6	18.4

a Excludes agricultural and vegetable products and animals and animal products as shown in the trade statistics, other than alcoholic beverages, rubber and products, and fish and fishery products.

SOURCE: Roger V. Anderson, *The Future of Canada's Export Trade*, 1957, a study for the Commission, Chap. 1, p. 7.

If many new industries have been established in Canada and many new products are now manufactured here, that development must be seen against what has been happening across the border. In an earlier chapter we referred to the many new chemical products now being marketed in the United States. In the same vein, we were told in evidence that more than 80 per cent of the total business of one of the largest electronics firms in the United States is now in products that did not exist commercially ten years ago.[17] In other words, if the range of commodities made in Canada has been expanding, there has concurrently been a great expansion in the range of commodities that might possibly be produced by a highly industrialized modern economy; and the gaps in Canadian production are still large and conspicuous. We have been impressed by the fact that per capita Canadian consumption both of crude steel and of chemicals of all kinds is only about 50 per cent of American consumption. Those ratios reflect lower standards of living, to be sure. But they also reflect heavy Canadian imports of machinery and other capital equipment, consumer durables, and fabricated parts and components, most of which require for their manufacture a great deal both of steel and of metal alloys, other mineral substances and organic materials that have been subjected to long chemical treatment.[18]

For all that, the change has been extraordinary. How far we have travelled may be suggested by a quotation or two from the Report of the Rowell-Sirois Commission, which was published in 1940. In their chapter on "The Canadian Economy Today", the Commissioners described Canada as "one of the least self-sufficient countries in the world" and, after mentioning the importance of exports of wheat and listing the other commodities in which Canada had large export surpluses, went on to make the following observations:

> "On the other hand, either Canada cannot produce or cannot produce as cheaply as some countries of the world her own requirements of such essential industrial raw materials as iron, coal, oil, rubber and tin; of tropical fruits, fibres and other natural products; and of many iron and steel, chemicals and textile manufactures based on special local resources and techniques. Every country could display a list of surplus and deficit resources but in few would both sides of the balance sheet contain such basically important products in such volume and in few would the extremes be so great."[19]

Those sentences, we think most readers would agree, are hardly an accurate description of the Canadian economy as it exists today.

As a result of increased diversification, it has now become a more complex and sophisticated mechanism than it was, with a large variety of reciprocating movements and with complex interactions that owe something to the multiplicity of its parts but also something to social and institutional arrangements. The wage structure, the tax structure, the programme of social security benefits, as well as attitudes toward work and social mobility, all assist in transmitting dynamic impulses widely through the economy. Money gets rubbed off on a great many fingers. Canadians like it, they like the things it can buy, and they find nothing in the social structure of the country that would discourage them from owning as many of the things they fancy as their pocketbooks will allow. On the contrary, a good deal of consumer expenditure is clearly competitive in nature and is designed to provide an outward and visible sign of rising social status. It follows from all this that when there is effective demand for the products of our resource industries or of our primary manufactures or, indeed, of any other sector of our economy, money filters into the hands of many Canadians and is used to purchase goods and services that stimulate activity in the secondary manufacturing and tertiary industries. Conversely, the economy is now strong enough to be able, if need be, to support at least a part of the export trade for at least short periods of time by providing loans or grants to finance it, or, alternatively, by making supplementary payments to primary producers if the returns obtained for their commodities, when traded internationally, seem inadequate.

At the same time, the economy has become more self-reinforcing than it was before the War. Our prosperity will continue to be heavily dependent on foreign trade and foreign investment. But there are also powerful internal forces at work that make for continuing economic growth. Many of our industries earn substantial profits that can be used for further expansion. They also help to create conditions in which other industries can thrive by contributing to pools of managerial, technical and manual skills. Their needs for machinery, components and materials — as well as the by-products they throw off — are constantly opening opportunities for

the establishment of new production. So plants manufacturing electronic components spring up to supply the television industry, and the petroleum industry is increasingly surrounded by a cluster of petro-chemical industries. Through their location in urban centres, new or expanded industries create a need for heavy investment in municipal improvements. The process is intricate and to a large extent self-reinforcing and self-sustaining. It would seem that the threshing machine has taken wing and turned into something more like a jet.

6

POPULATION AND MANPOWER

THE FIRST census in the modern world was taken in Canada in 1666. The new Intendant, Jean Talon, had been in New France only a few months when, acting on instructions from Colbert, the First Minister of Louis XIV, he began to make preparations for enumerating the sparse and scattered population of the colony. The census he drew up is still to be seen in the Archives de la Marine in Paris and shows that in 1666 there were 547 souls living at Quebec, 532 at Beaupre, 471 on the Isle of Orleans, 624 at Montreal, and 461 at Three Rivers, with a few more scattered in other settlements along the St. Lawrence. The total number of inhabitants of the colony was 3,215, of whom 1,344 were held to be capable of bearing arms.[1]

By 1763 the population of New France had risen to about 60,000. By 1830, it is estimated, the population of British North America was approximately a million. By the time of Confederation in 1867, it had risen to some 3,500,000. Then followed three decades of economic disappointment during which emigration to the United States substantially exceeded immigration from overseas, so that the census taken in 1901 showed that the population had grown to only 5,371,000. The next decade saw the largest flow of immigrants that Canada has ever experienced and the most rapid rate of population growth, which continued fairly steadily until the end of the '20's, when it was retarded by the Great Depression.[2]

Population Forecasts

Obviously the principal basis for population forecasts must be the record of past population growth. We have been fortunate in being able to draw on the census material that has been gathered in Canada on a decennial basis since 1851 and on the admirable vital statistics that have been published annually by the Dominion Bureau of Statistics since 1921. We are anxious, however, that the firmness of the foundations we have been able to use should not lead to misplaced confidence in the population forecasts we have erected on them. There is a fairly widespread disposition to assume that, since many of the people who will be living in Canada in 1980 already exist, and since the parents of still others have already been entered in the census returns, forecasts of population growth are more reliable than forecasts of other economic developments. In some measure that may be true. But they remain highly fallible. Before proceeding to

present our forecasts, we would like to warn that they will prove accurate only in the unlikely event that the assumptions on which they are based are fully realized. There are three main sets of assumptions we have made in the process of formulating population forecasts. The first concern fertility rates, which show the number of children born each year for every thousand women in the various age groups. The second concern mortality rates, which show the numbers dying each year for every thousand men and women in the various age groups. The third set of assumptions concern net immigration, or the number by which those immigrating into Canada exceed those emigrating. All these assumptions have been carefully chosen and, we think, are reasonable. But no one can tell whether they will be validated as the years roll by; and unless they are, our population forecasts will be more or less wide of the mark.

This warning is the more necessary because many previous population forecasts, although carefully and reasonably constructed, have proved egregiously wrong. We have been asked to rush in where the Bureau of Statistics has been cautious not to tread — at least officially. In the United States, however, various official or quasi-official forecasts have been made from time to time; and many of these have been proved by events to be little more than essays in elaborate error. In 1937, for example, population forecasts were prepared for the National Resources Committee. Of the range of 16 forecasts presented, only the highest predicted a population for 1965 as large as has already been reached. All but three of the forecasts showed a population for 1980 below that reached in 1955. In 1943 the same authors revised their forecasts for the National Resources Planning Board. With an assumption of medium fertility and low mortality, they predicted that it would be 1980 before the population of the United States grew to the size it actually attained in 1955.[3]

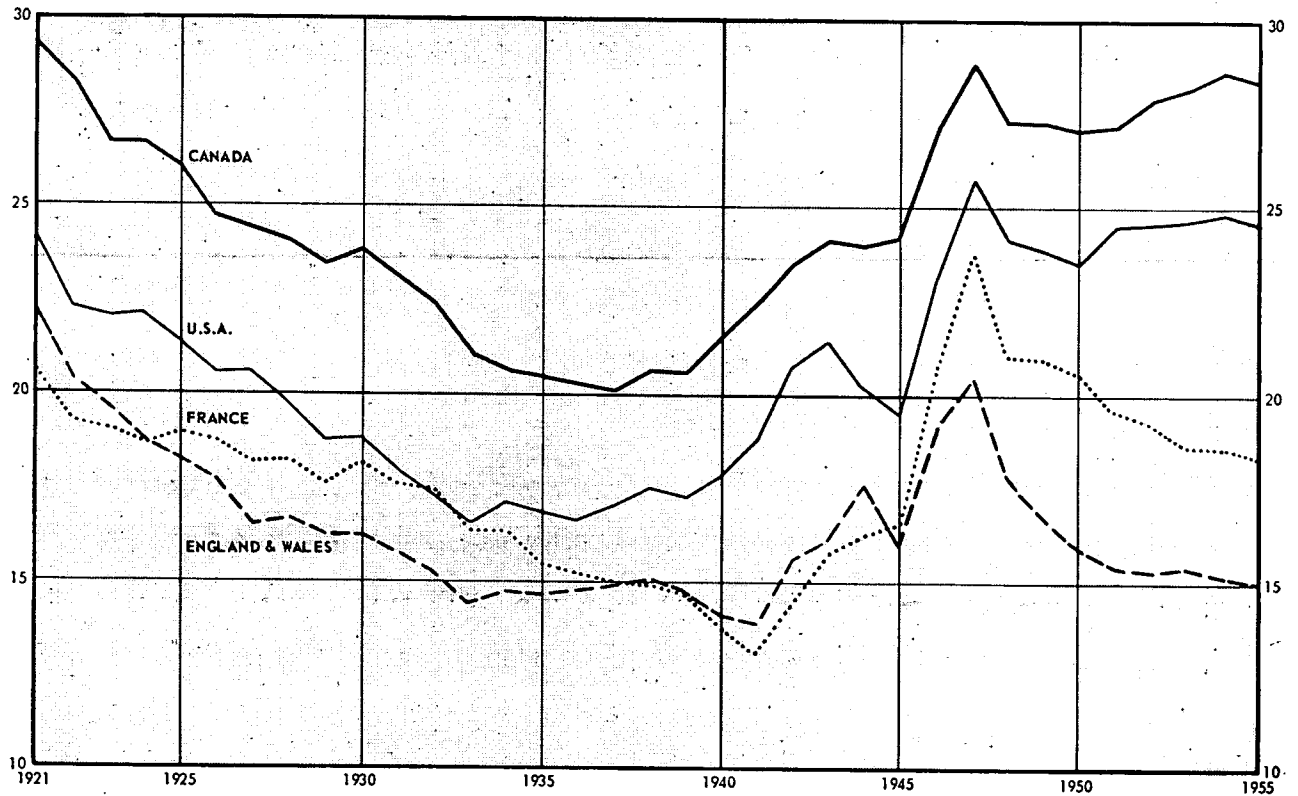
These forecasts and others like them not only coloured the views taken of the future in the '30's and '40's, but also had a wide influence on economic discussion and economic analysis. They proved wrong because of the great upsurge in fertility that occurred in North America after the War and has continued ever since. But who could have foreseen that? The birth rate had been declining in the United States as well as in other Western countries for many years and there seemed no reason to suppose that the trend would be reversed. No doubt if similarly careful and seemingly authoritative population forecasts had been made in Canada at about the same time, they would have failed to discern on the horizon the great increase in fertility that has in fact occurred in this country as well as in the United States.

That phenomenon suggests how mysterious are many, indeed perhaps most, demographic facts and what a wide vision is required if their causes are to be even partially apprehended. Why is the marriage rate in Ireland so low?[4] Why is the suicide rate in Copenhagen so high?[5] It would require

an almost God-like knowledge of the societies from which those facts emerge to understand fully the reasons for them. Deepest of all, perhaps, lie the reasons why people marry and have children — or, more narrowly, why they have more children in one period than in another. Clearly current economic conditions have something to do with it. But only something. Other possible reasons press for attention ranging all the way from fashion to philosophy and religion. The position of women in society; attitudes towards family limitation; social security payments, including particularly family allowances; standards of nutrition; all these are relevant. Also involved are expectations about the future. One may surmise, for example, that in times of great international uncertainty some people may decide that it would be imprudent to bring children into the world, while on others the effect may be to suggest that when everything is at hazard, prudential considerations may as well be disregarded. Feelings about the past are also germane: the strength of ancestral voices echoes in the birth rate. Nor without significance is the relationship between the society and the processes of nature — in fact and also through the modes of thought. For in many ways the ideas of thinkers long since dead affect the desire to have children as well as other aspects of human behaviour. In some communities no doubt the principles of the Utilitarians are still influencing the birth rate, as those of the Existentialists may in years to come. What is involved would seem to be no less than the total view held by the members of a given society at a given time about themselves and about the world — as well as those forces which move human creatures in seeming blindness towards unknown ends.

To plot the course of an *élan* on which so many influences operate must always be hazardous. But it is an indispensable part of our task. Stripped of technicalities, one of the main questions that we have had to try to answer in making population forecasts has been whether the birth rate in Canada will remain at its present very high level. How the birth rate (which of course reflects the age composition of the population as well as fertility) has been moving since 1921 is shown in Chart 6.1. It will be readily agreed, we think, that economic conditions have affected it, as is suggested by the sharp decline during the years of the depression. But that other things can influence it as powerfully is proved by the fact that the glissade was as pronounced during the prosperous '20's as during the hungry '30's. Indeed, the decline in the birth rate associated with the cyclical depression of the '30's seems to have been superimposed on a secular downward trend that had been noticeable in Western countries for many decades and that is to be explained only by reference to broad cultural changes. The sharp rise that occurred at the end of the War was to be expected, since many births that might otherwise have taken place during the war or the depression had been deferred. Many, however, thought that an increase in the birth rate would be only a flash in the pan. It did not prove so. After a drop between 1947 and 1949, the birth rate again

Chart 6.1
CRUDE BIRTH RATES



SOURCE: Dominion Bureau of Statistics, *Vital Statistics 1955*, p.30

began to rise and now stands at a level virtually as high as at the post-war peak in 1947 or as it did in 1921. At the present time Canada has the highest birth rate of any highly industrialized country. It is higher, for example, than the birth rate in the United States or in any country of Western Europe. It is also higher than the recorded birth rate of a number of Asian countries, including Japan, India, and Pakistan, where the birth rates are ordinarily considered to be extremely high. The process of industrialization and urbanization has usually been accompanied by a lower birth rate. Canada, as a highly industrialized, highly urbanized country, with a high birth rate, is an exception. The question is how long it will remain so.

On examination, the high level of the birth rate in Canada since the end of the War is shown to have been due to the fact that relatively more people have been marrying and having children, rather than to an increase in the average size of families. The marriage rate (the number of people marrying for every thousand of population) has been extremely high, and although it has fallen from its post-war peak, in 1955 it was still above what it had been in any year during the '20's or '30's. It is also high compared with the marriage rates in most other countries, although somewhat below the rate in the United States. By and large, it appears that not only are more people marrying, but they are marrying at a younger age. For example, between 1941 and 1951, there was a greater percentage increase in the marriage rate for those in the age groups between 14 and 25 than for any others. The average age of those marrying for the first time has also fallen steadily since 1940. In that year the average age for males was 28, whereas in 1955 it was only a few months more than 26. Similarly, the average age for females has dropped by a full year over the same period.[6] Unfortunately, no study has been made since the 1941 census of the average number of children born per family. It would seem, however, to be subject to conflicting influences. On the one hand, the tendency for the proportion of very large families (with five or more children) to decline, that has long been noted, continues. On the other hand, there are indications that fewer marriages are childless and that the average number of children among the smaller families has increased somewhat.

Our expectations concerning the Canadian birth rate over the next twenty-five years are incorporated in the detailed forecasts of specific fertility rates for the various age groups that are presented in Chapter 4 of the study prepared for us on *Output, Labour and Capital in the Canadian Economy*. We have taken the position that the trend towards earlier marriages will continue for some years. We also expect that it will be some years before the size of Canadian families ceases to reflect, on the one hand, a persistent decrease in very large families and, on the other hand, some inclination on the part of parents at the other end of the scale of family size to plan slightly larger families. Implicit in the assumptions

made about specific fertility rates, of course, is also the belief that none of the business recessions to be expected over the next quarter of a century will match in severity the depression of the early '30's. If the estimates of future fertility rates prove accurate, the birth rate will decline, but only moderately, moving down from where it stood in 1955 at 28.4 and varying between 24.2 and 25.6 over the period from 1960 to 1980.

Detailed estimates of mortality rates by age and sex are also to be found in the study to which we have already referred. Such estimates are likely to show a smaller margin of error than estimates of fertility, since mortality rates in Canada have been dropping fairly steadily for the last 20 years and there is little reason to expect that this trend will not continue. Specific mortality rates, when combined, yield the death rate, which shows the number of deaths in each year for every thousand of the population. The death rate has declined consecutively every year since 1943 and is now one of the lowest in the world.

One reason why we expect a continued decline in the death rate is that there is clearly still scope for reducing infant mortality. Here is one field where Canada has lagged behind other advanced countries. The number of children dying within the first year after birth in Canada is still much higher than in the Scandinavian countries or in Australia, New Zealand or the United Kingdom. In Sweden, for example, the infant mortality rate is little more than half what it is in Canada. As more children are born in hospitals and as standards of medical care improve, we would expect further important reductions in the infant mortality rate. Since 1921, it has been cut by more than two-thirds but there is obviously still room for substantial progress.[8]

Although some decline in mortality rates can be forecast with assurance, there cannot of course be complete certainty about the speed at which they will be reduced. Most of the improvement in life expectancy that has been achieved over the past 30 years has come about because of the greater control that has been gained over contagious and infectious disease and because of the reduction in maternal and infant mortality. As a result, the principal causes of death nowadays are those characteristic of older people, such as cancer and diseases involving the heart and the vascular system. Further progress in reducing the death rate, therefore, now largely depends on what can be done to combat the degenerative diseases that attack those who are no longer young. It may be found that the medical problems involved in curbing such diseases will be more intractable than those already surmounted in controlling contagion. On the other hand, if medical research into the causes of cancer, for example, were to make an important breakthrough, further dramatic increases in life expectancy might be registered. Between 1931 and 1951 life expectancy at birth increased from 60 to over 66 years for men and from 62 to almost 71 years for women;

but there has been comparatively little increase in life expectancy for men over 40.[9]

Our population forecasts rest on only one set of assumptions about fertility and one set of assumptions about mortality. However, we have thought it desirable to use a range of assumptions about net immigration. The assumptions we have adopted are that those entering the country will exceed those emigrating by no less, on an average, than 50,000 a year, and probably no more than 100,000, with the likelihood being that net immigration may run at about 75,000. Population projections are presented based on these three different assumptions. For purposes of presenting summary forecasts, however, and for forecasting developments in particular sectors of the economy, we have ordinarily adopted the mean assumption, i.e., that net immigration will amount on an average to 75,000 a year. It is perhaps worth stressing that if the total of net immigration is to reach that figure, the inflow of immigrants will have to be substantially larger, since, in any year, some residents of Canada will be leaving to go to other countries.

Our judgment concerning net immigration has been made after examining the record of immigration and emigration in past years and after giving some thought to the probable size of future migration movements. During the ten-year period from 1945 to 1955 immigration averaged 120,000 a year, while emigration averaged 50,000, with the result that net immigration ran at 70,000 a year on the average. From 1951 to 1955 immigration averaged 170,000, while emigration averaged 60,000 so that net immigration ran, on the average, at 110,000. It will thus be seen that we are assuming that net immigration over the next twenty-five years will be less than it has been in some post-war years but slightly more than it was on the average during the decade from 1945 to 1955.

Net immigration is a function of many variables. It will largely depend on comparative levels of economic activity in Canada, in the countries from which our immigrants normally come and in other countries which provide alternative settlement opportunities for possible immigrants. Government policies in all those countries will have a bearing on it. It will also be influenced by comparisons drawn between social conditions in Canada and elsewhere. Changes in the international scene will affect it, too, as is suggested by the migration movements precipitated by the political upheavals in Europe in the nineteenth century, during the Second World War, and a year ago in Hungary. In the event of further upheavals of that kind, net immigration into Canada might be considerably larger than we have assumed. It might also exceed our estimate if discouragement about the economic future of Western Europe or apprehension about its political prospects were to become more widespread than they are at present. On balance, however, we are inclined to think that there is more likely to be

a dearth than a plethora of would-be immigrants into Canada from those countries from which they have traditionally come.

This is suggested by an examination of the possibilities in Western Europe. Although this country was originally settled from France, it is a very long time since Frenchmen in any large numbers have come to Canada, preferring their own unique intellectual climate and their own almost uniquely fruitful soil and being confirmed in that preference by the policy of their Government. Indeed, we have been informed in a reference paper prepared for us by the Department of Citizenship and Immigration that the French Government now only "barely tolerates" restricted activities on the part of Canadian immigration officers. Essentially the same attitude is taken by the governments of the Scandinavian countries and of Austria and Switzerland. As is shown in Table 6.1, the principal source of Canadian immigrants since the end of the War (as for many decades in the past) has been the United Kingdom, and we would expect the flow of settlers from

Table 6. 1

SOURCES OF IMMIGRANTS—GROSS IMMIGRATION NUMERICAL AND PER CENT DISTRIBUTION

Year	U.K.	U.S.	Germany	Italy	Netherlands	Other	Total
				thousands			
1946	50.5	11.5	0.4	—	2.2	7.1	71.7
1947	35.4	9.4	0.3	0.1	2.7	16.1	64.1
1948	45.6	7.4	2.5	3.2	7.0	59.8	125.4
1949	20.7	7.8	2.9	7.7	6.8	49.2	95.2
1950	12.7	7.8	3.8	9.0	7.2	33.4	73.9
1951	31.6	7.8	29.2	23.4	19.3	83.2	194.4
1952	45.3	9.3	25.7	20.7	21.1	42.5	164.5
1953	46.8	9.4	34.2	23.7	20.3	34.4	168.9
1954	43.4	10.1	28.5	23.8	16.2	32.3	154.2
1955	29.4	10.4	17.6	19.1	6.8	26.6	109.9
				per cent			
1946	70.4	16.0	.5	—	3.1	10.0	100.0
1947	55.3	14.7	.4	.1	4.3	25.2	100.0
1948	36.4	5.9	2.0	2.6	5.6	47.5	100.0
1949	21.8	8.1	3.1	8.1	7.2	51.7	100.0
1950	17.1	10.6	5.2	12.2	9.7	45.2	100.0
1951	16.2	4.0	15.0	12.1	9.9	42.8	100.0
1952	27.5	5.7	15.6	12.6	12.8	24.8	100.0
1953	27.7	5.6	20.2	14.0	12.0	20.5	100.0
1954	28.1	6.6	18.5	15.4	10.5	20.9	100.0
1955	26.7	9.5	16.0	17.4	6.0	24.4	100.0

NOTE: Immigrant admissions by country of last permanent residence.

SOURCE: Dominion Bureau of Statistics, *Canadian Statistical Review, 1955 Supplement*, p. 11.

that country to continue to be substantial. It must be remembered, however, that the forecasts for the United Kingdom prepared by the Royal Commission on Population indicated either a static or only very slowly

increasing population.[10] Notwithstanding that, official opinion in the United Kingdom is in favour, on broad political grounds, of emigration to Commonwealth countries.[11] It may be anticipated, in our opinion, that Canada will continue to receive many thousands of new immigrants from the United Kingdom every year, although the size of this movement will be affected by the competing attractions of Australia and New Zealand, which pay part of the cost of transportation. The next most important source of immigrants in recent years has been West Germany. But we would not be surprised if increasing difficulty were experienced in obtaining suitable immigrants from that source because of the high level of economic activity which has been maintained in the Federal Republic and because of the demands of the German armed forces. Even in 1952 in a report to the Organization for European Economic Co-operation, the Government took the position that there would likely be no need for large-scale emigration.[12] Since then no obstacles have been put in the way of Canadian immigration officers, but similar activities by other countries have been curtailed and it seems unlikely that the Federal Republic will offer any encouragement to emigration. Movements of immigrants from the Netherlands to Canada have declined since 1954 and we would doubt if the numbers coming to Canada will be so large as they have been in some post-war years, in spite of the continued low death rate, high birth rate, and high population density in the Netherlands, since the inward flow from the former Netherlands East Indies is now virtually at an end and high levels of economic activity have created a need to obtain workers from other European countries.

The reasons for the decline since 1954 in the number of those emigrating to Canada from the Netherlands, as they have been explained to us by the Deputy Government Commissioner for Emigration in the Hague in a communication dated April 27, 1956, are perhaps of sufficient interest to warrant a paragraph to themselves. In part, the decline has been due, according to the Deputy Commissioner, to "adverse reports on the economic conditions and employment situation in Canada" at a time when the Netherlands was enjoying full employment. In part, it is to be explained by the fact that the Canadian Government does not pay any part of the cost of transportation. A third reason is to be found "in the standards of admission and selection applied by the Canadian Immigration Service". "Until recently", his letter continues, "only those Dutch people could be considered for emigration to Canada whose occupation figured on the so-called occupation list. This list was liable to alteration and consequently migration to Canada was more or less unstable. The list has recently been abolished and selection standards relaxed. This measure will have good results if the situation can be continued for a considerable time".

On the other hand, there will be opportunities for obtaining a substantial number of emigrants from some of the countries of Southern

Europe. In the last few years Italy has ranked only after the United Kingdom and West Germany as a source of immigrants. Particularly in Southern Italy, there is a large population surplus, many of whom are underemployed, and the Italian Government would like to see much larger annual movements in population, both to North and South America. Greece is in much the same position; and Spain and Portugal have recently modified their attitudes and have come to the conclusion that some emigration would be to their advantage.

Immigration to Canada from the United States has remained fairly constant since the end of the War, never moving very far from an average figure of about 9,000 a year. However, it has been more than counterbalanced by the number of those leaving Canada to settle across the border. No official figures are collected in Canada to show the volume of emigration from this country, the estimates used by the Bureau of Statistics being residual figures that are checked against the records kept in foreign countries, particularly the United States, which is the destination of more than 50 per cent of all those emigrating from Canada. Over the ten-year period from 1945 to 1955, as we have already indicated, it is estimated that emigration averaged 50,000 a year, with emigration to the United States running at approximately 30,000 a year. In view of the rapid economic development that we predict for Canada and the great interest that is being taken in it by United States concerns, we think it not improbable that our net loss on exchange of people with the United States will be reduced over the next two or three decades. No neat summary is possible of these scattered observations about possible migration movements. But it will be apparent that, in our opinion, the flow of intercontinental migration, particularly from Western Europe, will tend to be curtailed by the pursuit of full-employment policies of the governments of the West, by the nationalist colour almost inevitably given to economic policy by this objective, and by other national preoccupations, including comprehensive systems of social security and the maintenance of population in countries where the birth rate has been falling. In addition, of course, it is likely that potential emigrants in Eastern Europe will be prevented from leaving their own countries by the Iron Curtain.

Having explained the speculative assumptions underlying our population forecasts, we are now in a position to summarize them. As will be seen from Table 6.2, we expect that by 1980 the population of Canada will be in the neighbourhood of 27 million.* In Table 6.3 on page 108 further information is provided about the Canadian population that we anticipate by 1980, particularly with regard to its age and sex distribution.

---

* For technical reasons, the population estimates and projections shown in the tables in this chapter do not include the population of the Yukon and the Northwest Territories. Some amends for this omission are offered in Chapter 19.

Table 6.2

TOTAL POPULATION OF CANADA

(thousands)

Net immigration at rate of:	1955	1960	1965	1970	1975	1980
			(as at June 1)			
0	15,573	17,090	18,610	20,190	21,960	24,010
50,000	15,573	17,370	19,210	21,160	23,310	25,770
75,000	15,573	17,510	19,520	21,640	23,990	26,650
100,000 per annum	15,573	17,650	19,820	21,130	24,660	27,530

The Labour Force

How many of the population will be in the labour force? As defined by the Bureau of Statistics, the labour force includes all those 14 years and over (with the exception of those in the armed forces, in hospitals, jails or other institutions, or on Indian reserves) who are employed or looking for work. Of the various subtractions that are necessary to yield the civilian non-institutional population 14 years and over, the only one that perhaps requires some explanation is the allowance to be made for the armed forces.

The manpower requirements of the Canadian services will depend upon the kinds of emergency for which we must be prepared. In Chapter 2 we discussed the risks of a global nuclear war and the state of virtual nuclear stalemate that now exists. It is perhaps barely conceivable that a global war might be fought without the use of nuclear weapons; but this possibility seems so remote as to hardly merit consideration. There even seems little likelihood that, with nuclear weapons now integrated into the military forces of the United States, it will ever again forego using them in such a large-scale peripheral war as was fought in Korea. On the other hand, there are still countries in the world which stand outside the alliances centred either on Moscow or Washington, and it is possible that a military attack on one of them might lead to a limited war in which none of the participants would be willing to use nuclear weapons. There are also situations in which hostilities might be provoked that would have at least the colour of a civil war; and here again the fighting might be restricted to conventional weapons. Indeed, it may be that the present stalemate, in which the two largest world powers would both appear to have a sober horror of a global nuclear war, has somewhat increased the danger of such local "brush fire" campaigns. For this reason if for no other, it will be many years before conventional forces prove obsolete. In the event of such local hostilities, international police action may be required, and Canada may be called on to participate. But we doubt whether our participation would ever require very substantial forces.

Table 6.3

COMPARATIVE AGE SEX DISTRIBUTION
POPULATION OF CANADA AS AT JUNE 1, 1955 and 1980

(forecast is based on assumption of net immigration of 75,000 per annum)

Age	Males				Females				Total			
	000		%		000		%		000		%	
	1955	1980	1955	1980	1955	1980	1955	1980	1955	1980	1955	1980
0-4	1,011.3	1,561.6	12.8	11.6	967.9	1,482.4	12.6	11.2	1,979.2	3,044.0	12.7	11.4
5-9	860.0	1,387.0	10.9	10.3	821.8	1,317.9	10.7	10.0	1,681.8	2,704.9	10.8	10.2
10-14	689.2	1,251.3	8.7	9.3	662.9	1,190.6	8.6	9.0	1,352.1	2,441.9	8.7	9.2
15-19	574.8	1,152.1	7.3	8.6	553.9	1,110.0	7.2	8.4	1,128.7	2,262.1	7.2	8.5
20-24	558.9	1,119.8	7.1	8.3	548.5	1,067.5	7.1	8.1	1,107.4	2,187.3	7.1	8.2
25-29	593.3	1,081.9	7.5	8.0	597.2	1,031.3	7.8	7.8	1,190.5	2,113.2	7.6	7.9
30-34	562.8	961.3	7.1	7.2	580.7	906.5	7.5	6.9	1,143.5	1,867.8	7.3	7.0
35-39	540.6	793.4	6.9	5.9	544.8	751.3	7.1	5.7	1,085.4	1,544.7	7.0	5.8
40-44	499.6	691.0	6.3	5.1	486.9	646.4	6.3	4.9	986.5	1,337.4	6.3	5.0
45-49	436.6	661.8	5.5	4.9	408.5	632.7	5.3	4.8	845.1	1,294.5	5.4	4.9
50-54	373.1	649.4	4.7	4.8	350.3	651.2	4.6	4.9	723.4	1,300.6	4.6	4.9
55-59	314.6	562.0	4.0	4.2	306.2	591.8	4.0	4.5	620.8	1,153.8	4.0	4.3
60-64	265.7	491.3	3.4	3.7	259.5	530.8	3.4	4.0	525.2	1,022.1	3.4	3.8
65-69	231.1	393.1	2.9	2.9	219.2	443.4	2.8	3.4	450.3	836.5	2.9	3.1
70-74	180.4	294.6	2.3	2.2	174.7	336.7	2.3	2.5	355.1	631.3	2.3	2.4
75-79	112.2	197.3	1.4	1.5	114.5	241.0	1.5	1.8	226.7	438.3	1.5	1.6
80-84	54.6	121.1	.7	.9	60.1	159.0	.8	1.2	114.7	280.1	.7	1.1
85-89	18.5	59.2	.2	.4	23.6	77.6	.3	.6	42.1	136.8	.3	.5
90+	6.0	22.7	.1	.2	8.5	33.4	.1	.3	14.5	56.1	.1	.2
Total	7,883.3	13,451.9	100.0	100.0	7,689.7	13,201.5	100.0	100.0	15,573.0	26,653.4	100.0	100.0

SOURCE: Wm. C. Hood and Anthony Scott, *Output, Labour and Capital in the Canadian Economy*, 1957, a study for the Commission, Chap. 4, Table 4.16, p. 176.

The need to provide for such contingencies would of course be in addition to Canadian undertakings to NATO and for the defence of Canada. It seems unlikely that the manpower requirements to fulfill either our NATO commitments or such other international obligations as may arise from time to time will substantially increase. On the other hand, the need to strengthen the air defences of North America will probably necessitate some increase in air force personnel. So far as we have been able to judge, however, it will probably be possible to meet these requirements without any increase in the target figure for the size of the three Canadian services taken together. The authorized ceiling for military manpower now stands at 120,000, with the present strength of the three services approximately at 117,000. If more men are required to strengthen our defences against attack from the air, it seems likely that they can be found either by a re-deployment of existing service manpower, or by an adjustment of the manpower targets for the individual services, or by an increasing use of civilian defence employees. The assumption, therefore, that we have made about the size of the armed forces over the next twenty-five years is that they will not rise above 120,000 and will thus form a smaller percentage of both a growing population and total labour force.

The next question is how many of the civilian non-institutional population 14 years and over will be members of the labour force, either employed or looking for work, and how many will be students going to schools or universities, housewives getting the children's lunch, or retired folk pottering about the garden? Forecasting membership rates in the labour force involves deciding whether to bank on a continuance of Canadian experience since 1945 (when the first labour force sample survey was taken) or to assume that in the years ahead these rates will approximate more closely to what they have been in the United States. For the difference between the experience of the two countries in this regard has been wide — wider, indeed, than differences between the various Canadian regions. Many more women participate in the labour force in the United States than in Canada and many more men 65 years and older, while the number of men in the labour force between the ages of 14 and 24 is much smaller than in Canada. These, then, are the categories in which the main uncertainties lie — women, particularly over the age of 24; men 65 years and over; and men 24 years and younger. The curse laid on Adam will look after the rest.

Since the end of the War there has been a sharp drop in the membership rate for men 65 years and over. This is no doubt a reflection of a general move towards earlier retirement associated with more adequate provision of private and state pensions and with secular occupational shifts of the labour force, particularly out of agriculture. For in many parts of the country old farmers are rather like old soldiers: If they sometimes die, they seldom retire. Since both these trends may be expected to

continue over the next two or three decades and since the age distribution of men over 65 is expected to become progressively more heavily weighted with men over 75, the rate for men 65 and over may be expected to decline moderately, although we do not anticipate that the trend towards earlier retirement will continue indefinitely. In the age group between 14 and 19 the very rapid decline during the last decade reflects general prosperity and the longer schooling that it has made possible. There can be no doubt that this rate will fall further because of the growing demand for skilled and professional manpower and the growing ability of many families to equip their children with more formal education. But some of the technical skills that will be required may well be provided through in-plant training, night classes and other such informal schemes. For that reason we have postulated only a comparatively gradual decline over the next two or three decades. We have similarly allowed for some decline in the membership rate for men in the ages between 20 and 24. But again the estimated decline is moderate.

Women will go their own way as they always do, and it is not for us to prescribe for them. But since we have to guess, we think it likely that a higher proportion of them will choose to enter the labour force than at present, particularly in the age groups over 25. For those who are married, their husbands' wishes will have something to do with how they decide — but probably not very much. Their husbands' incomes, which on the average will be rising, may be more relevant; but whether higher average incomes will mean more women freed from the necessity of supplementing their husbands' earnings or more labour-saving appliances to permit them to go out to work is a nice question which we do not feel obliged to adjudicate. Most important of all, perhaps, will be the number of employment opportunities there are for women. On this issue we have little doubt at all: the opportunities will greatly increase. Automation may bring some decrease in the number of clerical positions now filled by women. But offices would be unthinkable without them and it seems clear that in one capacity or another they are there to stay. Employment in the service industries will increase more than in any other sector of the economy, and those industries have always had a higher proportion of women on their payrolls than any other. There will also be a large increase in employment in secondary manufacturing and here too the ratio of women to men has always been high. Largely because of the growth in employment opportunities we think that membership rates for women 25 years and over will rise very substantially, although differences in social attitudes will prevent them, we would guess, from climbing to the level at which they stand at present in the United States. Estimating membership rates for younger women is even more complicated, since major influences can be seen fairly clearly to be operating in opposite directions. On the one hand, there is the general movement towards greater participation of women in the labour force, which will affect younger

women as well as older. On the other hand, the desire for more schooling, for college educations and for earlier marriage and earlier motherhood will serve to restrict the movement of young women into the labour force. Attempting to resolve these opposing trends, we have supposed that the membership rate will decline in the age group from 14 to 19 and remain constant in the age group from 20 to 24.

Our forecasts about the labour force are summarized in Table 6.4.

Table 6.4

TOTAL LABOUR FORCE

(thousands)

Net immigration	1955	1960	1965	1970	1975	1980
50,000	5,555	6,150	6,850	7,710	8,610	9,560
75,000	5,555	6,210	6,980	7,910	8,900	9,930
100,000	5,555	6,270	7,110	8,120	9,190	10,310

It will be seen that we expect that by 1980 it will be in the neighbourhood of ten million. Perhaps the conclusion of most general interest that emerges from this part of our work is that, although since the end of the War the labour force has not been rising so rapidly as either the population as a whole or as the population 14 years and over, we expect it to rise at a slightly higher rate than both those magnitudes over the next twenty-five years. More detailed information about the labour force that we anticipate, particularly with regard to its age and sex composition, is provided in Table 6.5.

Age and Sex Distribution of the Population

In Table 6.3 and Table 6.5 we have presented information about the age and sex distribution of the population and labour force that we are forecasting. The implications of this material, however, perhaps appear more clearly in Chart 6.II, which shows the age and sex distribution of the population in 1955 and in 1980 on the assumption of net immigration of 75,000 per annum. We need not linger long over the sex distribution of the population. From the time of the earliest censuses there have been more males than females in Canada, and that will continue to be true over the period we have to survey. But the difference in numbers will be so slight as to have little economic or social importance. It is perhaps worth noticing, though, the matriarchal tilt that will be given to the top of the pyramid in 1980 by the fact that older women are living much longer than older men. The pyramid, in other words, will be built over the bodies of many dead husbands.

Table 6.5

FORECASTS OF THE LABOUR FORCE
NET IMMIGRATION 75,000
(thousands)

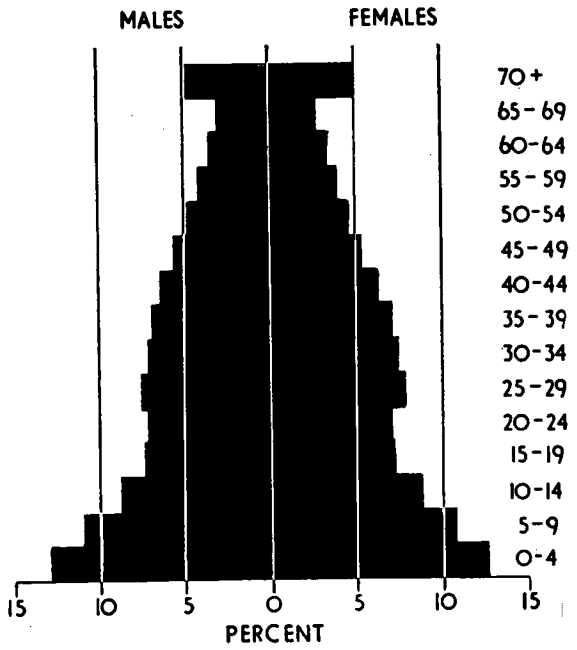
		Males						Females						Total male and females
		14-19	20-24	25-44	45-64	65+	Total	14-19	20-24	25-44	45-64	65+	Total	
1955	Civ. non-inst. pop. 14+[a]	672	513	2,111	1,363	583	5,242	666	542	2,187	1,307	580	5,282	10,524
	Membership rate (%)	48.6	92.3	97.5	91.7	32.4	82.0	32.9	46.3	23.7	18.8	3.9	23.8	52.8
	In labour force	327	473	2,059	1,249	189	4,297	219	251	518	248	22	1,258	5,555
	Not in labour force	345	40	52	114	394	945	447	291	1,669	1,059	558	4,024	4,969
1960	Civ. non-inst. pop. 14+[a]	860	540	2,260	1,560	660	5,880	810	560	2,320	1,510	690	5,890	11,770
	Membership rate (%)	49.0	91.8	97.5	92.0	32.5	81.1	33.0	46.0	25.2	20.0	4.0	24.4	52.8
	In labour force	420	500	2,210	1,430	210	4,770	270	260	580	300	30	1,440	6,210
	Not in labour force	440	40	50	130	450	1,110	540	300	1,740	1,210	660	4,450	5,560
1965	Civ. non-inst. pop. 14+[a]	1,020	660	2,390	1,770	730	6,570	1,030	670	2,410	1,760	800	6,670	13,240
	Membership rate (%)	48.2	91.4	97.5	92.0	32.0	80.5	32.4	46.0	26.5	21.5	4.0	25.3	52.7
	In labour force	490	610	2,330	1,630	230	5,290	330	310	640	380	30	1,690	6,980
	Not in labour force	530	50	60	140	500	1,280	700	360	1,770	1,380	770	4,980	6,260
1970	Civ. non-inst. pop. 14+[a]	1,180	840	2,600	1,980	820	7,420	1,180	840	2,570	2,000	920	7,510	14,930
	Membership rate (%)	47.4	91.0	97.5	92.0	31.5	80.1	31.8	46.0	27.8	22.9	4.0	26.2	53.0
	In labour force	560	770	2,530	1,820	260	5,940	370	390	710	460	40	1,970	7,910
	Not in labour force	620	70	70	160	560	1,480	810	450	1,860	1,540	880	5,540	7,020
1975	Civ. non-inst. pop. 14+[a]	1,230	1,000	2,940	2,180	930	8,280	1,250	990	2,840	2,240	1,070	8,390	16,670
	Membership rate (%)	46.6	90.6	97.5	92.0	31.0	80.2	31.2	46.0	29.2	24.3	4.0	26.9	53.4
	In labour force	570	900	2,870	2,010	290	6,640	390	460	830	540	40	2,260	8,900
	Not in labour force	660	100	70	170	640	1,640	860	530	2,010	1,700	1,030	6,130	7,770
1980	Civ. non-inst. pop. 14+[a]	1,310	1,070	3,430	2,330	1,060	9,200	1,300	1,060	3,310	2,380	1,260	9,310	18,510
	Membership rate (%)	45.8	90.2	97.5	92.0	30.5	80.2	30.6	46.0	30.6	25.7	4.0	27.4	53.6
	In labour force	600	970	3,350	2,140	320	7,380	400	480	1,010	610	50	2,550	9,930
	Not in labour force	710	100	80	190	740	1,820	900	580	2,300	1,770	1,210	6,760	8,580

a Civilian non-institutional population aged 14 and over.

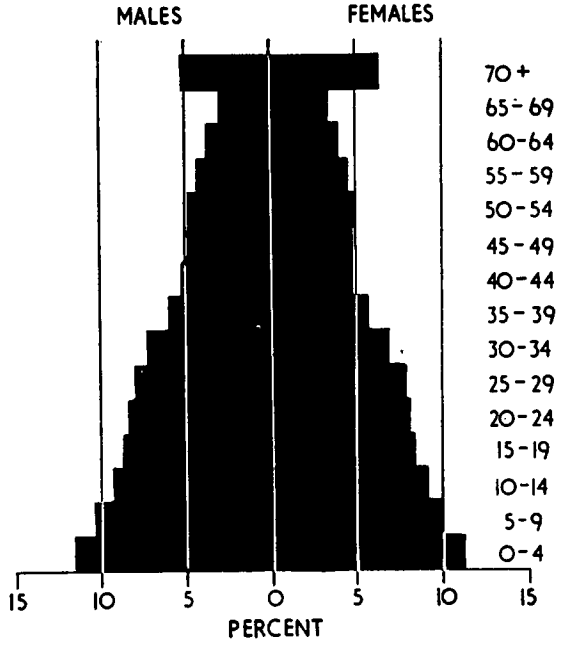
SOURCE: Wm. C. Hood and Anthony Scott, *Output, Labour and Capital in the Canadian Economy*, 1957, a study for the Commission Chap. 4, Table 4.24, p. 188.

Chart 6.II

PERCENTAGE DISTRIBUTION OF THE POPULATION BY 5 YEAR AGE GROUPS AND SEX — CANADA. 1955



PERCENTAGE DISTRIBUTION OF THE POPULATION BY 5 YEAR AGE GROUPS AND SEX — CANADA. 1980



SOURCE: Wm. C. Hood and Anthony Scott, *Output, Labou and Capital in the Canadian Economy*, 1957, a study fo the Commission, Chart 4.1, p. 161.

The age distribution of the population will be of much greater importance. The pattern for 1955 reflects at the top of the pyramid increasing life expectancy, so that proportionately more people are living to the age of 70 and beyond, and in the bottom tiers the high birth rate since the end of the War and the sharp reduction in infant mortality. The indentation in the pyramid for the age groups between 10 and 20 reflects the low birth rates of the '30's. Over time this indentation will move up in the pyramid and appears in the pattern for 1980 as a relative scarcity of those in the age groups between 40 and 50. Throughout the forecast period, in other words, there will continue to be a relative scarcity of both males and females in some of the age groups that participate most fully in the labour force.

It is also worth noticing the senses in which the population in 1980 will be somewhat older than it was in 1955. At the end of the forecast period those over 50 will account for some 22 per cent of the population, whereas in 1955 they accounted for only about 20 per cent. There will also be relatively fewer people below 10 years of age in 1980 than in 1955. On the other hand, there will be relatively more people between 10 and 30 and relatively fewer between 30 and 50 than in the 1955 population.

Canadian Immigration Policy

The rate of population growth, it will have been observed, will be influenced to a substantial degree by the average annual level of net immigration. If net immigration amounts on the average to 75,000 a year, the population by 1980 will be 2⅔ million more than if it were augmented by natural increase alone. If net immigration averages 100,000, it will be 3½ million more than the total we anticipate from natural increase. Net immigration, in its turn, will be considerably influenced by whatever immigration policy is followed by the Canadian Government. For these reasons we have considered it part of our responsibility to pay some attention to the economic arguments for and against immigration, and to make some suggestions about what, in our opinion, should be the broad outlines of Canada's immigration policy.

The argument in favour of immigration that is open to the least dispute is that a substantial net inflow of immigrants will be needed over the next seven or eight years to compensate for the relative scarcity of native-born entrants into the labour force that will be coming forward during those years, and that this need will persist at least until 1970, although in a somewhat less acute form, if the deficiency in the labour force of younger adults in their 20's and 30's as a consequence of the low birth rate during the depression is to be made good. As we have already pointed out in Chapter 5, the number of those in the age group between 15 and 20, from which new entrants to the labour force are mostly drawn, has

remained virtually constant over the last 20 years and has fallen as a proportion of the total population. As a result of this fact, coupled with some continued emigration and a marked decline in membership rates in the labour force, it has been estimated for us by the Department of Labour that in the absence of immigration the total Canadian labour force would have declined in four out of the nine years between June 1, 1946, and June 1, 1955. Moreover, in the 12 month period from June 1, 1948, to June 1, 1949, the labour force would have declined slightly in the absence of immigration had it not been for Newfoundland's entry into Confederation. Over the whole nine-years period it appears that the Canadian labour force would have declined by about 40,000 if there had been no immigration and if Newfoundland had not decided to throw in its lot with Canada.[13] Clearly, this would have put a drastic brake on Canada's economic development. By 1960 the number of native-born Canadians ready to enter the labour force will be relatively larger than it is at present and by 1965 it should be about as large as would be expected in a population the size of Canada's if the age distribution were reasonably symmetrical. If the relative lack of native-born Canadians as new members of the labour force is to be corrected, a substantial net inflow of immigrants will be needed. Even in 1970 there will be a relative deficiency of Canadians between the ages of 30 and 40, which immigration could help to alleviate since immigrants ordinarily include a much higher proportion of young adults than the Canadian population as a whole. In recent years, for example, more than half of the immigrants entering Canada have been between the ages of 20 and 40.[14] It is also to be borne in mind that the effect of immigration on the labour force will be greater because immigrants as a whole have a higher membership rate than the native-born population. As is shown in the study that has been prepared for us on *Skilled and Professional Manpower in Canada, 1945-1965,* they have also included a higher proportion of skilled manpower than the labour force as a whole.[15] This percentage may tend to decline somewhat in future; but in all probability it will remain substantially above the percentage of skilled workers in the total labour force. In a later chapter we give reasons for anticipating continued shortages of skilled and professional manpower. This expectation provides a further reason for continuing to encourage immigration over the next decade. To sum up, we accept without reservation the argument, first, that continued immigration will be needed until 1965 if the relative lack of native-born entrants to the labour force is to be made good and if the shortage of skills is to be overcome, and, second, that continued immigration will be needed until at least 1970 if the relative scarcity of young adults in the working population is to be corrected.

We also believe that immigration will add a useful degree of mobility to the Canadian labour force. In the Canadian economy labour mobility assumes a rather larger meaning than in many other countries. It means

being willing to move not only from one occupation to another but also over great geographical distances. It is not surprising that Canadians who are settled in one place with a job and family should be reluctant to move, for example, to a new mining camp in northern Saskatchewan or to a new lumbering community in northern Alberta, even though the financial inducements are large. Young Canadians just entering the labour force are more likely to be willing to take advantage of opportunities in the mines and the bush in distant parts of the country. But immigrants, eager to make a stake for themselves and their families, and who in any case have already left the communities to which they are accustomed, are more likely even than our own young men to be willing to work on the far fringes of our economic development. After a period of years no doubt many of them move south and settle in the larger cities. But in the meantime they have added a valuable degree of mobility to the Canadian labour force.

The arguments we have considered so far are of specifically Canadian application. Before going on to consider arguments of wider applicability, we should like to dispose of two other arguments that are rooted in Canada's geographical position. It is sometimes said that there is little advantage in encouraging immigration into Canada since its principal effect is to cause an exodus to the United States. This argument of course is given some colour by the fact that during some decades of our history emigration to the United States exceeded immigration to Canada. This was true, as we have already mentioned, of the period from 1871 to 1901. It is perhaps also worth remarking that, while from 1901 to 1955 approximately six million immigrants entered Canada, during the same period more than four million emigrants are estimated to have left the country. There is little reason to believe, however, that there is any very close connection between these two facts.[16] Some immigrants, no doubt, have come to Canada with the intention of moving on to the United States, and others have decided to cross the border after staying in this country only a few years. But immigration and emigration are not connected by Archimedes' Principle. Some residents of Canada in any case would always be leaving to emigrate to the United States, although since the War this movement has declined to very modest proportions. Nor, in our opinion, should it be assumed that the Canadian economy has a fixed and ascertainable absorptive capacity at any one time and that if the flow of immigrants exceeds that amount, other Canadian residents will be forced out in consequence. The recent economic growth and prosperity of West Germany, achieved at a time when it has been absorbing millions of Germans from behind the Iron Curtain, would be sufficient reason for doubting any such notion. On the contrary, we are inclined to believe that the fact that some emigration from Canada to the United States is inevitable is an additional reason for encouraging immigration.

Another argument that arises from Canadian geography concerns overhead costs. It is sometimes contended that the great distances that have to be spanned by our government, transportation and communications systems load the national economy with heavy overhead costs and that immigration, by adding to the population and so reducing the per capita incidence of these, would lead to higher real incomes. There may be some substance in this argument, although we have not been able to think of any way of expressing it in quantitative terms. However, when we remember the very large expenditures on social capital which will be made necessary by the population growth we anticipate and which are summarized in a later chapter, we are disinclined to attach very much weight to it.

There remain for consideration arguments of wider possible applicability and of a rather more theoretical cast which resolve themselves into general propositions concerning the economic advantages or disadvantages of a larger population or of a rapidly increasing population. In some circumstances all these arguments, it seems to us, have a degree of validity. The question is: How far will they be valid in the circumstances that we foresee in Canada over the next twenty-five years?

It was argued by Malthus at the end of the eighteenth century, when population in England was growing very rapidly, that population growth would lead to poverty and starvation since it would increase more rapidly than the supply of food. His argument was predicated on a fixed stock of natural resources and on a fixed level of technology. Fortunately, his forebodings were falsified for most Western countries because population growth was outstripped by advancing technology and rising productivity made possible by the application of technology to industry through heavy capital investment. However, in some parts of the world it yet remains to be seen whether his analysis will prove invalid. There may be situations in Canada where it applies; but we can think of very few. One, perhaps, is in the Northwest Territories where the Mackenzie River empties into the Beaufort Sea through an intricate delta of lagoons with heavily undercut banks resting on the permafrost. The number of Indians living in the Delta has been rising rapidly as a result of the improved health services provided by the Federal Government. But there has been no increase in the population of muskrat which the Indians trap for a living. The situation is serious and highly Malthusian. Although the Malthusian argument hardly applies in its simple form to any Western country as a whole, it can be put in a more sophisticated way which some believe might apply even to such a dynamic economy as that of the United States. Professor Spengler of Duke University, for example, has argued that because of rapid population growth and rising per capita consumption in the United States, the time is approaching, if it is not here already, when growing population will slow down the increase in real income per capita and before

many decades have passed, reverse it. "The stork", as he puts it, "will eventually eat up much of the fruits of contemporary technological progress."[17] That may or may not prove to be true of the United States. We doubt whether it will be true of Canada over the next twenty-five years. In the first place, our resources are very large relative to our population. Moreover, we export a large amount of what we produce and import a large amount of what we consume so that a growing population in Canada would have very little effect on the real cost of many of the commodities that are of concern to us. As our population grows, it seems likely that the real cost of hydro-electrical power, to take one example, or of meats and vegetables, to take another, will increase. But it seems unlikely that over the next two or three decades we will suffer in any substantial degree from diminishing returns.

If we will escape unscathed from the law of diminishing returns, will a larger population bring us advantages in the form of decreasing unit costs? On balance, we think it will. As our population grows and our domestic markets expand, there should be some reduction in costs because of opportunities for introducing more mass production methods. The increase in scale that will become possible with growing population will also, we believe, permit the establishment of new industries in Canada which would round out a more diversified economy. Optimism on this score, however, must be tempered by the recollection that the United States market will continue to be approximately ten times as large as the Canadian market, so that in particular lines of production where the optimum scale continues to increase, it may be difficult for Canadian enterprises to compete with businesses across the border unless they receive substantial tariff protection. However, over the last 15 years it seems clear that some Canadian industries, including the automobile and electrical industries, have been reaping the advantages of larger scale in the form of a fall in unit costs relative to those of comparable industries in the United States. With growing population, we would expect this trend to spread more widely through the Canadian economy. If it does, not only will real costs be reduced, but there will be room for new industries to become established. Such diversification, in our opinion, would be to Canada's advantage since it would give us more control over our own economic welfare than we have at present and make it easier to apply successfully policies designed to maintain high levels of employment and prevent inflation.

All these arguments relate to the advantages or disadvantages of a larger population. What of the arguments that turn on the advantages claimed for a rapidly increasing population? It has frequently been argued that a rapidly increasing population contributes to an expanding economy and general prosperity because of the high level of investment that it necessitates, particularly in such forms of social capital as houses and schools.

No doubt in some circumstances it does have that effect. But it must be remembered that similar effects might be produced through other means and also that, if the economy is already operating at full stretch, the need to provide social capital for a growing population can have inflationary results. However, we expect there will be periods over the next twenty-five years when we will be glad to take advantage of the need to provide social capital for a growing population in order to stimulate economic activity. Another argument that is frequently advanced in favour of a rapidly rising population is that the growing volume of demand that it creates facilitates technological change and innovation of all kinds. In such circumstances, it is easier for businessmen to scrap old plants and built new ones than it would be otherwise; and what Professor Schumpeter called the "gale of creative destruction", bringing with it increased productivity, blows more freshly. In Canada over the next twenty-five years a rapidly growing population would be likely, in our opinion, to promote innovation and so increase real incomes and, incidentally, keep further at bay the diminishing returns that Malthus feared.

The advantages to be gained from population growth might all be produced in the fullness of time through natural increase alone. But immigration can accelerate population growth to a very significant degree. We therefore conclude that it would be in Canada's interest to encourage immigration not only over the 10 or 15 years when there will be a relative scarcity of young adults in the Canadian population but over the whole of the forecast period. This conclusion has been reached on economic grounds. It is reinforced in our minds, however, by moral, social and cultural considerations. However it may be interpreted, Canada has some responsibility to open its doors to those who may wish to come here, particularly if they have suffered from oppression. We also think that a continued flow of immigrants bringing with them new skills, new arts, and new attitudes will add a welcome variety and richness to Canadian life. Nor is it futile in our opinion to try to increase, however marginally, freedom of movement throughout the world.

The economic advantages that we expect from continued immigration are not so substantial that they should be allowed to override legitimate concern for social harmony and orderly assimilation. But we do not anticipate that there should be any acute problems in assimilating numbers of immigrants within the magnitudes that we have been discussing. The work that is being done by the Canadian Citizenship Branch of the Federal Government to help new immigrants to adjust themselves to Canadian life has our full support; but in our opinion voluntary associations have also an important role to fill in this task and, indeed, all Canadians should recognize that they have some responsibility towards the newcomers.

Nor are the economic advantages to be expected from immigration so substantial that we should go into the highways and byways to bribe

or over-persuade citizens of other countries to come to Canada. The kind of immigrants we want are those who after careful study of the facts decide, of their own free will, that they want to become Canadians. We therefore support the present policy under which no subsidies are paid to immigrants, although help is given them in finding transportation and loans are advanced to meet their transportation costs. It may be, however, that there are foreign countries from which suitable immigrants might be drawn where the facilities for providing full and realistic information about Canadian living conditions and employment opportunities are inadequate. In that case, the Immigration Service should be strengthened to enable it to provide such information. If necessary, its personnel should also be increased in order to facilitate quicker processing of applications from would-be immigrants. The policy of not placing restrictions on the occupations in which immigrants may be entitled to engage should be continued, in our opinion. But the importance of encouraging immigrants with special skills can hardly be exaggerated under present circumstances when we are faced with serious shortages of many kinds of trained manpower.

On the other hand, it is our conviction that the economic advantages of continued immigration are substantial enough to justify an attempt to maintain a stable immigration policy even through periods of mild recession in Canada. Inevitably — and rightly, in our opinion — if there were a deep and widespread drop in employment in Canada, immigration would be either drastically reduced or suspended altogether. But, as we have suggested, there may be difficulty over the next two or three decades in obtaining as many suitable immigrants as it would be to Canada's advantage to have. The task would be made harder if our immigration policy, as expressed through regulations and administrative instructions, were to fluctuate with every minor fluctuation of business activity in Canada. Should the number of those wanting to come to Canada far exceed our expectations, such a stable policy as we recommend would clearly need to be reviewed. But if the number of available immigrants is roughly of the order of magnitude that we anticipate, we think that the interests of all Canadians would be best served by resisting the temptation to turn the administrative tap off and on with every temporary change in business conditions.

Implications of Population Growth

Before concluding this chapter, it may be convenient to draw attention to some of the implications of the population growth that we anticipate, although references to them will be found scattered through much of the rest of this report.

The flood of children born since the War is now swelling the primary and secondary schools and leading to a much greater demand for teachers

and the construction of many new classrooms. The crest of this wave will reach the universities about 1965, by which time enrolment may well be double what it is today, and university administrators are already planning for a large influx of additional students. The early 1970's will see a great increase in family formation as a result of the higher birth rate that followed the War, and this will call for another period of exceptionally rapid housing construction. Over the whole twenty-five year period heavy investment will have to be made in housing and other forms of social capital. Population growth will also be responsible for much of the new investment in industrial capital that will be required. Investment of both types will supply a continuing impetus to high levels of economic activity. To finance all this, very large amounts of capital, both domestic and foreign, will continue to be necessary.

As we have already suggested, rapid population growth will make it possible for many businessmen to replace their plant and equipment with new capital assets in order to take advantage of continuing innovation. In much of industry the attitude that will be required will be one of willingness to accept rapid obsolescence and constant eagerness to modernize the productive process. A different attitude will be appropriate on the part of those responsible for much public investment; and this should be encouraged, in our opinion, by the population growth that is to be expected. When it is a question of building a bridge across the Ottawa River near Parliament Hill, or a new City Hall in Toronto, or a hotel in the centre of Montreal, or a hospital in Quebec City, or a head-office building in Vancouver, the prospect of a rapidly growing population should encourage those who are responsible for planning such permanent structures to see that, in design and decorum, in fabric and finish, they will be worthy for many decades of a great country. In this way, we would hope that the expectation of a much larger population will help those in public life, and the public opinion to which they respond, to overcome what has sometimes seemed in the past to be a settled national aversion from doing anything decisive and costly.

Population growth will also have an effect on agriculture, both altering and brightening its prospects. Domestic demand will replace external demand as the principal stimulus to agricultural expansion and will lead to significant shifts in production, so that, even on the Prairies, Canadian agriculture will become more diversified. Secondary manufacturing which produces primarily for the domestic market, will also become more diversified as population grows. A higher degree of specialization will become possible. Real costs will come down. New industries will be established. Much of this development will be made possible by the creation of larger mass markets. But if consumers wish it and are able to make their wishes effective, population growth will also facilitate the creation of specialized markets. There will be room for shops offering special kinds

of food and books and furniture and records. Minority tastes in sport and recreation will be more fully satisfied. There will be more kinds of Canadian magazines and more kinds of Canadian radio and television programmes. Willy-nilly, we as a people are being swept from many of our old moorings. It is a paradox of population growth that, while it presents us with problems of social organization of great complexity, it also provides us with opportunities for recapturing old values in a different setting through the process of individuation in an industrial, urban society. If we have the strength and intelligence to grasp these opportunities, there will be strong strands to be woven into a national individuality — which, again, population growth should give us the self-confidence and the economic means to articulate and express.

7

ENERGY

No IMAGE of modern industrial man can convey much sense of his economic state and possibilities that does not give a prominent place to those forms of energy on which his power depends. They are the orb and sceptre that more than anything else represent the degree of his sovereignty over nature. Without them there would be little economic difference between him and his forebears during the long centuries when there were only waterwheels, windmills and the energy of animals to supplement the strength in his own muscles. But when abundant energy resources are available and techniques are known for transforming them into power, his fortunes can change dramatically. No longer is he fettered by the relative impotence of his puny hands and one of the indispensable conditions for economic progress has been met. So the steam engine, the gas engine, the diesel engine, the turbine and generator have all to be seen in close relationship to modern industrial man as attributes of his increasing ascendency over nature if an accurate impression is to be given of the process of economic development, a process which indeed can profitably be recounted in terms either of the successive prime movers that have been used in industry or of the various fuels — wood, coal, oil, natural gas — that have been consumed to make them turn.

The Coming Age of Nuclear Power

It seems clear that the world now stands on the threshold of a new era that will be characterized by a new prime mover and by new fuels. In some countries, the installation of nuclear power stations and the use of nuclear fuels will be of immediate industrial importance. In other countries they may not be supplying a large proportion of the energy requirements even twenty-five years from now. But in all countries the development of nuclear energy will banish the spectre of crippling shortages of heat and power and will set a ceiling on energy costs. Of themselves, these facts are so important as to justify speaking of a new age of nuclear power, no matter at what speed it makes headway against competing forms of energy.

During the next twenty-five years Canada's position in this new age may well be somewhat paradoxical. On the one hand, it should be in a position to participate fully in the peaceful application of atomic energy. Uranium is plentiful here, and the necessary scientific and technical competence is available. The wartime partnership with the United States and the United

Kingdom for the development of atomic weapons permitted Canadian scientists to participate fully and at a very early stage in solving the problems involved in building nuclear reactors; and further progress has been made on these foundations. The reactors at Chalk River, near Ottawa, have been used to carry out valuable theoretic and applied research. In addition, a nuclear power demonstration station is now being constructed for Atomic Energy of Canada and the Ontario Hydro, which by 1961 or 1962 should begin to feed electricity into the Ontario grid. The Canadian Government has also undertaken to supply a nuclear reactor to the Government of India as part of Canada's contribution under the Colombo Plan. There can thus be no doubt that Canada is equipped both with the natural resources and with the scientific and technical skills to enable it to put nuclear energy peacefully to work. On the other hand, it seems unlikely that any large proportion of Canada's energy requirements will be supplied by nuclear power until the period we are considering has almost reached its close. In the study that has been prepared for us on *Canadian Energy Prospects* it is estimated that by 1980 as much as one-third of all the new generating capacity being built in Canada may be powered by nuclear energy and perhaps 10 per cent of all the electricity being transmitted may come from nuclear stations.[1] But these figures will almost certainly be much less than comparable percentages for the United Kingdom, whose coal industry seems to be fighting a losing battle against the law of diminishing returns, for some countries in Western Europe which have long been deficient in energy resources, for Japan, and perhaps for a number of under-developed countries as well. The explanation is to be found in cost comparisons. The cost per kilowatt-hour of generating electricity by nuclear fission will in all probability vary little from country to country. But in most of Canada it will for many years remain higher than the cost of electricity generated by other means. In some areas of this country it will be cheaper to develop hydro-electric power at sites that have not yet been harnessed, while in other areas it will be cheaper to build steam plants fired by oil, natural gas or strip-mined coal. In the United Kingdom, on the other hand, and in a number of other countries nuclear power may fairly soon be cheaper than the only dependable alternatives.

The great appeal of nuclear power stations is the promise they hold out of low fuel costs. It remains to be seen, though, how great the advantage will be and how far it will be offset by high capital charges. From the technical point of view, nuclear power is to be classed with other types of thermal generation by which heat from the combustion of coal or oil or gas is converted into electrical energy. From the economic point of view, however, it bears a closer resemblance to hydro-electric power, since in both cases a high proportion of the total cost is represented by the fixed charges necessary to amortize the original investment. No doubt the capital costs of installing nuclear stations will drop fairly rapidly. But it seems likely

that it will be 1965 or 1970 before they have fallen far enough for electricity to be generated by relatively large stations (with a capacity of some 100,000 kilowatts or more) at a cost of between 5 and 7 mills per kilowatt-hour. At that price nuclear power could begin to compete in some parts of Canada either with hydro-electric power or with electricity generated in conventional thermal plants.

Large nuclear plants, it seems clear, will first come into commercial operation in Southern Ontario, where the annual increments in the demand for electricity are larger than anywhere else in Canada and where the end of cheap and accessible hydro-electric power has now been reached with the harnessing of the potential in the International Rapids Section of the St. Lawrence River. Now the only practical alternative to nuclear power in Southern Ontario is energy from coal-fired steam plants. While it is certain that many more conventional steam plants will have to be built and that imports of coal will rise sharply in consequence, it also seems clear that a number of relatively large nuclear plants will be needed before the next twenty-five years are out. Nuclear installations of this general scale may also be needed in the Maritimes and in Manitoba. In the Maritimes, nuclear power may be required for refining the base metals that have been discovered in New Brunswick, although, over the next decade or so, it would seem sensible to encourage the generation of electricity to meet these needs from coal mined within the area. For Manitoba there would seem to be a choice between developing the hydro-electric sites on the Saskatchewan and Nelson Rivers in the northern part of the province and building nuclear power stations near the principal market centres. In other provinces, a clear economic advantage will continue to lie with more conventional ways of producing electricity. There are large undeveloped water-power resources in the Province of Quebec, some of them very close to Montreal itself; and British Columbia has even larger untapped reserves of cheap hydro-electric power. Nor is it likely that nuclear plants will be needed for many years in either Alberta or Saskatchewan, since it seems clear that their electricity requirements will be met primarily by generating power either from oil, natural gas, or strip-mined coal. In more outlying parts of the country further removed from the urban concentrations where the demand for electricity is increasing most rapidly, there may well be need for smaller nuclear power plants of intermediate size with capacities ranging from 10,000 to 30,000 kilowatts. The principal purpose of such installations would be to provide both power and by-product heat (in the form of process steam) for new pulp and paper mills. One effect would be to remove the necessity that has hitherto kept such mills tethered to available water-power sites and to permit their location to be determined only by considerations of available timber resources and the most convenient transportation routes. At even greater distances still from the main centres of population in Canada there may well be a role for smaller nuclear plants with a capacity of from 2,000 to 3,000 kilowatts. These would be

substituted for diesel plants and would be primarily used by mining camps in the far North.

Although nuclear power will be of only limited economic importance in Canada over the next twenty-five years, we have thought it wise to begin this chapter by considering it, partly because of the great importance it will have in the more distant future, partly because the situation in some other countries during the next two or three decades will be very different than it will be here, and partly because even a brief discussion of the uses that may be found for nuclear power in competition with other forms of energy may throw some light on technological changes that have important cost and policy implications for the whole energy field. The most obvious change now occurring is that a new form of energy is being domesticated for use anywhere in the world. The cost of this new energy may with some confidence be expected to decline decade after decade. At the same time, the cost of hydro-electric power, which has always been comparatively cheap, will be rising as the remaining resources to be brought into production lie further and further away from the main centres of population. A counterpart of this trend is the declining cost of power produced in conventional steam plants as a result of improvements that have increased their thermal efficiency. The net effect of these changes is a general tendency for power costs to level out. This trend is reinforced by other technological changes that are cutting the cost of transporting energy in both its basic and more highly processed forms. The best illustration of this has already been referred to: the cost of transporting atomic fuel is so negligible as to impose no restriction on where an atomic reactor may be located. But other developments tending in the same direction have also been significant. Large-diameter pipeline have made it economical to move oil and natural gas longer and longer distances overland, while supertankers have cut transportation costs for water-borne oil. Even electricity can now be transmitted over greater distances as a result of new techniques making use of higher voltages with both alternating and direct current. In somewhat the same way as research in raw materials is bringing into view an age in which almost anything can be made from anything else, so developments in the energy field are bringing into view an age where power will be universally available, abundant and cheap. That day is not yet and may not have arrived even twenty-five years from now. It is rather an asymptote to which present trends are approaching. But even now it may occasionally be useful when policy questions affecting the next two or three decades are under consideration to allow them to be influenced by our growing proximity to a time when cost contours will have been largely eroded away and when power will be available in every country of the world on something like equal terms.[2]

The Future of the Fossil Fuels

For Canada over the next quarter century the central development in the energy field will be a great increase in the production, consumption

and export of oil and natural gas. Our reserves of these fossil fuels, although very large, are not of course inexhaustible; and it may be that in retrospect this period will seem little more than an interlude. But it promises to be a good feast while it lasts. Certainly it behoves us to try to make the most of these resources which are altering the size and shape of the Canadian economy and which for the first time are providing us with an abundance of energy within our own borders.

Water-power has figured so largely in the Canadian mythology that we have sometimes been bemused into thinking that we have had abundant sources of energy. There has been water-power in abundance, it is true; and this has helped to promote the growth of the Canadian economy from the earliest days when settlers depended on falling water to provide the power for their flour mills, grist mills, saw mills and distilleries, until more recent decades when it was cheap hydro-electric power that attracted chemical industries to the Niagara Peninsula and provided the basis for the location of very large aluminum plants in Quebec and British Columbia. But hitherto there has been a scarcity rather than an abundance of sources of energy in Canada. Although Canadian industry has obtained the energy it needed in the form of power mostly from hydro-electric plants and for this reason has had the advantage of relatively cheap power, it has relied — like the industry in many other countries — mainly on coal to provide it with energy in the form of heat and has had either to obtain it from Canadian collieries situated at long distances from the chief concentrations of industry in Canada or else import it from the United States or, occasionally, from other countries. The same has been true of residential and commercial consumers. Similarly oil has had to be imported over long distances. As a result, the average cost of energy in Canada has run as much as 50 per cent higher than in the United States.[3]

The discovery of large fields of oil and natural gas on the Prairies, beginning with the discovery made at Leduc near Edmonton in 1947, has changed legend to fact. There is now an abundance and variety of energy resources in Canada; imports are declining as a proportion of total energy requirements; and in many parts of the country the average real cost of energy has been falling both absolutely and in relation to costs across the border.

a) Oil

So far the principal part in producing this transformation has been played by the oil industry. Since 1947 exploration and development has proceeded so rapidly that by 1955 production had increased twentyfold, reaching in that year an output of 130 million barrels. Because of lack of markets, output has been held at a level some 40 per cent or 50 per cent below what is considered by petroleum engineers and conservation authorities to be the "maximum efficient rate" of recovery. If Canadian wells

had been producing in 1955 at that optimum rate, their output would have been sufficient to supply in full Canada's requirements of crude oil. But in spite of the large percentage of production that has been "shut-in", Canadian oil has been flowing to supply many regions in this country and to meet some requirements in the United States. The Inter-Provincial Pipeline brings oil from the Prairies to refineries in Sarnia and Toronto and as it passes through the United States provides oil for the Minneapolis-St. Paul area and other points along the route. The Trans-Mountain Pipeline brings oil from Edmonton through the Rockies to Vancouver and also supplies refineries in the State of Washington. At present the only parts of Canada dependent on foreign sources of supply for their requirements of crude oil are Newfoundland, the Maritime Provinces, the Province of Quebec and the Montreal market, including some parts of Eastern Ontario. The following 1955 figures may perhaps indicate sufficiently the growing size of the Canadian oil industry: in that year recoverable reserves amounted to 3,000 million barrels, the value of crude oil production was more than $300 million, and the new capital invested in all phases of the industry was more than $450 million.

Those are large figures. But they may seem larger in Toronto or Calgary or Ottawa than they do in New York. The Canadian oil industry provides employment for many Canadians and stimulates activity in many parts of the Canadian economy. But for the most part it is owned and controlled in the United States. If its dimensions and problems are to be seen in perspective, an effort must therefore be made to regard it with binocular vision, to see it as it appears not only to a Canadian but also to the major United States oil companies with interests in many parts of the world. In the board room of such a company the horizons are wider and the pressures different — although not necessarily all less parochial — than they would be in Canada. In that setting, the figures for Canadian production and reserves, while still significant, dwindle a little. Canadian production in 1955 was only approximately one-twentieth of production in the United States and one-sixth of production in Venezuela. It was also far outstripped by production in Kuwait, Saudi Arabia and Iraq. The figures for reserves, although less reliable, are perhaps even more indicative of the relative importance of the major oil fields throughout the world. In mid-1956 Canada is estimated to have accounted for between 1 per cent and 2 per cent of the world's proven reserves. Venezuela, on the other hand, accounted for more than 6 per cent; Iraq for more than 7 per cent; Iran for almost 13 per cent; the United States for 15 per cent; Saudi Arabia for almost 20 per cent; and Kuwait for almost 25 per cent.

Not only are the great Middle Eastern oil fields much more extensive than anything known in the Western Hemisphere, but because of the size of the individual pools, oil can be produced from them much more cheaply

than elsewhere. That fact, however, finds little reflection in world pricing policies followed by the major United States companies,[4] which are naturally influenced by United States defence considerations and by public opinion in the United States, including that part of it which is responsive to the claims of the independent oil companies. It would seem that the principal purpose of these pricing policies is to maintain a high level of prices for producers in the United States as a means of sustaining a rapid rate of domestic exploration and hence a satisfactory reserve position.[5] The price of Canadian crude oil is tied into this system by being related to the price at which oil from the Mid-Continent area in the United States can be delivered at Sarnia. But this consistency in price throughout North America conceals significant cost differences. Comparisons which have been made for us with help from the industry and which are to be found in Chapter 7 of *Canadian Energy Prospects* suggest that the cost of finding a barrel of oil in Canada is substantially less than in the United States and also that the profit to be made on each barrel is higher in Canada than in the United States, in spite of the longer distances that Canadian oil has to travel to reach its markets. From the first fact it may be inferred that there will be a continuing inducement for the large international oil companies to devote some of their large resources to further exploration and development in Western Canada. The second fact suggests that it should be to their advantage to try to widen the markets for Canadian oil in the United States. On the other hand, it must be recognized that moves in that direction may well be restrained by widespread reluctance across the border to disturb the system of prices that now insulates United States producers.

That is one strand in the triple barrier at present protecting the United States market. Another is the United States tariff of 5¼ cents per barrel on heavy gravity crude, 10½ cents per barrel on light gravity crude, and higher rates still on refined petroleum products. Still a third protective strand is the seldom absent threat of import restrictions and the system of voluntary restrictions that has been introduced under the sponsorship of the United States Government to take its place. For defence and other reasons such voluntary restrictions by United States importers have had little effect in practice on the flow of Canadian oil across the border. But as we were told in evidence by the President of Imperial Oil Limited, "actions of the United States Government which indicate uncertainties or possible restrictions in the free importation of Canadian crude could be expected to have a discouraging effect."[6] They certainly could.

The most logical new markets for Canadian crude oil are to be found in the United States — in the Detroit and Toledo area, in the Chicago area and in California. We are confident that, well before the end of the period we have to consider, growing United States demand will result in Canadian crude meeting some of the needs of those markets as well as the increasing requirements of the areas it now helps to supply. But wider

access to United States markets will not be easy and the vigorous action, involving price adjustments, that would make it possible may be hampered by the subsidiary relationship of the principal oil companies operating in Canada. In that event "shut-in" capacity on the Prairies will grow and there will be strong pressure to open the Montreal market to crude oil from Western Canada even at some sacrifice in terms of price to the producers. At present, this market is supplied by imported oil which comes in either by tanker or over the pipeline from Portland, Maine, and enters Canada duty free. In our opinion, it is possible that if Canadian oil were long balked of alternative markets, the Canadian Government might well decide to take action which would result in a larger share of the Montreal market being supplied by Western crude.

To the international oil companies with operations in many parts of the world, it may not seem a matter of great urgency or concern whether large new markets are found for Canadian oil. They can supply all these markets from other sources and through other companies with which they are associated. They might even prefer to increase almost indefinitely their reserves of oil in Canada and draw down their reserves elsewhere. Also, as we have suggested, they are under pressure within the United States to do nothing that might disturb domestic prices there. In our opinion, however, it is clearly in the Canadian national interest that new markets be found. Only in this way can there be assurance that a steady and rapid pace of exploration and development in Canada will be maintained. Only in this way can early advantage be taken of this great natural resource and its exploitation not left to the hazards of an uncertain technological future. Above all, it is only in this way that a place can be left within the Canadian oil industry for the independent Canadian producers, who, unlike the large international companies, must receive some return on their investment in Canada if they are to stay in business and not be forced to sell out to the foreign-owned companies, which already hold such a high proportion of all the acreage now under reservation or lease in Western Canada. It would seem that here is one instance, as is suggested in the discussion of foreign investment in a later chapter, where there might easily be some divergence between the Canadian national interest and the interest of foreign companies operating in Canada.

At the end of 1956 approximately 75 per cent of the proven oil reserves in Western Canada were controlled by six of the largest international companies; and the same six companies held between them about 40 per cent of the gross acreage under reservation or lease in Western Canada. At the same time over 85 per cent of the total refinery capacity in Canada was also subject to foreign ownership and control.[7] The large international companies have gained such a dominant position in the Canadian oil industry partly because of their large financial resources, partly because of the technical and managerial competence at their com-

mand, and partly because they have had the enterprise to see opportunities and to take advantage of them. But from the evidence presented to us and the studies made for us, we have also been convinced that one reason Canadians have not played a larger part in the development of our petroleum resources has been that the position of Canadian individual and corporate investors under Canadian tax law has been less favourable than the position of United States investors under United States law. We have suggested a number of ways by which these disparities (many of which also affect the natural gas industry) might be reduced. In our opinion these matters are of considerable importance; but since they are also highly technical, we have judged that the convenience of most readers might be best served by discussing them in an appendix.*

We have paid special attention to the oil industry in this way because it seems destined to become one of the most important in the country and may show a tenfold growth in output between 1955 and 1980 in response to strong domestic and foreign demand. Since the end of the War, Canadian consumption has grown at the phenomenal rate of approximately 12 per cent annually. Although that rate of increase will not continue, there are good reasons for anticipating large continued growth in domestic demand. It will be sustained not only by population growth but also by an even more rapid spawning of automobiles. In the study made for us of *The Canadian Automotive Industry,* it has been estimated that by 1980 there may be one passenger car registered for every three members of the population, instead of one car for approximately every six, as at present.[8] It is that outlook more than anything else that accounts for the increasing domestic consumption that we foresee, although increasing quantities of petroleum products will also be needed for other types of transportation, for residential and commercial heating and for use in industry. The growth of foreign demand is more difficult to forecast. But we assume that at least by 1965 larger markets should be opening up across the border and that sales to the United States should be accounting for the major part of the increase in total Canadian production. By 1980 Canadian output may well be about 3 million barrels a day. Of this amount perhaps 1,600,000 barrels would be exported and 1,400,000 barrels consumed in Canada.

There is little doubt that there is plenty of oil in Canada to support production of that order of magnitude. The Western Canada sedimentary basin, stretching from Norman Wells in the Northwest Territories to Red Coulee in southern Alberta and from Fort Saint John at the western end of the Peace River district to Virden in Manitoba, contains approximately 750,000 square miles; and that whole area is considered to be favourable for the discovery of oil. The tempo of new discoveries will no doubt be set at least in part by the rate at which markets open up. But unless the claustrophobia from which the Canadian oil industry is now suffering is to be

* See Appendix H.

more prolonged than we anticipate, there would seem nothing unreasonable in the estimate that as much as 25 billion barrels of oil will be found in Western Canada over the next quarter century, and that about half of this amount will still be in place as proved reserves in 1980. In addition, it is always possible that some of the drilling at present being carried out in Eastern Canada will be successful. In any case, there will always be the vast oil reserves known to occur in the bituminous sands of northern Alberta to draw on if our other petroleum resources fall short of our expectations or if the costs of exploration and development rise more rapidly than we are inclined to anticipate.

b) Natural Gas

In Canada as in the United States the natural gas industry has grown up in the shadow of the oil industry. This is because natural gas is often found in the same pools with oil and even when it occurs independently has more often than not been found as a by-product of the search for oil. In that case the cost of finding it is written off against the cost of petroleum exploration; and until comparatively recent years it was either flared off as waste or sold at very low prices for various local purposes. The development of large-diameter, high-pressure steel pipe and of special pipe-laying machinery changed all that. As wider markets were found for natural gas, higher prices could be charged for it at the well head, and it began to appear more and more as a competitor with petroleum products. The higher prices it could command in turn made it worth while to search for natural gas as an end in itself rather than as a by-product of the search for oil. Finally, the oil companies felt some inclination to divest themselves of their holdings of natural gas in order to escape the attentions of the public regulatory bodies, which have had to be concerned with the marketing of natural gas because of its inevitably more monopolistic character. In Canada the two industries are not yet so distinct as they are in the United States, but many signs of the coming separation are already apparent. Of Canada's presently proved recoverable reserves, some three-quarters can now be regarded as independent of crude oil production. Some prospecting and drilling has also been done with natural gas as the principal object of the search. And in Canada, as in the United States, the pipeline companies are now assuming a dominant position in the new industry. With the pipeline of the Westcoast Transmission Company completed from the Peace River area to Vancouver and the United States border, and with the Trans-Canada pipeline completed to Winnipeg and under construction to Toronto and Montreal, the natural gas industry in this country may be said to have come of age.

Hitherto the use of natural gas has been confined to the Prairies and, on a much smaller scale, to southwestern Ontario. Now the groundwork is

* The possible reserves to be found in the Athabasca tar sands are variously estimated at between 100 billion and 300 billion barrels.

being laid for a national industry. As a result, average per capita consumption in Canada may be expected to rise very rapidly. In 1955 it stood at approximately 10,000 cubic feet; by 1980 it may well have risen to 75,000 cubic feet, and at that rate, total domestic consumption twenty-five years from now would amount to two trillion cubic feet annually.

Wherever it has been introduced, natural gas has won wide preference for residential and commercial use as the cleanest and most convenient of all fuels. It is also regarded as a premium fuel by a number of industries that value it not only for those qualities but also for the exact temperatures that can be reached and maintained with it and for the ease with which it can be automatically controlled. In the United States primary steel mills are beginning to use natural gas more in their open hearths instead of residual oil. Other metallurgical plants are employing it both as a source of process chemicals and for the generation of heat. Brick plants and glass producers prefer natural gas over other fuels on grounds mostly of quality. In the processing of foods its cleanliness is an advantage. Secondary manufacturing industries engaged in the fabrication of metals and the production of secondary chemicals also prefer natural gas when it can be obtained at a price comparable to that charged for oil.

Already natural gas is being used for many of these special purposes by Canadian industry, and as it becomes more widely available, such markets for it will grow as well as the demand for it as a preferred source of residential and commercial heating. In addition, of course, it will continue to be important for operations in the oil and gas fields themselves and, within a limited radius of them, to be used as a raw material by many petro-chemical industries and as a fuel by such heavy industrial consumers as oil refineries, cement plants, and some thermal generating stations. In all these respects the pattern of use will be very similar to that already established in the United States. But there may well be one significant difference. In much of central Canada, industry is accustomed to paying much higher prices for its fuel than are paid on the average in the United States. For this reason it seems probable that even some of the largest industrial users of fuel in Canada, such as pulp and paper mills and metallurgical plants lying at great distances from the gas fields, will be prepared to contract for very large volumes of natural gas. Indeed, some contracts of this kind have already been negotiated.

Wide availability of natural gas will obviously affect the consumption of other fuels and the prospects of the industries that exist to provide them. The area of competition with oil will be fairly wide, although the largest single market for petroleum products — in transportation — will be immune, since natural gas cannot readily be used to drive automobiles, aircraft, ships or locomotives. On the other hand, some of the natural gas liquids (i.e., propane, the butanes and natural gasoline) which are stripped from natural gas in the cleaning process, are well suited to drive

internal combustion engines and may capture at least a fraction of the present market for refined gasoline and diesel oil. Heavy residual oils used as industrial fuel will also be displaced in some instances by natural gas. Much more important, however, will be the competition between natural gas and the middle distillates which are used for residential and commercial space-heating. If the experience of the gas-producing areas in the United States can be taken as a guide, it seems likely that natural gas will be widely used for these purposes throughout the Prairies to the virtual exclusion of fuel oil; and to a lesser, although very considerable, degree, it will be used in place of oil for space heating in other parts of the country as well. The effect of this competition, however, may be reflected less in the output of Canadian refineries than in the volume of imported petroleum products, since the severity of the Canadian winter has made it necessary to import large quantities of fuel oil during the season of peak demand. The Canadian oil industry will also, of course, have the consolation of drawing additional revenues from the sale of the natural gas it will continue to have as a by-product from its field operations.

The consequences for the coal industry will be more serious. For space-heating purposes, natural gas enjoys an even clearer preference over coal than over oil and will displace some sales of coal to residential and commercial consumers as it becomes available. It will also reduce the demand for coal as an industrial fuel, particularly in the summer time when the demand for natural gas slackens and lower than average rates can be quoted for sales to industrial users. In many cases large steam plants, particularly those at a distance from the gas fields, will still find it cheaper to use coal for the generation of electricity. The impact on the coal industry will thus be selective and vary according to location. But there can be no doubt that competition from natural gas will cut into many of the volume markets for coal and, in so doing, tend to hold down both sales of Canadian coal and imports from the United States.

In spite of the very rapid growth that we anticipate over the next two or three decades in Canadian consumption of natural gas, reserves are likely to grow even more rapidly and make possible substantially larger exports to the United States than are now being contracted for. The growth of reserves will be a function of the demand not only for natural gas but for crude oil as well; it will also be affected by the government policies pursued in both Canada and the United States; so that any estimate must be subject to a wide margin of error. It would seem plausible, however, to expect reserves of natural gas to increase over the period from 21 trillion cubic feet in 1955 to perhaps 100 trillion cubic feet in 1980. If that estimate is not too wide of the mark and if Canadian consumption runs at about the rate we have forecast, the amount available for export twenty-five years from now might be one trillion cubic feet annually or about half the amount likely to be marketed in Canada. Since 1951 gas

from southern Alberta has been meeting some of the requirements across the border in Montana. United States companies have also contracted to take gas from the Westcoast Transmission Company for sale in Washington and Oregon and from the Trans-Canada Pipe Line Company for sale in the states of the Middle West. In all three of these areas — the Pacific Northwest, the Mountain states and the Middle West — substantial growth in demand is expected and it seems probable that Canadian natural gas will be needed to provide a large part of the increase.

No doubt, as time goes by, more attention will be paid to the terms under which gas is exported. In our opinion, Canadians hitherto have been insufficiently aware of some of the influences that have been operative in setting prices. In one instance, Canadian gas is being supplied to industrial users across the border at very low prices under the terms of a contract negotiated with a supplying company in Canada which forms part of the same corporate structure as the public utility purchasing the gas and the industrial enterprise that is the principal user. In other cases, a pivotal role in setting prices has been played by the United States Federal Power Commission, which has the duty under the Natural Gas Act, in its own words, "to protect the American public in all possible respects through the regulation and control of the transmission and wholesale sale of natural gas".[9] If the Federal Power Commission with its public and quasi-judicial procedures for investigating both the engineering and economic aspects of proposals for importing gas into the United States finds against a Canadian proposal, the would-be suppliers in Canada may have no alternative but to come to a different agreement with prospective purchasers in the United States on terms less advantageous to themselves but more likely to be approved by the Commission. The present system of export licensing by the Canadian Government would seem to be an inadequate counterweight to this bargaining advantage held by United States companies wanting to purchase Canadian gas; and in our opinion, the bargaining position of Canadian suppliers might well be strengthened by stronger institutional arrangements within the Canadian Government in accordance with a proposal made later in this chapter.

c) Coal

The difficulties from which the Canadian coal industry has been suffering have been largely due to the competition that coal has been meeting from other fuels. So recently as 1950, the railways were burning approximately 25 per cent of all the coal consumed in Canada;[10] but that market has been shrinking rapidly as the railways have been dieselizing their operations and will have virtually disappeared by the early 1960's, when the night sky in Canada will no longer echo to the wail of steam locomotives. Coal has also been losing out, as we have mentioned, to oil and natural gas for residential and commercial space-heating; and growth

of its industrial markets has been held in check by sharp competition from the other fossil fuels. In part, however, the industry's difficulties have been due to production problems. This has been true, for example, of the coal mines in Nova Scotia. In Pictou and Cumberland counties, many of the seams pitch steeply and the workings are gassy and troubled with faults. In Cape Breton, the mines dip out under the sea for many miles and in some cases it takes two hours to travel back and forth between the pithead and the mine face.[11] These circumstances have not only created operating difficulties but have also added to labour costs. Obviously coal miners must be paid wages at least roughly commensurate with those paid in other industries, but to do so and yet meet the stiff competition being offered by other fuels has nowhere been easy and has been particularly difficult in those areas where the general level of wages has been high and alternative employment readily available.

It has been widely recognized in the industry, both by labour and management, that the only way these problems can be overcome is by increasing productivity. Wherever it has been possible to produce coal by strip-mining methods with the new heavy power-shovels and earth-moving equipment that have become available, output per man-day has been much higher than in the underground mines and has raised the general average. These are the methods used, for example, in the lignite fields in southern Saskatchewan and in the Minto field in New Brunswick. But it is easier said than done to increase productivity in many of the underground mines in both Eastern and Western Canada. Because of their structure, the major mines in Nova Scotia are unsuited to the room-and-pillar method of mining which is almost universally used in mining the larger seams that are common in the United States, so that much of the machinery developed for use across the border cannot be employed. The Nova Scotia mine operators, however, have shown enterprise in developing new cutting and loading machinery that can be used with the longwall system of mining and in undertaking, with the assistance of loans from the Canadian Government, an extensive investment programme to mechanize their operations more fully and efficiently. In the study prepared at our request on *The Nova Scotia Coal Industry,* it is estimated that as a result of this programme of modernization, output per man-day in the mines concerned (which account for approximately 90 per cent of all the coal produced in Nova Scotia) increased by 47 per cent between 1945 and 1955. At the same time, however, productivity in United States mines was increasing even more rapidly, so that the differential between costs at the pithead in Nova Scotia and in competing fields in the United States tended to grow. During our hearings in Halifax, we were told by one of the representatives of the Dominion Steel and Coal Corporation Limited that the cost of production at DOSCO collieries in Nova Scotia was a little more than double the cost of production in the United States.[12] One consequence of this and of rising transportation costs

has been a sharp increase in the subsidy paid by the Canadian Government on Nova Scotia coal moving into central Canada, since the payment per ton is related to the laid-down price at Canadian points of coal imported from the United States. However, since there is a maximum on the amount payable per ton, another consequence of the widening gap between the cost of Nova Scotia and United States coal has been some contraction in the market area in central Canada available to coal from Nova Scotia. The subsidy paid to enable coal from Western Canada to move to Ontario has also been rising while the available market has been somewhat contracting. The very buoyant labour market in Western Canada has also meant that the difficulties facing the coal mines there have led more rapidly to the abandonment of mines than has been the case in the Maritimes. In Nova Scotia, only two important pits so far have been closed. In Alberta, on the other hand, 16 mines were abandoned in 1955; and the total output in Western Canada declined by about 40 per cent between 1948 and 1955.

We see little immediate prospect of wider Canadian markets for coal. The railways' requirements will continue to decline; oil and natural gas will make new conquests; and these losses will outweigh the additional quantities that will be burnt in thermal generating plants, used for coking purposes in steel-making and other metallurgical industries, and possibly exported. It is for this reason that in a later chapter on regional development in Canada we put forward some suggestions for readjusting the basis on which subsidies are paid on shipments of Nova Scotia coal. The purpose of these suggestions would be to maintain for it something like its present volume of sales, while avoiding any substantial increase in the total amount of subsidy paid and so to keep to a minimum the social dislocation that might be caused by falling demand.

Further ahead the outlook for coal is brighter. The reasons for this are simple. Total energy requirements in Canada may be expected to compound at only a slightly lower rate than the Gross National Product. Increasingly over the next quarter century these requirements will be met by oil and natural gas; but however large Canada's resources of these fuels may be, they are certainly exhaustible and almost certainly less, when expressed in terms of the heat they can produce, than the coal reserves which in some circumstances it might prove economic to recover. Sooner or later it must be anticipated that in Canada as well as in the United States the real cost of finding oil and natural gas will begin to mount in the same way as the real cost of hydro-electric power is already beginning to move upward. As energy requirements increase and as oil and natural gas become relatively more expensive, coal will begin to come into its own again. Already the shape of what is to be expected in Canada in the latter part of the period we are considering may be seen in the United States, where large chemical and aluminum companies are beginning to buy up coal fields to meet their future needs.

It must be recognized, however, that this change will first affect the volume of coal imported from the United States rather than Canadian production. Under existing subsidy arrangements, coal from Nova Scotia is not marketed further west than Ottawa and coal from Western Canada is not marketed further south than Sault Ste. Marie. But the largest increases in demand will all be in Southern Ontario and no doubt will be met by larger shipments from across the border. Imports of coal will probably begin to rise substantially by about 1965, while it may be 1970 or a few years later before the Canadian coal industry begins to feel the effects of increased Canadian demand. It must also be recognized that the Canadian coal industry which we expect to be of growing importance twenty-five years from now will differ markedly from much of the industry we know today. For the most part, it will be geared to supply the requirements of large industrial users who will be less interested in the rank of coal they burn than in its uniformity. Coal operators in consequence will be drawn by preference to fields of uniform texture which can be mined with relatively low labour costs by open-pit methods. Where that is not possible, there may be inducement twenty-five years from now to convert mined coal at the pithead into electricity or synthetic gas or oil, or to gasify it underground.

Capital Expenditures of the Energy Industries

In an earlier chapter, we remarked on the large capital expenditures that are often necessary to exploit the latent potential in our natural resources and bring them into relation to the economic process. That is conspicuously true of the energy industries. As we were reminded during the public hearings by several of the oil companies, between 1946 and the end of 1955 the oil industry in Canada invested over $3,000 million in its efforts to find, produce, transport and process its products.[13] Over the same period, capital expenditures by a single electric power corporation, the Ontario Hydro, on generating stations, transmission lines, transformer stations and other facilities required to deliver power to its customers amounted to more than $1,250 million.[14] In 1955, the value of new capital investment in all the energy industries is estimated to have totalled approximately $900 million. Of this total, more than $400 million was invested by the oil industry, about $100 million by the natural gas industry, and more than $400 million by the electric power industry. In that year, the nation's fuel and power industries were investing approximately $1 out of every $7 being spent on the creation of new physical assets in Canada. It seems likely that over the next two or three decades, new investment in the energy sector will increase relative to the total of new investment in all Canadian industries and that by 1980 as much as $5,000 million may be spent annually on exploration and development, production, processing, transportation, distribution and marketing.

Electric power is the most highly processed form of energy and requires correspondingly large amounts of capital for its production and distribution. That is one reason why we expect new investment by the electric power industry to continue to account for not much less than half of all the capital expenditures in the energy sector of the economy. Another reason is the virtual certainty of rapidly growing demand for electricity. Since the War, there has been a greater increase in the use of electricity in households than for any other purpose; and it seems likely that domestic demand will continue to grow very rapidly as the number of households increase, as they come to be more fully equipped and as new appliances appear on the market. As we will see in the next chapter, use of electricity in agriculture will also grow and spread in sympathy with the decline in the farm labour force. Other industries will have even larger demands for electric power. Canada's pulp and paper mills and its smelters and refineries for non-ferrous metals at present consume about 40 per cent of all the electricity used in this country. They will continue to have growing needs for very large blocks of electric power, although the proportion of electricity used for making pulp and paper will fall over the next twenty-five years and although the great growth we expect in smelting and refining capacity in Canada may be checked by decisions to make use of cheap hydro-electric power in other countries for refining light metals. In the aggregate, however, the amount of electricity needed for these two purposes in Canada will be very great. The secondary manufacturing industries will also have large requirements, since many of them are heavy users of electricity and since this sector is likely to increase in relative importance. To sum up, we have thought it reasonable, after giving some consideration to the various uses of electricity, after examining the record of increasing consumption in recent decades and after pondering the correlations between growing demand for electricity and growth in the Gross National Product and in the labour force, to conclude that on the average over the next quarter century the annual increase in the use of electricity will be of the order of 7 per cent. This will necessitate large new investments year after year in generating capacity and in transmission and distribution facilities. By 1980, such capital expenditures may be running at the rate of some $2,000 million annually.

If electricity requires more capital for its production than any other form of energy, it is equally true that to produce it from water-power requires more capital than to do so in any other way. It is estimated, for example, that since 1950 the average investment per installed kilowatt of generating capacity in Canada has been $225 in the case of hydro plants and $125 in the case of steam plants. In spite of this, there will continue to be good reasons for making the very large capital outlays needed to develop new water-power resources. For, while the margin between the delivered cost of electricity produced hydraulically and by

thermal means has been narrowing, it is still substantial, provided that hydro power does not have to be transmitted over too great distances. Moreover, once a hydro station has been built, the costs of operating it are predictable over a long period of time, being affected very little by changing labour costs and not at all by changing fuel costs. We are therefore certain that many of Canada's remaining water-power resources will be developed before the next twenty-five years are out.

It is not so simple as might be thought to estimate how much undeveloped hydro power is still available. In 1955, installed turbine capacity in Canada amounted to approximately 13 million kilowatts; and in that year it was officially estimated that the total of available water-power, both developed and undeveloped, was between 37 million and 38 million kilowatts. For a number of reasons, however, that estimate must be regarded as being highly conservative. It is based on calculations only of the power available at sites where the flow has been measured over a period of years and where the foundations for the dams that would be necessary have been tested; it leaves out of account some of the additional capacities that could be made available through the greater use of storage and stream regulation; and it makes no allowance for possible diversions from one watershed to another of the kind successfully employed at Kitimat. Omitted, for example, from the calculations is the great head of power available at Grand Falls in Labrador, which we saw as we flew from Goose Bay to Knob Lake. There the Hamilton River, as it flows eastward towards Lake Melville through a high tableland, turns slightly in its course and plunges straight down more than 250 feet into a long deep gorge with spruce-wooded banks where snow lies in patches all summer long. The development that is projected at this site would eventually have a capacity of more than three million kilowatts. One cold, gloomy evening, flying from Whitehorse to Fort Nelson, we also saw — as they caught the last, gun-metal gleam of a stormy day — the waters of Lake Atlin and other tributaries of the Yukon that would be diverted through huge tunnels into the Taku River and so out to the Pacific instead of into the Bering Sea if the plans outlined to us at our hearings in Victoria are implemented.[15] The ultimate installed capacity of all the powerhouses involved in the project would be more than five million kilowatts; and this energy too is omitted from the calculations of Canada's hydro-electric potential. In our opinion, a reasonably realistic schedule of the large hydro-electric capabilities remaining to be developed in Canada is shown in Table 7.1.

From that table it is very noticeable what a high proportion of all the undeveloped hydro-electric power in Canada is situated in British Columbia. Some of it, however, cannot be developed so long as the interests of the fisheries are held to be of over-riding importance and so long as it is so costly to provide means which would enable the salmon

to surmount the high power-dams that would be necessary and so reach their spawning-beds upstream and also allow the fingerlings to find their way down to the ocean. International agreements have also to be reached

Table 7.1

LARGE HYDRO POWER CAPABILITIES[a]

(remaining to be developed in Canada as of December 31, 1955)

	Millions of installed kilowatts
Newfoundland and Labrador	
On the Island of Newfoundland	0.2
Hamilton River	4.2
New Brunswick	0.5
Quebec	
Lachine	0.9
Beauharnois	0.7
Ottawa	0.9
St-Maurice	0.6
Saguenay	1.0
North Shore, Gulf of St. Lawrence	4.0 (min.)
Rivers flowing into James, Hudson's and Ungava Bays	6.8
Ontario	
International Rapids	0.9
Northeastern Ontario[b]	0.2
Manitoba	
Nelson, Churchill and Saskatchewan	3.9
Alberta	
Peace, Saskatchewan, Bow, etc.	1.0
British Columbia[c]	
Columbia and tributaries[d]	3.5[d]
Fraser and tributaries[e]	5.7
Peace	3.0
Nass, Stikine, Liard[f]	6.0
Other coast rivers and possible diversions	4.0
Possible downstream benefits from U.S.	1.0 (min.)
Yukon — Taku project	5.2
(Total (provisional)	54.2

a 100,000 k.w. and up.

b Excluding the Albany and Severn River systems.

c The British Columbia Government in its brief estimated the total hydro-power resources of that province as being in the vicinity of 18 million k.w. as of December 31, 1955.

d See General A. G. L. McNaughton, "Problems of Development of International Rivers on the Pacific Watershed of Canada and the United States", a paper presented at the World Power Conference, Vienna, 1956.

e Assuming no diversion of the Columbia into the Fraser River system. Were this to be done, it would add some 4.5 million k.w. to Canadian capacity.

f See George J. Smith, "Major Undeveloped Water Powers of Northern British Columbia", a paper presented at the eighth British Columbia Natural Resources Conference, February, 1955.

SOURCE: Adapted from John Davis, *Canadian Energy Prospects, 1957*, a study for the Commission, Chap. 9, Table 14, p. 225.

in many cases for the allocation of the benefits that would result from the construction of storage reservoirs and from the more regular flows they would make possible. If all these difficulties are overcome, as we expect they will be, Canada's installed hydro-electric capacity in 1980 could be more than four times as great as it is today. Even so, the ratio of hydro power to thermal power would have fallen from seven out of every eight kilowatts of installed capacity to two out of every three kilowatts. Nevertheless, the importance of hydro-electric power over the next two or three decades and the cost of developing it will both be so great as to necessitate careful attention to the twin problems of where it is to be marketed and how it is to be financed.

In some parts of the country, the efficient development of a large new project may require that it be designed to produce much more power than can be used immediately in the area of economic power transmission, although the general growth of the area will require all the output over a period of years. Under these circumstances one possibility is to try, by low rates, to induce one of the relatively few industries that use very large amounts of power and for which power costs are therefore a very important factor, to locate in the area. The difficulty in this case, in settled or rapidly growing regions, is that such industries typically add relatively little to the diversified economic strength or to the employment opportunities of the region and permanently appropriate a large amount of power which a growing area will need for its own general expansion. In these circumstances there would seem to be merit in permitting some part of the power from such a large new project to be exported at economic rates for stated periods of years, after which it would be made available in the area for Canadian use. In this way, the interests of Canadian consumers, immediate and long-term, would be properly protected. This would mean cheaper electricity to the general body of consumers immediately and a safeguarding of future electrical supply for the diversified requirements of the region. This policy would not, of course, apply to areas remote from settled centres where the development of hydro-electricity for industries requiring very large amounts of power seems to be desirable from every point of view, or to areas far from the United States border.

We realize that in some quarters it is regarded as heresy to suggest that in some circumstances the export of firm power under long-term contracts might be sanctioned with advantage to the Canadian economy. Hydro-electric power has long been regarded in Canada as a unique resource — uniquely valuable, uniquely cheap, irreplaceable. For that reason it has long been settled policy not to permit the export of additional blocks of firm power and to reserve it to promote the growth of the Canadian economy. For the same reason it has long been held that, once exported, power could not be repatriated. So long ago as 1910, the

Conservation Commission over which Sir Clifford Sifton presided, declared that . . . "should power be exported to the United States, the vested interests it would create there would prevent its subsequent withdrawal to meet the future needs of Canadian industry."[16] Sir Henry Drayton, who during the First World War had been Power Commissioner under the Borden Government, later said bluntly, "Power exported is power lost".[17] Mr. Meighen in 1925 gave it as his view that, "Power is not something that is in the world market, that another country can substitute for if the first country withdraws".[18] A few years later, Mr. MacKenzie King stated, "This government has laid down the policy that the export of hydro-electric power shall be prohibited so that these great reserves of energy may be utilized in building up the Dominion".[19] We are aware of past policies and of the reasons for them. When they were adopted, there was a wide difference between the cost of hydro-electric power and of power generated in thermal stations; the blocks of power exported were a relatively large part of the electricity supplied to the importing area; and there was nothing in the export contracts specifically providing for recapture. But circumstances change and policies should be flexible enough to change with them. Hydro-electric power is no longer a unique resource. Certainly it is no more so than natural gas, which is being exported from Canada under contracts of 20 years duration. Electric power is undoubtedly essential for modern industrial growth. But it can now be generated in many different ways; and the difference between the cost of generating it hydraulically and by thermal means, whether of the conventional or nuclear variety, has been decreasing and may be confidently expected to go on decreasing over the next few decades. Furthermore, the amount of energy that might be exported in proportion to the total consumption of the importing area would be fractional now compared with the comparable proportion in earlier periods; and the problem of recapturing exported hydro is consequently much simpler now. There is therefore nothing naive in believing that arrangements could be made whereby hydro-electric power would be exported to the United States for a stated number of years to be replaced, when the time came under the agreement for its repatriation, by power generated from conventional fuels or by nuclear fission. Such arrangements are perfectly feasible in our opinion and might well be more in the public interest than any alternative method of developing some of the very large blocks of hydro-electric power that still remain to be harnessed in this country.

A Comprehensive View of Our Energy Requirements and Resources

Issues of this kind, in our opinion, should be examined within a context broad enough to include all forms of energy and all the energy industries. In this chapter, we have tried to suggest that, although there are a number of separate energy industries, the interrelations between them are close and complex. Each of the various energy resources has

its own peculiar advantages which make it better suited than others for some purposes. Wood needs no processing before it can be burned as a fuel and is found almost everywhere, except on the prairies, so that it will still be used for heating in some outlying districts, although Canada's total consumption of fuelwood will continue do decline. Coal has both a high heat content and valuable metallurgical properties, and there are large reserves of it. It will continue to be essential in steel-making and after the passage of time may begin to recapture some of the volume markets that it is now in the process of losing. Petroleum products provide the most practical form of power for cars and trucks, and highway traffic will continue to depend on it almost exclusively. Natural gas is a particularly clean and convenient fuel and its special properties will always ensure for it many premium markets. Water-power can be harnessed with a very high degree of thermal efficiency and electricity can be produced from it without exhausting any natural resources. Electricity itself, however produced, is the most amenable form of power in industry and is now almost indispensable for domestic comfort as well. But there is also a wide area of competition between the various energy resources. For many purposes, one form of energy can be substituted for another. Wood, coal, oil, gas and even electricity can all be used for space-heating. There are many possible ways of generating electric power. Moreover, it is now technically feasible and may, in succeeding decades, be economic to synthesize oil or gas from coal, or gas from oil, and so extend the practical limits within which one form of energy can be converted into another.

For the first time in Canada, the interrelations between the various energy industries have been treated comprehensively in the study that has been prepared for us on *Canadian Energy Prospects.* As a result of that study, it is possible to put forward some estimates of the rate at which Canada's energy requirements will grow over the next two or three decades, of the way the pattern of end-use may change, and of shifts in the relative importance of the various energy resources in supplying total Canadian requirements.

Since quantities of all forms of energy can be reduced to a common measure by being expressed in terms of the heat they can generate, it is readily possible to add and compare them. Expressed in terms of tons of coal equivalent, it seems probable that the total quantity of energy required in Canada over the next quarter-century will increase at an annual rate of some 4¼ per cent. That estimate has been chosen after considering the results produced by a number of different methods. The growth experienced recently in energy requirements has been projected. Forward estimates have also been prepared based on the anticipated growth in the Gross National Product and in the labour force. The estimated requirements of the various main consumption sectors and of the various regions have

been totalled, as have estimates of domestic demand for the various energy sources. After selecting a rate of increase of 4¼ per cent per annum from among the results yielded by these different methods and after reconsidering the component estimates in order to reconcile them with that projected rate of increase and with one another, we have concluded that the changing pattern of energy use over the next quarter century might be along the lines set out in Table 7.2.

Table 7.2

THE PATTERN OF ENERGY USE IN CANADA

(percentage of total energy consumed, measured in terms of tons of coal equivalent)

Consumption sector	1926	1953	1980 (estimated)
Energy industries	7	9	14
Manufacturing and mining	18	23	29
Residential and commercial	37	30	21
Transportation	29	29	26
Non-fuel uses	3	5	8
Other (waste and unaccounted for)	6	4	2
Total	100	100	100

SOURCE: John Davis, *Canadian Energy Prospects*, 1957, a study for the Commission, Summary, p. 2.

As will be seen from the table, it is anticipated that manufacturing, mining and the energy industries themselves will use a higher percentage of the total than at present, with residential and commercial demands being correspondingly reduced.

The changing pattern of supply to meet Canadian requirements is suggested in Table 7.3.

Table 7.3

THE PATTERN OF ENERGY SUPPLY TO MEET CANADIAN REQUIREMENTS

(each source as a percentage of total energy consumed, measured in terms of tons of coal equivalent)

Energy source	1926	1953	1980 (estimated)
Coal (including coal for electrical generation)	69	39	16
Petroleum	10	42	45
Natural gas[a]	2	4	25
Wood	16	7	1
Water power[b]	3	8	11
Nuclear energy[b]	—	—	2
Total	100	100	100

a Including natural gas liquids.

b Measured in terms of its contributions as electricity.

SOURCE: John Davis, *Canadian Energy Prospects*, 1957, a study for the Commission, Summary, p. 3.

The salient conclusion that emerges from the above table is that by 1980 between two-thirds and three-quarters of Canada's greatly increased total requirements may be supplied by petroleum and natural gas. It should be noted, however, that the percentage distribution shown above is based on the consumption of energy in its primary or relatively raw form before the deduction of losses due to the inefficiency inherent in most of the methods by which energy is produced, transported and consumed. Since hydro-electric power can be put to work much more efficiently than liquid fuels or coal, its effective contribution towards meeting Canada's total energy requirements today would seem to be of the order of 20 per cent rather than 8 per cent, as is shown in the table. In 1980, the corresponding percentage might be more like 25 per cent. Nuclear power is also a highly efficient source of energy, and by 1980 its contribution might be about 4 per cent instead of 2 per cent, as is shown in the table.

We are aware that these estimates of energy use and energy supply will prove inaccurate. But, in our opinion, they are a valuable part of the total context in which individual energy issues should be considered. It is particularly important that such a context be developed at a time when the questions of the development of power resources and of the downstream benefits on rivers which cross the Canadian-United States border are under discussion between the governments of the two countries. Undoubtedly in these negotiations Canada's long-term interests in hydro-electric power will be safeguarded. We assume that in connection with these inter-governmental negotiations, the appropriate Canadian authorities are considering our long-term interests in the whole field of energy. These include not only the question of exporting electricity for periods long enough to permit the financing of new installations but also our interests in export markets for oil, both crude and refined products, and for gas and its by-products.

In order that a sound and comprehensive policy may be worked out with regard to development, exports, imports and consumption of all forms of energy in Canada, we propose that a national energy authority be established which would be responsible for:

(a) advising the Federal Government and, upon request, any provincial government on all matters connected with the long-term requirements for energy in its various forms and in different parts of Canada; methods of promoting the best uses of energy sources from a long-term point of view; export policy, including such questions as the further refining of oil and gas in Canada and the disposal of by-products; coal subsidies, etc.

(b) approving, or recommending for approval, all contracts or proposals respecting the export of oil, gas and electric power by pipeline or transmission wire, including, where necessary or desirable, the holding of public hearings in connection therewith.

If this proposal is accepted, the organization of the Dominion Coal Board should be merged with that of the proposed national energy authority. It is perhaps unnecessary to add that the proposed new body would not interfere with the rights of the provinces respecting control over natural resources.

Energy and the Changing Structure of the Canadian Economy

The change from wood to coal as the principal industrial fuel was an intrinsic part of the Industrial Revolution and served to drive it forward; and subsequent shifts in the supply of energy have significantly modified the structure of every industrialized country where they have occurred. It is perhaps worth while, therefore, to add a few speculative comments on the general nature of the changes we foresee in the structure of the Canadian economy resulting from the changes in the availability and cost of energy that have been outlined in this chapter.

As has been often remarked, the Canadian economy has been given a particular twist in previous decades by the relative inaccessibility and scarcity of its fuel resources and by its relative abundance of hydro-electric power, with the result that there has been a much higher concentration of the electro-process industries in our economy than there has been in the United States or many other countries.[20] Production of those chemicals which are manufactured essentially by combining air and electricity has gravitated naturally to the Niagara Peninsula and other areas where hydro-electric power has been plentiful. We have also been able to add a higher value to some of our natural resources by using hydro-electric power to turn our pulpwood into pulp and paper and to smelt and refine many of our minerals. In the case of aluminum, even though the raw material is not available in Canada in commercial quantities, the presence of cheap power near tidewater, together with access to large international markets, has made it profitable to locate very large aluminum plants at various points in Canada. The advantage we have had from cheap power, however, is now declining as energy costs throughout the world, including the cost of power, are tending to level out.

It seems likely that our advantage in this regard will last long enough to justify the development, even in remote areas, of large new water-power resources and to provide the basis for a large increase in Canada's capacity to produce aluminum and probably other light metals, including magnesium and titanium. It should also provide the basis for a few new smelters and refineries for the production of non-ferrous metals, and also perhaps of uranium 235. But cheap hydro-electric power is available in other countries, particularly in Africa. And as their economic development progresses, it may become attractive to develop some of these sites for the production of aluminum, or other of the light metals, or U-235. Indeed, that is already happening. Towards the end of the period that

we are considering, when nuclear energy should be available at much lower cost than it is today, and when all of Canada's large water-power resources will have been harnessed, the edge we have had because of cheap power will have entirely disappeared. Even before that, as has been suggested in the study made for us on *The Outlook for the Canadian Forest Industries,* the availability of nuclear power will be operating to narrow the advantage in the manufacture of pulp and paper that we have enjoyed because of our water-power resources.[21] The same may also be true of the smelting and refining of base metals.

Fortunately, there is much to be set down on the other side of the ledger as well. While we are beginning to lose the advantage given us by cheap power, the handicap imposed on many Canadian industries by fuel costs higher than those in the United States is being reduced in many parts of the country as average energy costs on both sides of the border begin to come together. Close to the oil and gas fields in Western Canada, energy costs are now low enough to provide an attraction to new industries. But these low costs do not reach out very far from the fields and, in our opinion, are unlikely to, so long as changes are not made in the present methods of setting prices at the border. Even if this were done in ways less prejudicial to Canadian interests, we doubt, however, whether the special character being given to the economy by the proximity of many parts of Western Canada to cheap oil and gas will ever equal in relative importance the specialized twist given our economic development by cheap hydro-electric power. In terms of energy, our situation is beginning to blend more and more into that found across the border. Only at the other end of the country, in some parts of the Atlantic Provinces, does there seem to be little present hope of energy costs approaching the continental average. It is for this reason, as well as because of the more general considerations outlined in a later chapter, that we think special assistance from the Federal Government to help some of the Atlantic Provinces obtain assured energy resources at lower cost is well justified.

There will continue to be special energy problems in the Atlantic Provinces. In the West, some special new industries, including notably the petro-chemical industries, will cluster about the oil and gas fields. The electro-process industries will continue to expand and to have a relatively larger place in the Canadian than in the United States economy. But by and large what we foresee is a less specialized Canadian economy as a result of developments in our energy resources and in the energy resources available elsewhere throughout the world. Energy costs are coming together and energy is being diffused more widely, almost as it were, in accordance with the Second Law of Thermo-dynamics. To pluck new economic advantages from this new situation will require initiative and brains and technical skill of a high order.